# *WCSD21*

Washoe County School District's

# Plan for 21st Century Learning 2015-2020

*WCSD Mission: To create an education system where all students achieve academic success, develop personal and civic responsibility, and achieve college- and career-readiness for the 21st Century*

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This document is best viewed in its digital form, as it includes hyperlinks to supporting resources and relevant locations within the document.

Please visit http://tinyurl.com/WCSD21Plan to view the digital version.

# *WCSD21*

## Washoe County School District's
## 21st Century Learning Plan

## Executive Summary

*WCSD21*, Washoe County School District's *Plan for 21st Century Learning* charts an ambitious, achievable path to **equitable, student-centered, digitally-enabled learning** that engages the diverse students of Washoe County in preparing for their varied futures in careers, college, and life.

This plan articulates WCSD's implementation strategy for Objective 1.3 of the district's Strategic Plan, *Envision WCSD 2020*, which seeks to strengthen teaching and learning through technology and 21st Century instructional strategies by

- elevating students' readiness for college and careers through learning environments that develop 21st Century Competencies (Initiative 1.3.2), and
- empowering teachers with 21st Century instructional strategies (Initiative 1.3.1).

*WCSD21* is not simply a technology plan; rather, it is a **LEARNING plan supported by and empowered through technology**. It recognizes that all our students deserve **equitable access** to relevant and engaging educational experiences and resources that help them graduate ready for careers, college, and life in a complex, technology-rich world. A short video of WCSD teachers demonstrating the value of student-centered technology is at **http://tinyurl.com/WCSD21Video**.

*WCSD21* is a scalable plan that takes a holistic, sustainable approach to **blending academic skills with competencies for the 21st Century**, and recognizes that **students cannot learn to thrive in a technology-rich world in technology-poor learning environments**.

This document outlines the six core components of *WCSD21*—Learning, Teaching and Professional Learning, Student-Centered Technology, Equity and Access, Communication and Outreach, and Evaluation and Continuous Improvement. It also details an implementation timeline and budget.

# *WCSD21*

## Washoe County School District's
## 21st Century Learning Plan

## The *WCSD21* Vision of 21st Century Learning: Preparing Our Students for Success in the 21st Century

**WCSD Mission**

*To create an education system where all students achieve academic success, develop personal and civic responsibility, and achieve college- and career-readiness for the 21st Century*

In 2015, the Washoe County School District Board of Trustees, through its Strategic Plan, *Envision WCSD 2020*, clearly articulated a vision for 21st Century Learning, intended to:

- elevate students' readiness for college and careers through learning environments that develop 21st Century Competencies (Initiative 1.3.2: see Appendix A), and
- empower teachers with 21st Century instructional strategies (Initiative 1.3.1: see Appendix B).

This document outlines *WCSD21*, Washoe County School District's implementation plan for Initiatives 1.3.1 and 1.3.2. Fully implemented, *WCSD21* would set our District on a path to **equitable, student-centered, digitally-enabled learning** by providing our students with the 21st Century opportunities they need to prepare them for careers, college, and life. A short video of WCSD teachers demonstrating the value of student-centered technology is available at **http://tinyurl.com/WCSD21Video**.

*WCSD21* builds on important progress already underway in WCSD, including

- a substantial technology infrastructure upgrade that has brought 1:1 wireless capacity (Wi-Fi) to all district schools,
- the development and implementation of digital tools that enhance our ability to serve the needs of our students, such as the BIG gateway to a

comprehensive data warehouse and the deployment of digital productivity tools, such as Microsoft Office 365,

- a transition to more rigorous academic instructional practices aligned to the Nevada Academic Content Standards (NVACS), and
- the development of a framework of 21st Century Competencies for students and corresponding professional learning for teachers.

*WCSD21* also leverages opportunities such the forthcoming *Victory* 1:1 program at Hug High School, and will lay a foundation for further innovations.

## Why Have a 21st Century Learning Plan?

We are nearly a generation into the 21st Century—a century that has seen the most significant technology-driven social changes in history. Consider:

- Google was launched in 1998,
- Facebook was launched in 2004,
- The iPhone was released in 2007, Android in 2008, and by February, 2015, 78% of US cellphone subscribers owned an internet-connected smartphone,
- The iPad was released in January, 2010. Now, in 2015, the majority of US households own a tablet device.

The way the world does business has changed. As Tom Goodwin of Havas Media notes,

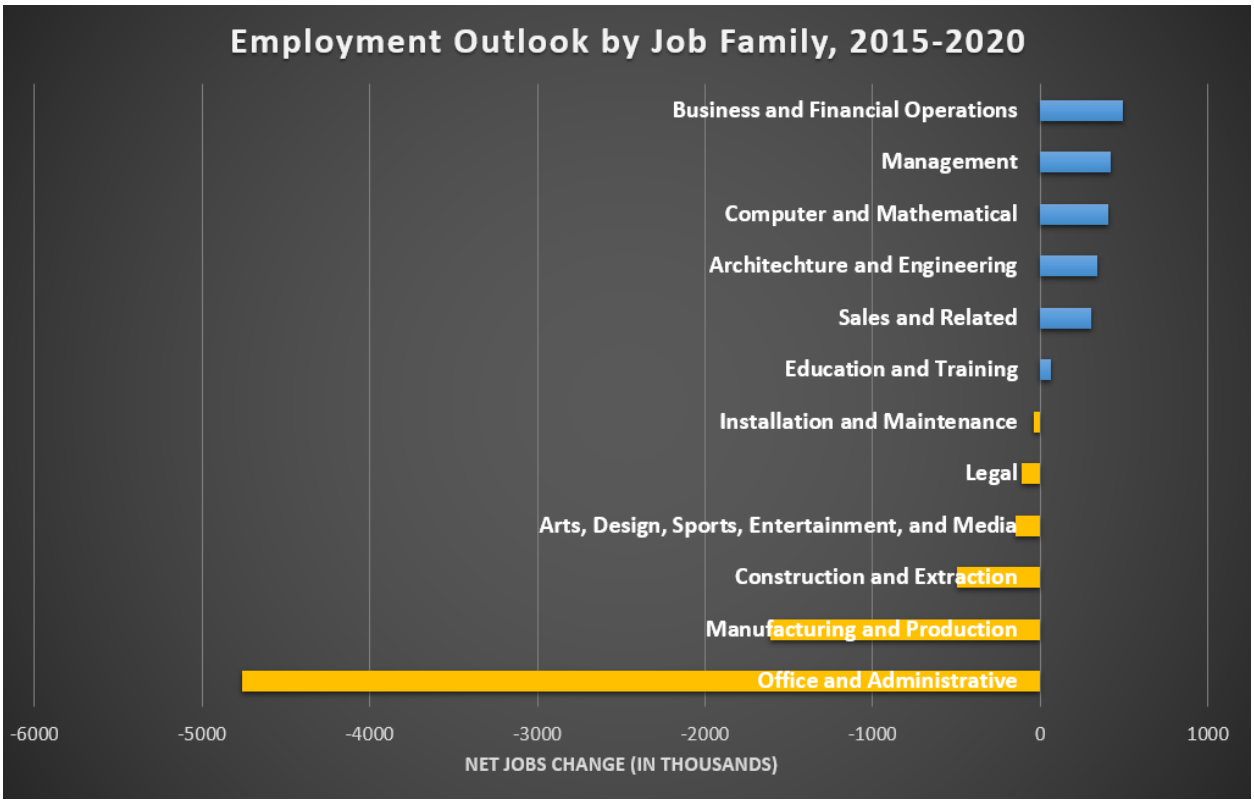
> Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. Alibaba [China's answer to Amazon.com], the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate.[1]

The students of Washoe County are growing up in a world where change is constant. Businesses are changing, jobs are changing, the nature of work is changing, and employers' expectations of the workforce are changing. According to the Society of Human Resource Managers (SHRM),

> Educational authorities are struggling to remold their systems to meet the needs of the modern economy. Though the number of college graduates is growing, companies still report challenges in finding candidates with the right combination of technical and soft skills.[2]

Supporting this assertion, the U.S. Department of Education states that "three-quarters of the fastest-growing occupations require education beyond a high school diploma."[3] It is clear that **in every industry sector, employers increasingly value not only content knowledge and expertise, but the skills with which to use this knowledge in innovative and creative ways.** Figure 1 shows projected job gains and losses worldwide between 2015 and 2020 across twelve job families.

**Figure 1: Employment Outlook by Job Family, 2015-2020**




Source: World Economic Forum, The Future of Jobs Report, 2016

The national educational landscape also is undergoing a transformation in response to these demands. To cite just a few examples,

- the College Board has embarked on a comprehensive redesign of its AP courses and exams to emphasize inquiry, reasoning, and communication skills,[4]

- many large public school districts—Houston Independent School District and Baltimore City Public Schools to name just two—are implementing comprehensive plans centered on 21st Century Learning and technology integration that recognize and address the diverse educational needs of their K-12 students, and
- the Nevada Department of Education's *Nevada Academic Content Standards* (NVACS), and its *Employability Skills for Career Readiness*, combine content knowledge with the need for students' 21st Century Competencies and technology literacy.

*WCSD21* builds on the significant progress already made in WCSD, and outlines a holistic approach to this transformation with the goal of meeting the needs of today's students and empowering their success in a changing world.

## Equity and Access

Preparing students for careers, college, and life in the 21st Century requires us to keep in mind two critical imperatives. These imperatives provide the foundation for this plan's components, implementation, timeline, and evaluation (outlined below).

**Imperative 1:**

**WCSD students deserve equitable access to educational experiences that help them graduate ready for careers, college, and life**

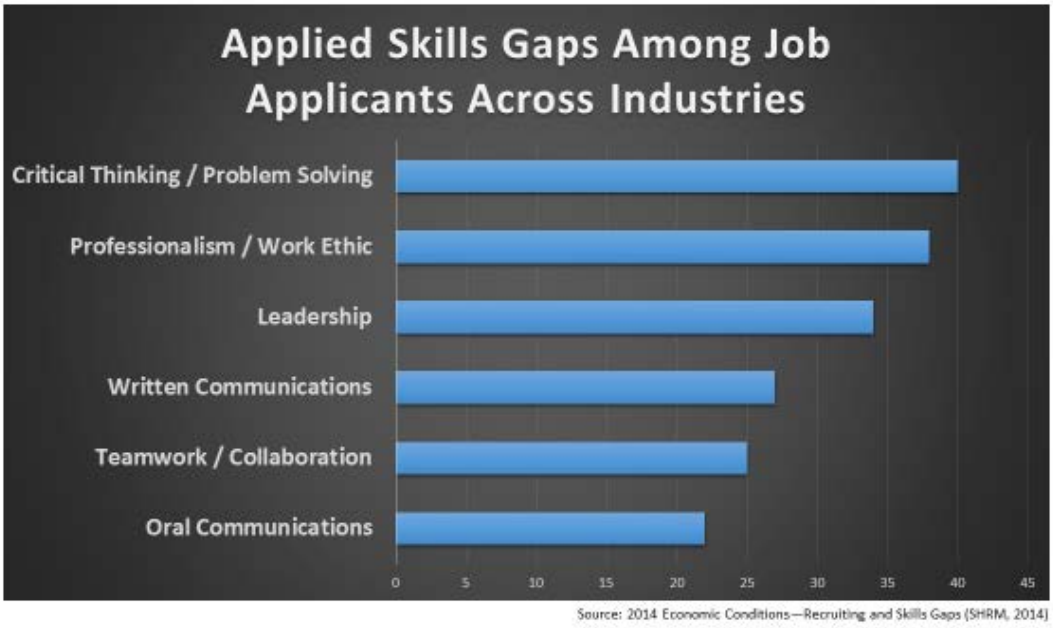
A 2014 study conducted by the Society of Human Resource Managers (SHRM) identified several critical skills that job applicants frequently lack (see Figure 2).

Collectively, these applied skills are commonly referred to as 21st Century Competencies. **WCSD recognizes that to address the applied skills gap requires that we prepare students with academic skills AND competencies for the 21st Century.** By focusing on the classroom experience for students and teachers, this plan provides the tools for teachers and students to engage in significant, real-world learning experiences.

**Imperative 2:**

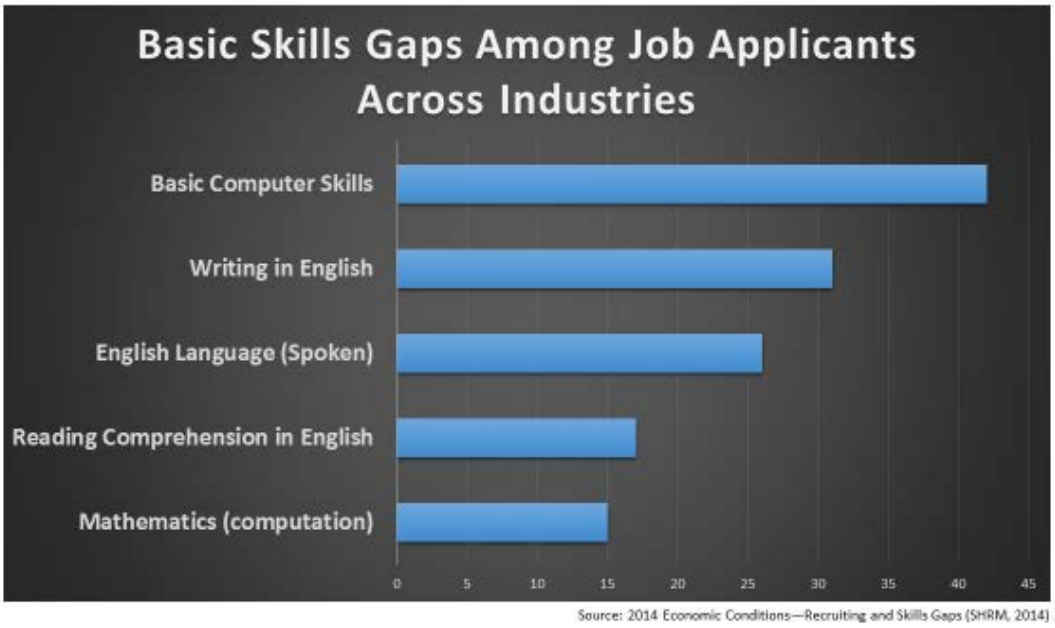
**WCSD students deserve equitable access to educational resources that help them graduate ready for a complex, technology-rich world**

**Figure 2: Applied Skills Gaps Among Job Applicants Across Industries**




The rapid rise of digital technologies is transforming the ways in which individuals communicate—as workers, as learners, and as citizens. According to the U.S. Department of Labor, "many job seekers no longer turn to the want ad pages but to the Web pages. They find their jobs on the Internet."[5] Employers also struggle to find job applicants with the technology skills they need (see Figure 3).

**Figure 3: Basic Skills Gaps Among Job Applicants Across Industries**



To be successful citizens of Washoe County, it is undeniable that students must learn to navigate a modern world in which digital technologies—especially personal digital devices, such as laptops, smartphones, and tablets—form the basis for how we do business. **WCSD recognizes that students cannot learn to thrive in a technology-rich world in technology-poor learning environments.**

Digital technologies coupled with innovative classroom practices have proven powerful enablers of 21st Century learning experiences for students. *WCSD21* is therefore fundamentally a **learning plan, not a technology plan**.

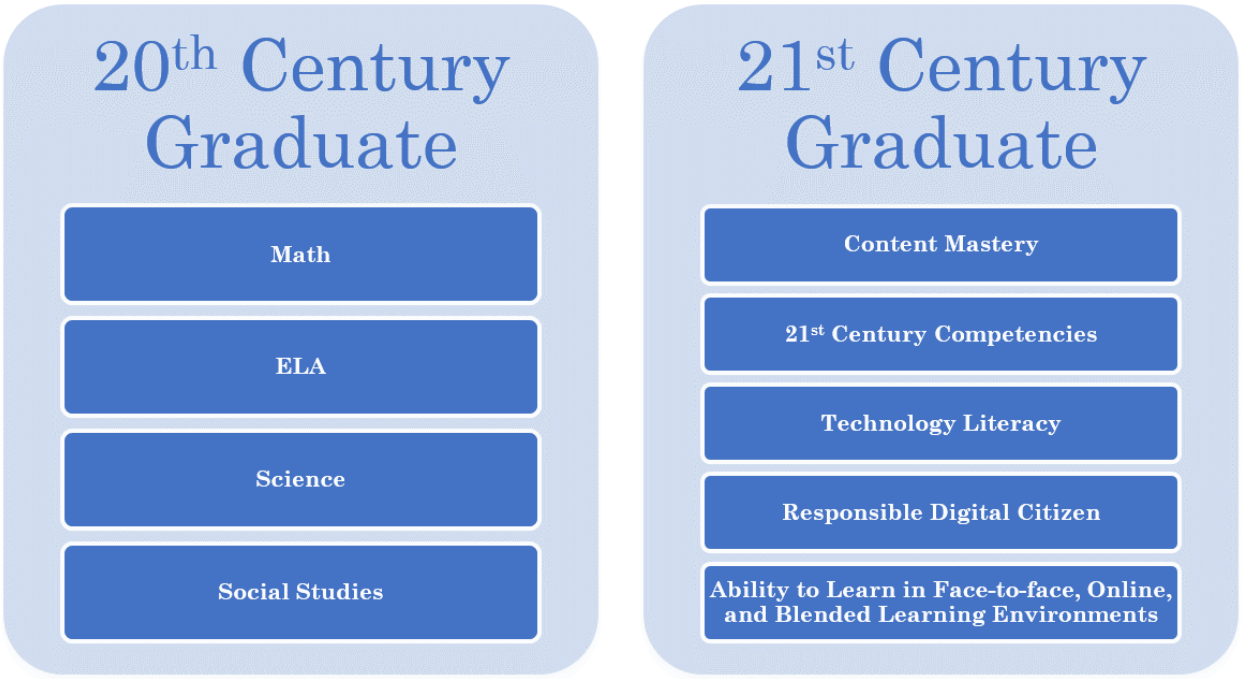
## Portrait of a WCSD Graduate

Preparing students with the appropriate **academic outcomes**, **21st Century Competencies**, and **technology skills** to succeed in the 21st Century, WCSD outlines a *Portrait of a WCSD Graduate* to express our hopes for our graduates (see Figure 4).

This *Portrait of a WCSD Graduate*—a statement of real-world outcomes for all our students—guides the implementation and continuous improvement of *WCSD21.* The *Portrait* also serves to promote purposeful conversations with students, teachers, parents, and guardians, around attributes our students should develop, and the instructional practices that will help students develop these important attributes.

The remainder of this document outlines the core components of *WCSD21*—Learning, Teaching and Professional Learning, Student-Centered Technology, Equity and Access, Communication and Outreach, and Evaluation and Continuous Improvement—and details a timeline and the required resources for implementation.

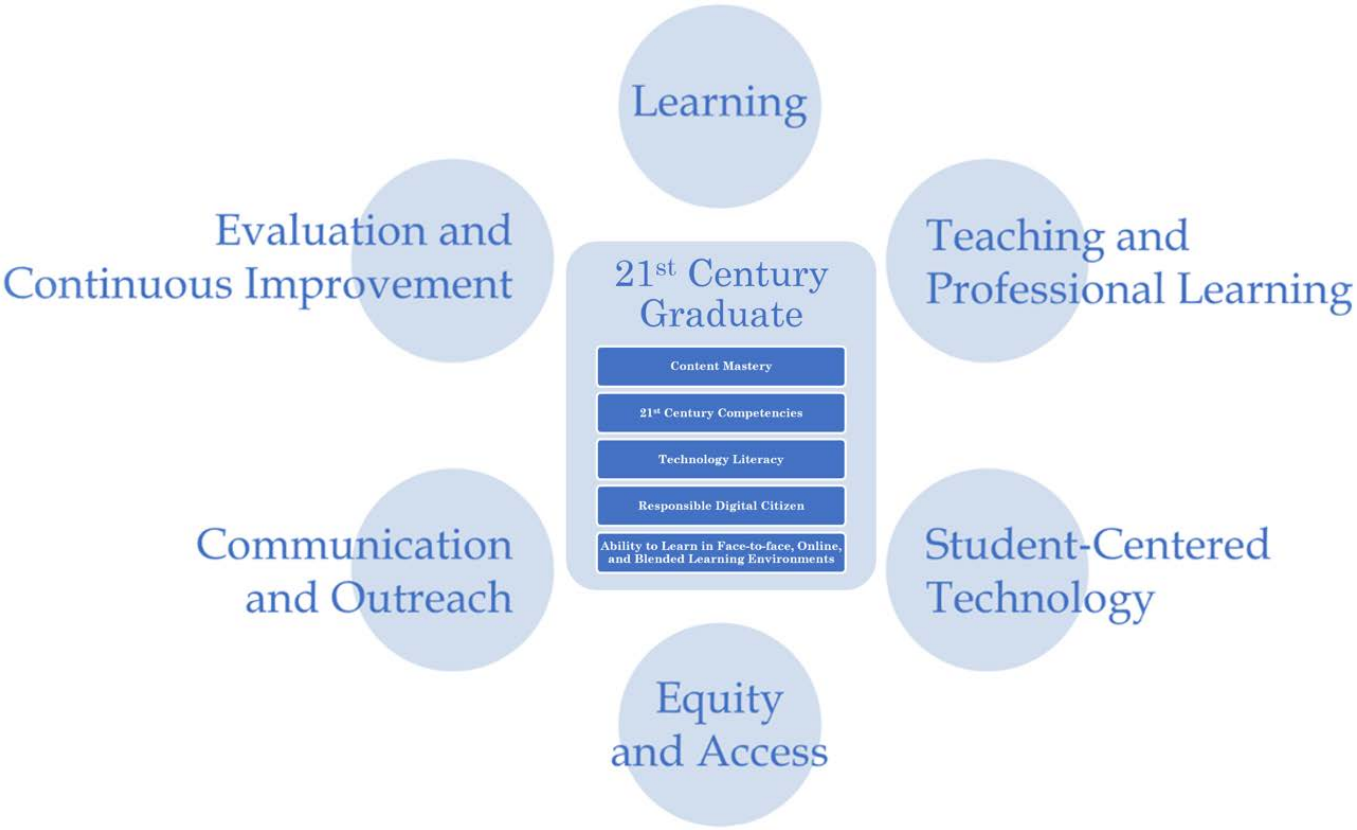
**Figure 4: Portrait of a WCSD Graduate**



## Key Elements of *WCSD21*

Meaningful implementation of 21st Century Learning in a large school district requires a thoughtful consideration of multiple factors. This plan outlines an implementation framework containing six key elements essential for achieving **equitable, student-centered, digitally enabled learning environments** for the 21st Century students of Washoe County School District. Figure 5 identifies the key elements of *WCSD21*, each of which is outlined in detail below.

**Figure 5: *WCSD21* Key Elements**




The development of these six key elements has been substantially informed by

- initiatives underway in other school districts—such as Jefferson County (Colorado) Public Schools,[6] Houston Independent School District,[7] Baltimore City Public Schools,[8] Loudoun County (Virginia) Public Schools,[9] and Fairfax County (Virginia) Public Schools,[10]
- implementation frameworks and guidelines prepared by several national organizations—including the One-to-One Institute (OTO), EdLeader21, the Consortium for School Networking (CoSN), the Partnership for 21st Century

Learning (P21), the State Educational Technology Directors Association (SEDTA), and the International Society for Technology in Education (ISTE),
- local work already begun in WCSD, including the experiences of innovative WCSD schools and teachers who are creating valuable learning experiences in a handful of 1:1 classrooms and technology-rich learning environments, and
- lessons learned by districts whose implementations failed due to lack of planning and faulty execution—most notably, Los Angeles Unified School District (LAUSD).

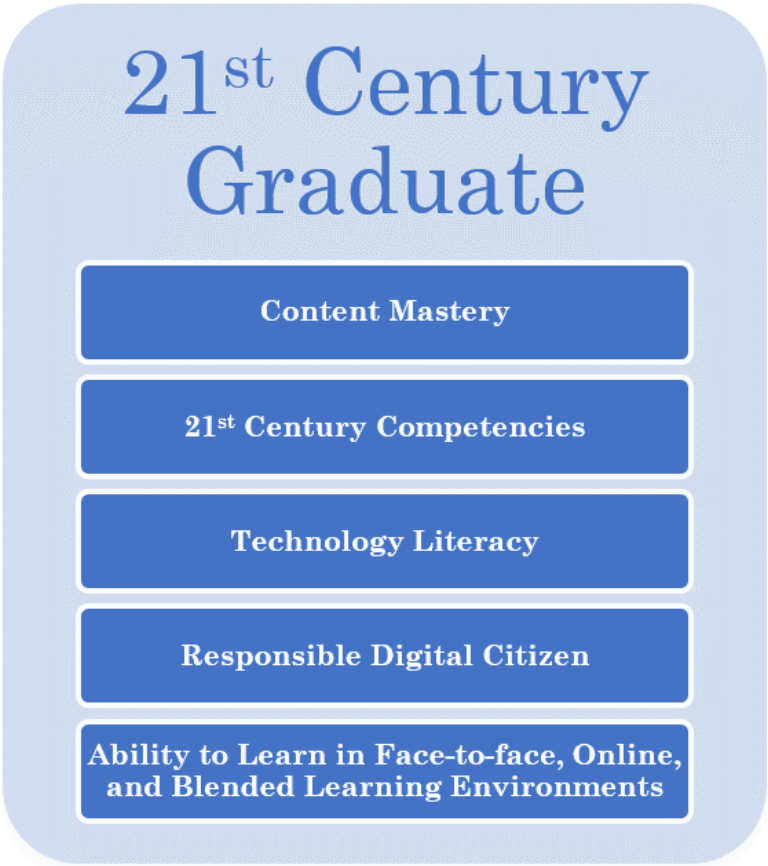
Taken together, the six elements of *WCSD21* directly support 21st Century students by providing a structure that allows for a **meaningful, thoughtful, and equitable district-wide implementation of 21st Century Learning**. Throughout the sections below, items that require actions and additional resources are clearly identified. A proposed implementation timeline incorporating all six elements, and an implementation budget, are discussed in the final sections of this plan.

# Learning

***WCSD21* is a LEARNING plan empowered with technology**. This plan recognizes the substantial research that shows technology by itself does not improve learning for students. However, when used purposefully in meaningful, student-centered learning environments, technology has tremendous potential to enhance learning outcomes for students. Because our students are living in an increasingly digital world, it us our responsibility to provide learning environments that will help them successfully navigate technology-rich learning, work, and social environments. The appropriate use of **technology for learning** is a core skill for students, and an imperative for Washoe County School District.

This section outlines *WCSD21*'s desired Learning Outcomes for students (Figure 6).

**Figure 6: *WCSD21* Learning Outcomes for Students**



WCSD students will be **masters of content**, knowledgeable in core academic areas covered by the Nevada Academic Content Standards (NVACS). They will **possess 21st Century Competencies**, as outlined in WCSD's 21st Century Competencies Framework, by becoming collaborators, constructors of knowledge, problem-solvers and innovators, learners through the use of technology, self-regulators, and skilled communicators. WCSD students will be **technology literate**, competent at using digital technologies constructively in work and learning environments. They will be **responsible digital citizens** able to use digital technologies ethically, legally, and equitably for work and leisure. Finally, WCSD students will have the **capacity to learn in a variety of learning environments**, including face-to-face, online, and blended settings.

### *Student Outcome 1: Content Mastery*

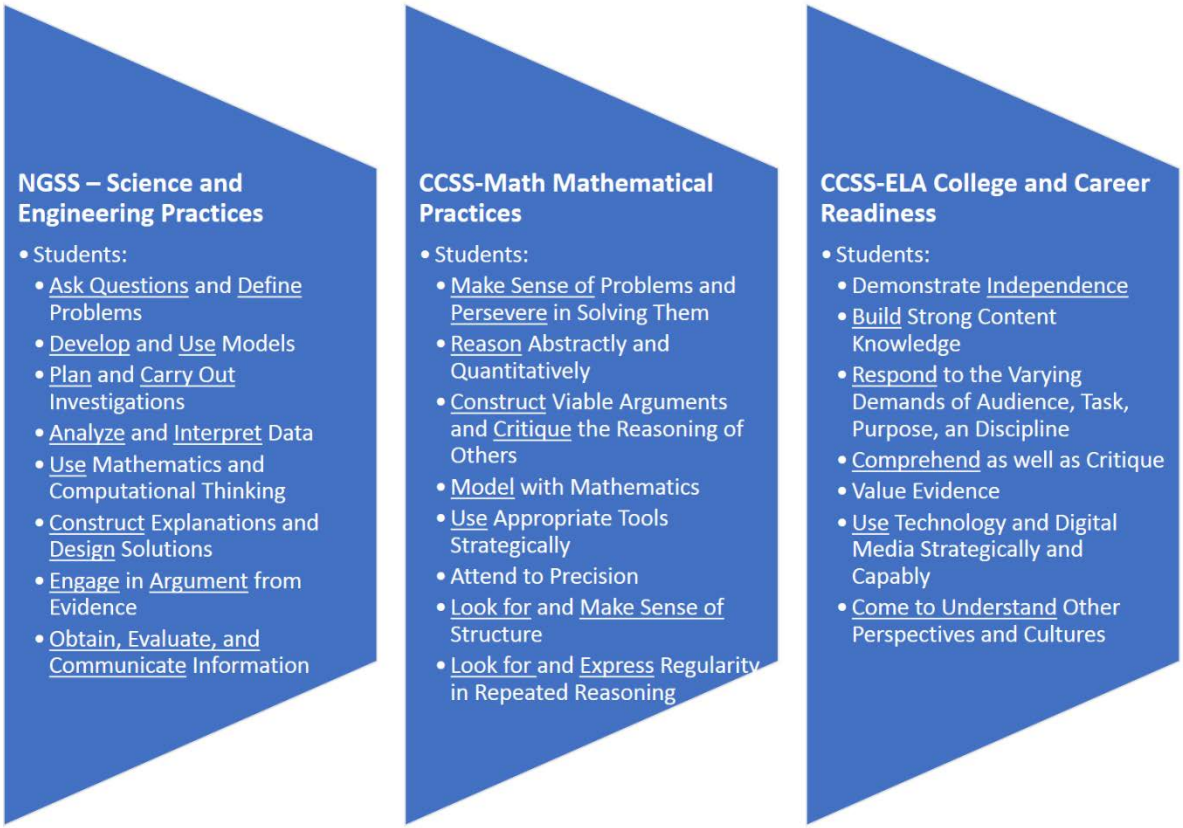
The Nevada Academic Content Standards (NVACS) outline important academic outcomes for students in all content areas. Our core responsibility as a school district is that graduates should achieve and demonstrate mastery of these standards. The NVACS ask educators to make important "shifts" in instruction—WCSD has excelled at fostering these shifts, gaining substantial national recognition.[11]

The Common Core State Standards (CCSS) and the Next Generation Science Standards (NGSS)—the English, Math, and Science portions of the NVACS—place a significantly stronger focus on active learning, 21st Century Competencies and technology literacy than did the previous academic standards. Figure 7 demonstrates the significant instructional shifts and importance of active, student-centered learning articulated in the NVACS. The underlined terms identify student actions required to achieve mastery of the standards.

Building on WCSD's substantial progress requires that we work to ensure students have significant, meaningful, student-centered learning opportunities. ***WCSD21* builds on the District's efforts to implement the NVACS by emphasizing active learning through 21st Century Competencies and technology literacy**.

Importantly, the NVACS are not a *curriculum*—the standards outline "what students need to know and be able to do," but they do not specify "how" students will learn.[12] ***WCSD21* supports student learning by linking content mastery with a focus on learning activities that emphasize 21st Century Competencies**.

**Figure 7: The Emphasis on *Active* Learning in the Nevada Academic Content Standards (NVACS)**




### *Student Outcome 2: 21st Century Competencies*

21st Century Competencies are the **learning and success skills** needed to thrive in the colleges and careers of a globally interconnected world. While it is possible—although perhaps not desirable— for students to learn traditional academic skills and acquire content knowledge in teacher-centered classrooms, **21st Century Competencies can only be learned in active learning environments in which students are regularly engaged in experiential, inquiry-based activities**. In other words, 21st Century Competencies are not "taught," but learned through experience.

An important point of clarification: 21st Century Competencies are not focused purely on technology proficiency. Although technology can create engaging 21st Century experiences for students, technology is just one aspect of the 21st Century Competencies students need to become college, career, and life ready. Learning activities that incorporate 21st Century Competencies provide fantastic opportunities for technology integration, but technology always plays a supporting and enabling role.

To create a common district-wide understanding of these learning and success skills, WCSD has identified six 21st Century outcomes for students (Figure 8). Because the WCSD *21st Century Competencies Guide* is also a framework for instructional planning, it will be discussed in more detail below in the section on Teaching and Professional Learning.

Focusing on content mastery AND 21st Century outcomes for students helps them meet the rigorous demands of the NVACS. *WCSD21* increases opportunities for students to

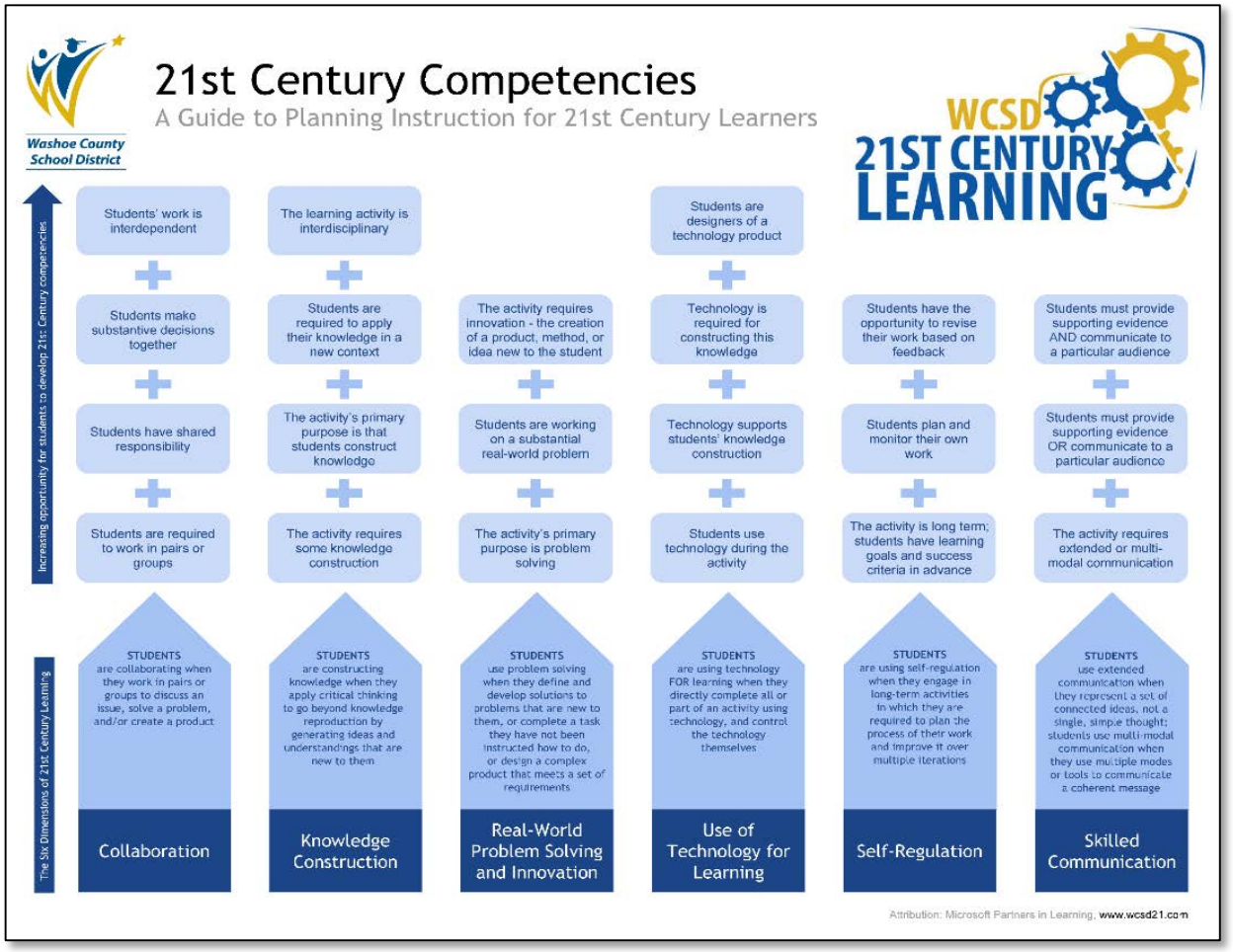
- **collaborate with others** to discuss issues, solve problems, and create products of learning, rather than conduct the majority of their learning alone;
- **construct their own knowledge** about the world by applying critical thinking to generate ideas and understandings that are new to them, rather than merely reproduce and repeat established procedures;
- **define and develop solutions to problems** that are new to them, complete tasks they have not been instructed how to do, and design complex products that satisfy a set of requirements;
- **select and use appropriate technologies** in ways that add value to the learning process—such as to construct knowledge or design products—rather than simply learn to use specific technologies;
- **direct their own behavior** by engaging in long-term activities in which they plan the process of their own work and improve it over multiple iterations using feedback from multiple sources, rather than merely complete assigned tasks; and
- **communicate skillfully** using multiple modes to communicate a coherent message to a particular audience.

In addition to the NVACS, 21st Century Competencies also directly support the *Nevada Employability Skills for Career Readiness Standards*—the general work-

readiness standards for Career and Technical Education (CTE). The CTE employability standards emphasize the skills articulated in the WCSD 21st Century Competencies Guide, and include

- personal qualities and leadership skills—such as positive work ethic, integrity, teamwork skills, positive self-representation skills; diversity awareness; conflict-resolution skills; creativity and resourcefulness; and initiative,
- professional knowledge and skills—such as effective speaking and listening skills; effective reading and writing skills; critical thinking and problem solving skills; identifying "big picture" issues; lifelong learning skills; time, task, and resource management skills; mathematical reasoning; and identifying and addressing the needs of customers, and
- technology knowledge and skills—such as proficiency with information technology; proper internet use; and selecting and using appropriate technologies.

**Figure 8: WCSD 21st Century Competencies Guide**



Demonstrating competencies for the 21st Century requires students to undertake work that can be assessed more holistically that traditional paper-and-pencil assignments. Work such as **digital portfolios, performance tasks, video production, and multimedia presentations**, all require complex thinking and self-regulation skills. These tasks better represent college and workforce success skills and help students develop 21st Century Competencies through opportunities for formative assessment.

### *Student Outcome 3: Technology Literacy*

In the 21st Century, the concept of *literacy*, and what it means to be a literate person, have changed. **WCSD21 directly supports a broader, 21st Century concept of literacy, as embodied in the NVACS, as an essential outcome for students.**

The International Literacy Association (ILA) defines literacy as

> the ability to identify, understand, interpret, create, compute, and communicate using visual, audible, and digital materials across disciplines and in any context.[13]

The ILA's emphasis on "visual, audible, and digital materials" is reflected in the NVACS, which require students to "use technology and digital media strategically and capably."[14]

The National Council of Teachers of English (NCTE) asserts that,

> As society and technology change, so does literacy. Because technology has increased the intensity and complexity of literate environments, the 21st century demands that a literate person possess a wide range of abilities and competencies, many literacies.[15]

Literate participants in our society, according to the NCTE, should be able to

- develop proficiency and fluency with the tools of technology;

- build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
- design and share information for global communities to meet a variety of purposes;
- manage, analyze, and synthesize multiple streams of simultaneous information;
- create, critique, analyze, and evaluate multimedia texts; and
- attend to the ethical responsibilities required by these complex environments.[16]

*WCSD21* recognizes that basic technology skills are important building blocks of literacy in the 21st Century, but that **these skills are best acquired through the use of technology through regular instruction, not by direct teaching methods**. To become proficient in the use of technology for learning, and the use of technology to enhance literacy, students need daily opportunities to use digital devices and tools. *WCSD21* therefore enables students' direct involvement in the use of technology, and their selection of appropriate technology tools, that will help them develop true 21st Century technology literacy.


Importantly, an additional literacy for the 21st Century currently gaining national attention is the ability to code—to tell a computer what to do. Digital technologies all run on code, so even students who are not destined to be computer programmers increasingly will need an understanding and appreciation for why and how computers are able to do what they do. WCSD21 establishes a curricular expectation that **all students, Pre-K through 12th Grade, will learn the fundamentals of coding as a critical 21st Century literacy**. WCSD will continue to explore expanding access to Computer Science courses in alignment with State and Federal efforts.

### *Student Outcome 4: Responsible Digital Citizenship*

K-12 schools have always played a vital role in the development of students as productive, responsible citizens. In an increasingly digital world, WCSD takes seriously our responsibility to educate students by helping them learn to successfully navigate the world into which they will graduate. ***WCSD21* promotes**

**responsible citizenship in a technology-rich world in which students' online and offline activities are strongly interconnected**.

Having a positive "digital footprint"—the sum-total of online information about an individual—is becoming increasingly important for students entering college and the workforce. A recent study by Kaplan Test Prep found that in 2014, 35% of college admissions officers say they look at prospective students' social media profiles, up from 9% in 2008.[17] For students entering the workforce, 43% of employers use social networking sites to research job applicants.[18] One-third of these found online content that made them more likely to hire a particular candidate, including professional image, communication skills, creativity, positive online image and number of followers. ***WCSD21*** **provides students with the digital tools and opportunities to learn to create and maintain a positive digital footprint**. This important 21st Century outcome for students simply is not possible without regular access to technology.

Of course, leveraging the tremendous opportunities for learning offered by access to digital technologies demands that we consider and address potential pitfalls.[19] The idea of "digital citizenship" encompasses concepts such as online privacy and security, the importance of creating a positive digital footprint, online identity and self-image, internet safety, cyberbullying, fair use and copyright, and appropriate online communication. ***WCSD21*** **takes a proactive, positive approach to digital citizenship education by educating students about the potential pitfalls of technology use, and helps them develop responsible habits and behaviors**.

### *Student Outcome 5: Ability to Learn in Face-to-Face, Online, and Blended Learning Environments*

Lifelong learning takes on new meaning in a technology-rich world. Students need the ability to learn in varied learning environments and modalities because **teaching and learning in the workforce and in college is increasingly occurring in many different ways**. For instance, online and blended learning are already firmly established in post-secondary education. The National Center for Education Statistics reports that in 2012, 26% of US college students were enrolled fully or partially in distance education classes.[20]

In the workplace, formal and informal learning occurs in multiple contexts and formats, with increasing use of technology for delivery of learning. In K-12 education, states such as Michigan, Florida, and Idaho have made successful completion of an online class a *requirement* for high school graduation. Preparing students to access learning in multiple contexts is an important goal of *WCSD21*. ***WCSD21*** **enables students to learn with and through technology in face-to-face, online, and blended learning environments**.

The remaining five key elements of this plan describe the necessary supports to realize these important learning outcomes for students:

- Teaching and Professional Learning,
- Student Centered Technology,
- Equity and Access,
- Communication and Outreach, and
- Evaluation and Continuous Improvement.

# Teaching and Professional Learning

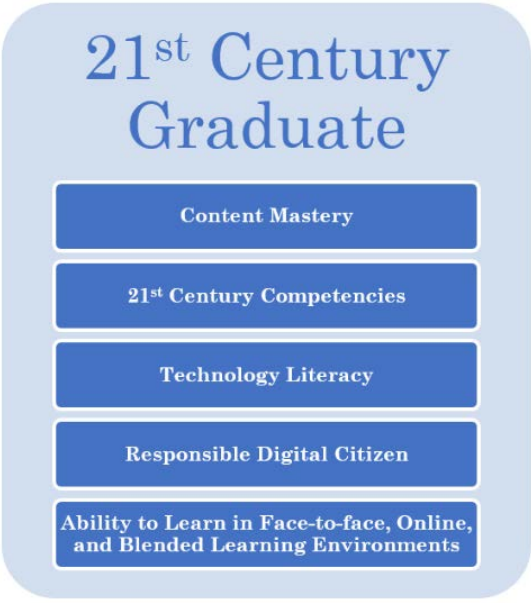
Achieving *WCSD21*'s desired outcomes for students requires a comprehensive approach to professional learning that supports students'

- content mastery,
- 21st Century competencies,
- technology literacy,
- responsible digital citizenship, and
- ability to learn in face-to-face, online, and blended learning environments.

*WCSD21* includes a **comprehensive program of professional learning** that supports teachers with the learning opportunities and resources to empower students to achieve these outcomes. The opportunities and resources outlined here address the needs of individual classrooms and schools and assure district-level support for school improvement through 21st Century instruction and assessment and the meaningful use of technology for learning.

This section details the resources and programs necessary to enable and sustain *WCSD21*'s outcomes for students, including

- 21st Century instruction and assessment,
- the *21st Century Educator Program*,
- 21st Century instructional coaching,
- the *21st Century Leaders Network*,
- on-demand, differentiated professional learning resources,
- technical training for teachers, and
- NVACS-aligned grade-level expectations for 21st Century Learning and technology literacy.

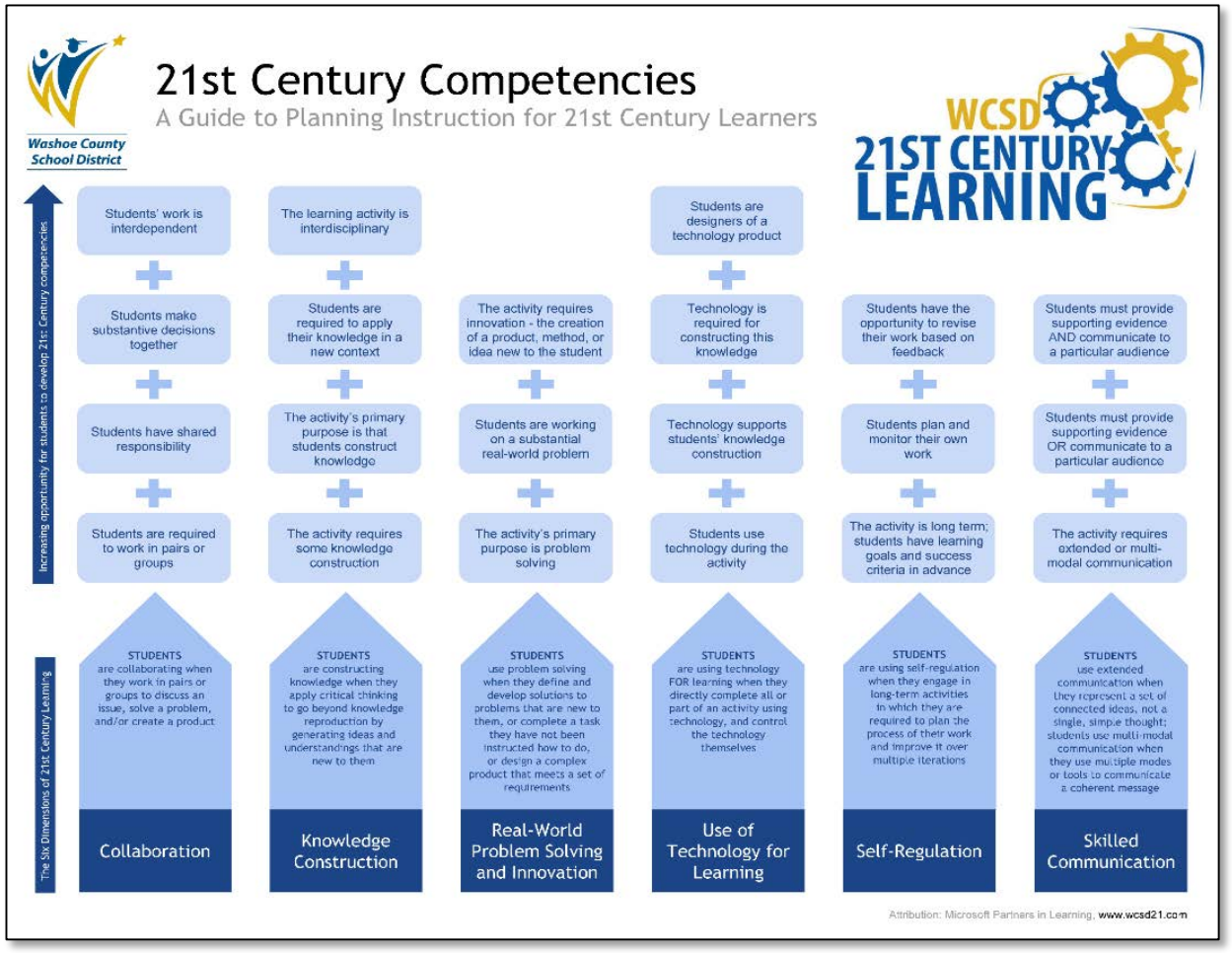



## *21st Century Instruction and Assessment*

21st Century Learning requires **differentiation** and **personalization** in teachers' creation of student-centered learning

environments—places that increase opportunities for students to engage meaningfully with content AND to develop 21st Century Competencies. WCSD has adopted a framework of 21st Century Competencies as its official articulation of 21st Century outcomes for students (Figure 9). Based on the findings from a 2011 global research study sponsored by Microsoft Partners in Learning, WCSD's Six Dimensions of 21st Century Learning serve as a comprehensive framework for instructional planning and design for teachers in all levels and content areas.[21] The *21st Century Competencies Guide*, also known as the *Elevator Guide*, focuses on ways teachers can plan for modest adjustments to lessons and learning environments that can significantly elevate students' opportunities to learn 21st Century skills. The Guide provides educators with a launching point for planning meaningful, engaging instruction for learners who live in a complex information society.

**Figure 9: WCSD 21st Century Competencies Guide**



Instructionally, 21st Century Learning environments truly support the adage of teachers moving away from being the "sage on the stage," and toward being the "guide on the side." Supporting students' content mastery, 21st Century Competency

acquisition, and technology literacy requires innovative approaches to curriculum, instruction, and assessment. 21st Century instruction focuses on providing students with a broad range of learning experiences emphasizing the following kinds of activities for students:

- creation of products of learning with real-world application and relevance,
- communication with real-world audiences,
- communication using multiple modalities, including digital media,
- planning and monitoring their own work,
- design of technology products,
- solving real-world problems,
- constructing rather than reproducing knowledge, and
- collaborating with a purpose.

21st Century assessment is part of instruction, not merely a summative event—such as a test—that occurs at the end of instruction. **Formative instructional process** strongly supports 21st Century instruction. Formative process uses multiple methods of assessment designed to reinforce learning. These methods include:

- self- and peer-assessment,
- a focus on revising and resubmitting work based on feedback from multiple sources,
- work that students improve over multiple iterations and multiple resubmissions,
- performance assessments,
- digital portfolios,
- opportunities to create work for public exhibition to real-world audiences, and
- providing students with success criteria in advance, such as through the use of rubrics.

To realize these important instructional outcomes for teachers requires careful, phased planning and alignment of district curriculum, instructional resources, and assessment practices. *WCSD21* establishes a standing **21st Century Curriculum, Instruction, and Assessment Committee** to plan and implement this process.

### *21st Century Educator Program*

WCSD began the *21st Century Educator Program* in 2013-14 to provide teachers with relevant, immediately usable professional learning in 21st Century instructional strategies. The *Explorer Badge* class introduces teachers to the WCSD

*21st Century Competencies Guide*. The *Practitioner Badge* class provides a "deep dive" into the *Guide*, and asks teachers to implement 21st Century strategies as they explore the six dimensions of 21st Century Learning. The *Leader Badge* class prepares teachers to undertake 21st Century Learning activities that reach beyond their own classrooms, such as facilitating professional learning sessions for other teachers, creating and curating resources, and participating in 21st Century and technology planning at their sites. A 2015 survey conducted by the *UNR Center for Program Evaluation* showed that 100% of participants agreed or strongly agreed that "this course added to my understanding of the ways 21st Century Learning supports the NVACS."[22]



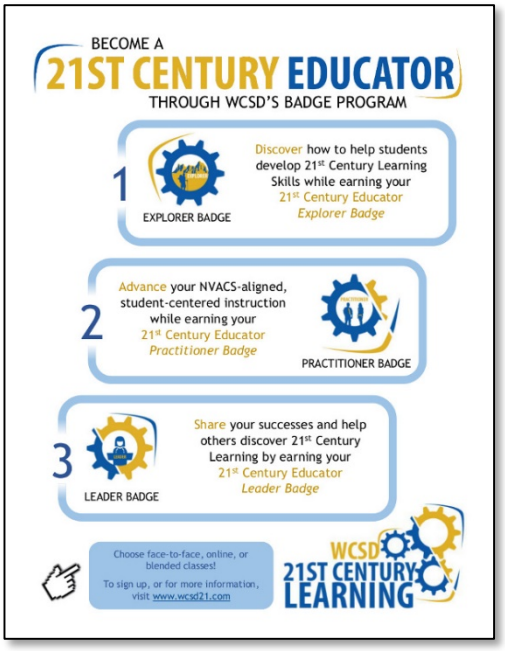
*21st Century Educator* classes are offered in **face-to-face, online, and blended formats**, modeling for teachers the learning environments they may create in their own classrooms. The blended and online *21st Century Educator* classes utilize the *Canvas* Learning Management System (LMS). *WCSD21* makes **a commercial LMS available for classroom use**, in addition to use in professional learning.

*WCSD21* expands the *21st Century Educator Program* to include the *21st Century Educator: Instructional Coach Badge*, and a micro-badge program for all teachers that includes additional blended and online professional learning opportunities centered on instructional purposes for technology integration. **21st Century Learning Specialists** support this work. *WCSD21* includes **five full-day professional learning sessions** for all teachers, during which they will earn their *21st Century Educator: Practitioner Badge*.

### *21st Century Instructional Coaching*


Supporting teachers' ongoing, day-to-day professional learning needs in 1:1 environments requires on-site expert coaches who are well versed in 21st Century instruction and technology integration. *WCSD21* places **21st Century Instructional Coaches** at every school site to support teachers in the process of becoming 21st Century educators. Through direct involvement in PLC planning, teaching of model

lessons, co-teaching of technology-integrated lessons, participating in site 21st Century planning, and other activities, 21st Century instructional coaches will facilitate 21st Century instruction and assessment across school sites. It is critical that 21st Century instructional coaches are embedded in each school to ensure teachers have the on-demand support necessary to enable them to plan for technology-integrated learning activities.




WCSD has developed a 21st Century Data Collection Instrument through which 21st Century Instructional Coaches may collect formative data to inform coaching conversations with teachers. **21st Century Learning Administrative Coordinators** coordinate training, professional learning, data collection, and the activities of site instructional coaches.

### *The 21st Century Leaders Network*

The *21st Century Leaders Network* is a District-wide Professional Learning Community that supports 21st Century Learning and technology integration planning at sites. The *Leaders Network* builds site capacity to support 21st Century Learning and meaningful technology integration, and establishes a district-wide conversation centered on 21st Century Learning. In 2014-15, 21st Century Leaders at almost all WCSD schools participated in a rigorous program focused on earning their *21st Century Educator: Practitioner Badge*, and planning 21st Century instruction. 100% of participants agreed or strongly agreed that "the issues explored were relevant to [their] professional responsibilities."[23]

In 2015-16, the *21st Century Leaders Network* has expanded to include close to 200 educators from almost every school in WCSD. New 21st Century Leaders will earn their *21st Century Educator: Practitioner Badge*, and returning Leaders will earn their *21st Century Educator: Leader Badge*.

21st Century Leaders are actively engaged in 21st Century instructional planning and are building a website linked to www.wcsd21.com to house resources for site 21st Century leadership and technology planning. The *21st Century Leaders Network* supports *WCSD21* by building site-based leadership capacity for 21st Century instruction and planning and meaningful technology integration.

### *On-Demand, Differentiated Professional Learning Resources*

Teachers in 1:1 programs benefit from on-demand access to professional learning resources that are available at the moment they are needed. As a supplement to traditional professional learning sessions and instructional coaching, on-demand resources enable teachers to explore techniques and get instructional ideas that meet each educator's unique learning goals and preferences.

WCSD has created many 21st Century and technology integration resources, housed online at www.wcsd21.com. These resources include webinars, videos of best practices taking place in WCSD, podcasts, and screencasts. ***WCSD21* expands these resources** and makes them available for personal and site-based professional learning.

***WCSD21* also expands the blended and online professional learning opportunities available to teachers**. In 2014, WCSD implemented the *Canvas* Learning Management System (LMS) for professional learning opportunities. WCSD presently offers a number of classes in face-to-face, online, and blended formats to better meet the needs of individual teachers. Online options allow teachers to undertake professional learning at times that work best for them. Blended options combine the best of online and face-to-face instruction by bringing teachers together for collaborative opportunities, while allowing them the flexibility to complete individual learning at times that are convenient for them.

### *Technical Training for Teachers*

Training in the use of digital tools, such as Learning Management Systems (LMS), Web 2.0 tools, online learning platforms such as O365 and Google Apps, digital tools for multimedia creation, and the use of these tools in instruction, should be highly differentiated for teachers because levels of technical knowledge can vary significantly from teacher to teacher. Teachers learn technical skills in many different ways, with some preferring to learn through experimentation, others through one-one-one support from a coach, and some during formal professional learning opportunities. ***WCSD21* provides a range of opportunities for teachers to attain the technology skills necessary** for teaching in a digital environment, including on-site 21st Century instructional coaching, in-service classes, and on-demand online resources.

### *NVACS-aligned Grade-level Expectations for 21st Century Learning and Technology Literacy*

To support the professional learning opportunities identified above, *WCSD21* creates and implements a comprehensive set of NVACS-aligned grade-level expectations to support teachers planning innovative 21st Century instruction. These grade-level expectations will be vertically aligned—progressing through

grade levels from Pre-K to Grade 12—and will communicate the expected competencies and skills at each level to support:

- grade-appropriate 21st Century Competencies and implementation of the WCSD *21st Century Competencies Guide*,
- digital citizenship,
- integration of technology literacy into regular instruction,
- a foundational understanding of coding and computer science,
- development of learning skills for online and blended learning environments, and
- implementation of the NVACS.

Importantly, the expectations documents will **emphasize the integration of these concepts, rather than the teaching of discrete skills** in isolation. Specifically, the expectations will avoid the use of simple technology integration models that do not have a specific instructional focus and that don't emphasize a broad set of 21st Century outcomes for students.

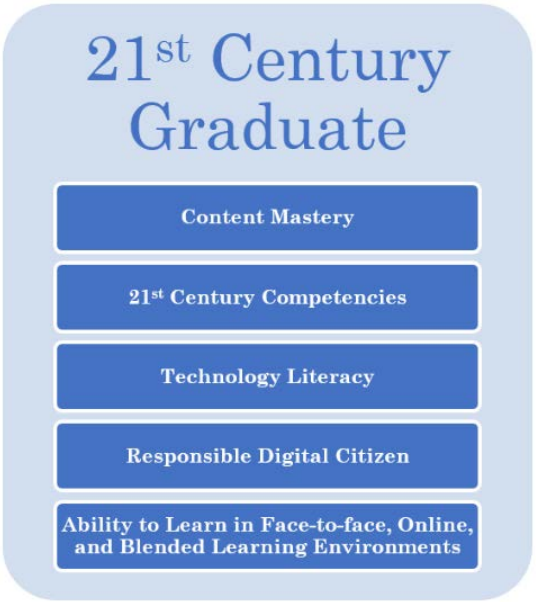
The grade-level expectations documents will be differentiated and clearly articulated by grade level and content area, and will be written to support instructional planning in all contexts, including by individuals and Professional Learning Community (PLC) groups. The expectations will also inform instructional coaching conversations and site planning for 21st Century instruction. District partnerships, such as with Code.org, will support classroom instruction through curricular and technology resources and professional learning for teachers.

*WCSD21* establishes a **Grade Level Expectations for 21st Century Learning Committee** to guide the development of these documents and resources.

# Student-Centered Technology

*WCSD21* is more than a technology plan; it is a 21st Century Learning plan enabled by technology focused on five outcomes for students:

- content mastery,
- 21st Century competencies,
- technology literacy,
- responsible digital citizenship, and
- the ability to learn in face-to-face, online, and blended learning environments.




**Regular, equitable access to digital technology is essential if students are to achieve these outcomes**. Importantly, these are *student* outcomes that cannot be achieved without **technology directly in students' hands** when they need it. Just as teaching a child to paint requires handing them a brush, teaching children to use technology for learning demands that we give them the necessary tools. *WCSD21* is about **student-centered technology**, not just occasional access to technology.

To assure regular, equitable access to student-centered technology, *WCSD21* establishes **equitable, student-centered, technology-rich learning environments for students and teachers** through a comprehensive 1:1 program. *WCSD21* defines 1:1 learning environments as follows.

> ***WCSD21* Definition of 1:1 Learning Environments:**
>
> 1:1 learning environments assure equitable 24/7 access, for all students and teachers, to their own portable internet-connected digital device

### *Benefits of Student-Centered, Technology-Rich Learning Environments*

Personal digital technology is virtually ubiquitous in every industry—except K-12 Education. In all industry sectors, technology empowers innovation, creates efficiencies, and enables communication and learning. While the use of technology is not an end in itself, we cannot deny that **preparing students for a technology-enabled world requires that we empower students to learn using the tools they will encounter every day in the workplace**.

Additionally, a large and growing number of studies have identified improved student outcomes in 1:1 learning environments. A few of these improved outcomes are detailed here.

- The research is quite clear that **traditionally underserved groups benefit from 21st Century instructional strategies and the use of technology for learning**, including English Language Learners[24], students living in poverty[25] and, students with special needs[26]. There is also research to suggest that gifted and talented learners benefit from 21st Century instructional strategies.[27]
- *Project RED*, a 2010 report of the findings of a large-scale study into technology and student achievement, found that schools that properly implement digital learning environments outperform other schools in several areas connected to the achievement gap.[28] Decreases in disciplinary actions,

reductions in dropout rates, increases in high-stakes test scores, and increases in graduation rates are among *Project RED*'s findings.

- A 2015 OECD report[29] found that the availability of digital texts improves reading outcomes for boys, contributing to closing a gender achievement gap.
- The research organization, *Project Tomorrow*, found through its annual *Speak Up* survey in 2014 that students with regular access to technology in school are more able to "connect the use of technology tools within learning to the development of college, career, and citizenship skills."[30]
- One-to-one learning environments afford students the opportunity to engage in active learning opportunities that increase student engagement. Studies have demonstrated a link between student engagement and increased academic achievement, along with lower dropout rates.[31]
- Through digital productivity tools, such as Learning Management Systems, email, and web 2.0 tools, communication and workflow can be significantly more efficient, and enable more timely feedback to students.[32] These tools also permit students to demonstrate their learning progress over time because work can be stored and retrieved more efficiently. Importantly, these tools also reflect the nature of work and communication in the real world. Eanes ISD, in Austin, Texas, found for instance, that its *LEAP* 1:1 initiative resulted in 100% of students noticing an increase in communication between teachers and students.[33]
- Other research has demonstrated improved feedback and assessment for students, increased access to anytime / anywhere learning and blended learning models, and streamlining of computer-based testing schedules, resulting in increases in available instructional time.[34]

The remainder of this section details the necessary tools and elements of 21st Century Learning Environments that support *WCSD21*'s student-centered technology program.

### *Personal Digital Devices for Students and Teachers*

***WCSD21* establishes 1:1 learning environments through a phased plan to provide students and teachers with personal digital devices that enable the Student Outcomes listed above.**

This section will address the devices that would be deployed in launching a 1:1 computing project. Devices currently deployed across the district and how we will deal with them will be covered in the "Refresh" section of this document.

Devices and device options have changed greatly in the last several years. In a world that used to be dominated by desktop computers and laptops, we now have options such as tablets, all-in-ones, two-in-ones, convertibles, smart phone "phablets", and most recently, wearables in the form of smart watches and virtual reality (VR) headsets. Keeping up is, and has been, quite a challenge for consumers as well as IT professionals. Despite the rapid pace of change we do see some features and device families on which we recommend basing our device standards.

WCSD must follow certain standards that are dictated by online assessments such as SBAC (Smarter-Balanced Assessment Consortium) assessment and the upcoming EoC (End of Course) exams in high schools. While the standards for compatible SBAC devices are minimal based on modern hardware specifications we must ensure that anything the district purchases meets these standards. Tables 1 and 2 detail these standards as of 8/1/2014.

**Table 1: Minimum and Recommended Smarter-Balanced Device Standards**

| Operating System | Minimum Smarter Balanced Requirements for Current Computers | Recommended Smarter Balanced Minimum for New Purchases |
|---|---|---|
| Windows | Windows XP (service pack 3)<br>Pentium 233 MHz processor<br>128 MB RAM<br>52 MB hard drive free space | Windows 7 to Windows 8.1<br>1GHz processor<br>1GB RAM<br>80 GB hard drive or at least 1GB of hard drive space available |
| Mac OS X | Mac OS X 10.4.4<br>Macintosh computer with Intel x86 or PowerPC G3 (300 MHz) processor,<br>256 MB RAM, 200 MB hard drive free space | Mac OS X 10.7 to OS X 10.9<br>1 GHz processor<br>1GB RAM<br>80 GB hard drive or at least 1GB of hard drive space available |
| Linux | Linux<br>(Ubuntu 9-10, Fedora 6)<br>Pentium II or AMD K6-III<br>233 MHz processor<br>64 MB RAM<br>52 MB hard drive free space | Linux<br>(Ubuntu 11.10, Fedora 16)<br>1 GHz processor<br>1GB RAM<br>80 GB hard drive or at least 1GB of hard drive space available |
| iOS | iPads 2 running iOS6 | iPads 3+ running iOS6 |
| Android | Please see http://www.smarterbalanced.org for the current set of approved secure browsers and the devices for which they are approved. | Please see http://www.smarterbalanced.org for the current set of approved secure browsers and the devices for which they are approved. |
| Chrome OS | Chromebooks running Chrome OS (v31–v34) | Chromebooks running Chrome OS (v31–v34) |

**Table 2: Additional SBAC Requirements that Apply Regardless of Operating System**

| Device Requirements | Minimum Smarter Balanced Requirements for Current Computers |
|---|---|
| Screen Size | 10” class or larger with 1024 x 768 display resolution |
| Headphones/ earphones | Available to students for use during the English language arts test and for students who require text-to-speech features on the mathematics test |

| | |
|---|---|
| Security | The device must have the administrative tools and capabilities to temporarily disable features, functionalities, and applications that could present a security risk during test administration. |
| Keyboards | External keyboards are required in all cases unless specified differently by a student's Individualized Education Program (IEP) or 504 plan. Any form of external keyboard that disables the on-screen virtual keyboard is acceptable. This includes mechanical, manual, plug and play, and wireless-based (e.g., Bluetooth, RF, IR) keyboards. The intent of this specification is to ensure the required display area is available to allow students to read multiple sources of complex item text and respond to source evidence for analytical purposes. While wireless keyboards are permissible, districts should be aware that high-density deployments of wireless keyboards and mice might interfere with each other or with the wireless network. Therefore, they should test the room configuration before the examination date and consider wired alternatives. |
| Pointing Device | A pointing device must be included. This may consist of a mouse, touch screen, touchpad, or other pointing device with which the student is familiar. |
| Form Factors | No restriction as long as the device meets the other stated requirements. These forms include desktops, laptops, netbooks, virtual desktops and thin clients4, tablets (iPad, Windows, Chromebooks, and Android), and hybrid laptop/tablets. |
| Network | Must connect to the Internet with a minimum of 20 Kbps available per student to be tested simultaneously. Local Web proxy caching servers are not recommended. |

### *Mandatory Features for* WCSD21 *Devices*

While the standards outlined above enable SBAC testing, *WCSD21* establishes additional standards to the above minimum requirements to enable the Student Outcomes listed above. We recommend the following as mandatory features on district-standard devices.

#### Touch screen functionality

Touch is here to stay. While touch screen functionality is not included in every device made today, its value has been proven in the way people interact with technology and with their devices. Hand a two-year-old a device and they will instinctively try to swipe the screen or zoom in or out by pinching the screen. It's as if children today are born with this knowledge. Applications, and indeed entire operating systems, are designed and built with touch in mind and there is no reason

to believe that we will ever go back to the days when a keyboard and mouse dominated the interactions between humans and computers. The district has been purchasing desktops and laptops with touchscreens as a standard feature for over a year now. We consider touch a mandatory feature for our standard devices.

#### Stylus

Right alongside touch is the need for a stylus or digital pen to interact with the device and the applications on it. A major fear of some is that students are not being taught writing skills and that the ability to write is disappearing as technology marches forward. A stylus is essential for students to write as they would with pencil and paper and take notes, but also to draw out diagrams and pictures as part of their normal school work. A stylus works very well in programs such as OneNote for note taking, but also in Adobe Illustrator for drawing, and similar artistic programs that are currently used in the district. We consider a stylus a mandatory feature for our standard devices.

#### Vendor Standards

The district is currently standardized on Hewlett-Packard (HP) for desktops and laptops although we do offer options from Dell, Microsoft, and Apple on the WCSD purchasing website. Our final choice for device standards will be based on meeting our minimum hardware specifications and recommendations, software compatibility, battery life, warranty, support, vendor reputation, and price.

#### Device Recommendations for *WCSD21*

Based on all of the above, and the discussion of learning tools below, the IT Department recommends a laptop, or 2-in-1 style (tablet & laptop) device running Microsoft Windows, with a touchscreen and stylus as the standard form factor for students and staff in the Washoe County School District, from a manufacturer that will be determined after an evaluation and comparison of available devices.

As we will discuss in the next section, based on software compatibility, the standard district device cannot be an iPad or a Chromebook. Those and other devices could be considered exceptions, however, if there are specific applications that only run on those devices and there is an academic need for them. Those exception decisions should be based on the true need for a device that is capable of running specific applications that cannot be run on the standard device, and not based on personal preferences. Such exceptions would be approved through the IT governance process.

### *Digital Learning Tools*

Personal digital devices are the most visible component of *WCSD21*. But it is what students can do with these devices that will help them achieve the Student Outcomes outlined above. Digital learning tools enable students to create and

collaborate, locate resources, submit work and receive input and feedback, communicate with teachers and peers, and manage their work. **This section outlines the most important digital learning tools that *WCSD21* students and teachers will use** in the advancement of content mastery, 21st Century Competencies, technology literacy, responsible digital citizenship, and the ability to learn in face-to-face, online, and blended learning environments.

### *Microsoft Office 365 and Google Apps for Education*

Microsoft Office 365 (O365) and Google Apps for Education (GAFE) are online productivity and collaboration platforms available to all students and staff of the Washoe County School District. Both include productivity applications that enable word processing (Word and Google Docs), spreadsheets (Excel and Google Sheets), and presentations (PowerPoint and Google Slides). Table 3 details additional applications available in both platforms.

**Table 3: Productivity and Collaboration Applications Available in Microsoft Office 365 and Google Apps for Education**

| Function | Google Apps | Microsoft O365 |
|---|---|---|
| **Word Processing** | Docs | Word |
| **Spreadsheets** | Sheets | Excel |
| **Presentations** | Slides | PowerPoint |
| **Email** | Gmail | Outlook |
| **Web Site Creation** | Sites | SharePoint |
| **Storage** | Drive | OneDrive |
| **Instant Messaging** | Talk | Skype |
| **Video Conferencing** | Hangouts | Skype |
| **Social Networking** | Google+ | Yammer |
| **Note Taking** | Keep | OneNote |

While O365 and GAFE have many similar features there are some differences in the user experience and how the IT Department is able to support the individual platforms. O365 was created, and is distributed by Microsoft. It is a free product for the K-12 education space and gives districts like ours the ability to move many of the traditional IT workloads to the cloud, as well as shift or eliminate many of the expenses that the district has always borne in the past.

Google Apps for Education (GAFE) was created, and is distributed by Google. It is also a free product for the K-12 education space, and like O365, gives K-12 school districts the ability to move many of the traditional IT workloads to the cloud, as well as shift or eliminate many of the expenses that the district has always borne in the past.

Microsoft offers free downloadable installations of the latest version of Office Professional Plus, currently Office Professional Plus 2016. Licensing allows for this package to be installed by WCSD staff and students on up to five personal devices. There isn't an equivalent of this service on the Google Apps side since all of Google's applications are strictly cloud based.

Both O365 and GAFE options are available to all users 24/7/365 since they do not reside inside the district network but in the cloud. This allows all students and staff the ability to access their email, documents, and online tools wherever there is an Internet connection. This availability helps to **extend learning time, provide equitable access to all students and staff, and allow for collaboration and communication regardless of whether school is in session or not**.

Because they are web-based, GAFE and O365 can be run on any type of hardware from any manufacturer. For example, GAFE can be run on a PC as easily as on a Chromebook, and O365 can be run on an iPad or a Chromebook with no loss of functionality on either platform.

Since O365 is a Microsoft product it directly integrates with WCSD's Windows domain. This means we can automatically create and provision users, assign permissions to content, securely manage user access and activity, and offer seamless integration with existing programs and domain features.

WCSD has recently improved accessibility by integrating Single Sign On (SSO) for GAFE with our Windows domain. This means that a user can log into our Windows domain and automatically be authenticated into the GAFE world without having to enter their username and password all over again. This helps save valuable classroom time lost to logging into multiple systems over and over, and lost productivity due to forgotten usernames and passwords from multiple systems.

### Student Email

The Board of Trustees approved Board Policy 7200 - Digital Learning in May 2015. Included in that policy was the provision to provide students with district issued email accounts. District-issued email accounts are specifically restricted to an email account that begins with a student ID number and ends with @washoeschools.org. Gmail, Hotmail, AOL, or email accounts from any other third party providers are not permitted through this policy. The policy specifically states that WCSD will

provide students, faculty and staff access to *district-provided email accounts*, to enable the use of appropriate online tools and resources.

Centralized issuance of email accounts through the IT Department assures improved student and teacher access and safety. There are obvious reasons why providing email accounts to students through third party providers is, and should be prohibited. The number one reason is student safety. Student safety includes threats from outside the district but also from within the district. Issuing email addresses to students through third party providers does not allow for the restricting of accounts based on age/grade level or allow for the archiving of email in the event of bullying or other online threats, whether internal or external to the district.

Teachers aren't network administrators or security experts and they shouldn't be expected to take on that role. By only issuing email accounts linked to the domain and managed by IT, we solve that problem. More information and specific details of student email accounts are provided in the draft WCSD Student Email Procedure (see Appendix C).

### Learning Management System (LMS)

Learning Management Systems (LMS) are software platforms that streamline workflow in class, and allow classes to be offered in fully online or blended formats.

**Blended Learning:**

Blended learning combines face-to-face educational settings with online environments to enable students the experience of personal interaction and collaboration with teachers and other students, and the personalized control of time, place, learning path, and pace.

A 2010 U.S. Department of Education meta-analysis conducted by SRI International found that students in blended learning environments outperformed students in fully face-to-face or fully online settings.[35] While it is not the objective of *WCSD21* that all instruction be provided in blended learning environments, **it is a key 21st Century outcome for our students that they are able to succeed in various educational settings**. Thus, students should have the opportunity throughout their K-12 experience to learn in face-to-face, online, and blended settings. An LMS empowers these opportunities for students.

LMSs typically include features such as content management, document management and submission, collaboration tools such as discussion forums, quiz and test creation tools, course calendaring and notifications, and assessment, grading, and reporting tools. LMSs allow for teachers to build entire courses online, or simply use some LMS functionality to streamline workflow or enable student-teacher and student-student collaboration.

LMS access for teachers and students also opens access to content and courses built in other districts, and streamlined collaboration among teachers wishing to share and improve educational content and activities they have created for students.

*WCSD21* provides students and teachers with **24/7/365 access to a commercial Learning Management System to enable streamlined workflow and feedback, increase collaboration, and create opportunities for blended learning. 21st Century Digital Tools / LMS Specialists support the technical, training, and implementation needs associated with the Learning Management System.**

### Web 2.0 Tools

Web 2.0 tools are web-based digital apps and applications that enable content creation, collaboration, and sharing. Thousands of web 2.0 tools with educational purposes are available online, and serve to supplement the learning tools that can be provided by WCSD. WCSD's Digital Learning Policy (see Appendix D) states that the District will

> maintain and administer a list of online tools and apps approved for use in classrooms, including a formal approval process and responsive procedure for staff to request access.

***WCSD21* enables access to web 2.0 tools for teachers and students while assuring safety and security**.

### Digital Portfolio System

In the 21st Century, prospective employees and college applicants increasingly are required to demonstrate a body of academic work that demonstrates academic and personal growth over time. Digital portfolios allow students to collect, curate, and share their exemplary work with prospective colleges and employers and demonstrate growth over time.

***WCSD21* includes a comprehensive Digital Portfolio System and 21st Century Digital Tools / LMS Specialists who support training, implementation, and technical needs associated with the Digital Portfolio System.**

### Digital Textbooks

Digital textbooks replicate traditional paper textbooks, but often provide improved and/or enhanced content for students through interactive activities and links to online resources. Digital textbooks can also be superior to traditional textbooks because the substantially minimize the weight carried by students—especially in middle and high school. Digital textbooks may also help reduce costs by removing the potential for damage and loss that exists with traditional textbooks. Digital textbooks and the online resources they reference may also be updated far more frequently by vendors than printed texts. While Nevada State law presently requires the actual purchase of traditional textbooks, digital versions provided by vendors can be used in their place and as supplemental materials. WCSD textbook adoptions request vendors to include these options for digital content.

While *WCSD21* does not directly include textbook adoptions or purchases, digital technology and access afforded by this program permits WCSD to explore enhanced options for digital textbooks.

### Open Education Resources

Open Education Resources (OER) are growing in importance and acceptance in K-12 digital education. The William and Flora Hewlett Foundation (2013) defines OER as

> teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.[36]

Many OERs are already in use by teachers in WCSD, including several designed to support implementation of the Nevada Academic Content Standards (NVACS). ***WCSD21* provides the digital tools and access required to expand OER use to students. WCSD21 establishes an OER Committee to explore and implement access to OER throughout WCSD.**

### Educational Software and Applications

Educational software and applications are computer programs used by students that are installed locally, either on individual devices or on school or district servers. These programs can be important components of a 1:1 program as students have 24/7/365 access that can enable learning during and outside of the school day.

WCSD presently uses over 800 different educational software applications, including many with very similar functionality and purposes. Thus, while

educational software seems to be an obvious piece of the puzzle in a 1:1 computing project, there are many challenges, primarily due to WCSD's lack of standardization and the fact that current laws and policies don't allow us to consider digital curriculum or software as a complete replacement for traditional resources, such as textbooks.

Educational software can be an important tool to support content mastery, and can be used on the devices in the hands of our students and staff. But such software is not the basis of the *WCSD21* program. *WCSD21* does not propose the purchase of curriculum or a third party curriculum tool for devices. The devices themselves and the access they provide to online tools and web based resources are enough to make them valuable and a worthwhile investment. *WCSD21* does propose a process of governance for standardizing the titles currently deployed, to a more manageable number. While there will always be exceptions, there is no reason that a student or teacher should have to learn a completely new program just because they transfer to a different school within our district. The final number of applications we use should be based on governance, data driven decision making, and standards-based goals for students. Educational software as a standalone category in this plan will find a much better home in the "Potential Cost Savings" category since many of the currently installed programs may be consolidated as a result of a 1:1 deployment. One reason for this is that most sites do not own a sufficient number of software licenses for the amount of devices deployed in a 1:1 program.

As mentioned in the devices section, software compatibility is one other vital piece of information to consider when discussing educational software that has a direct impact on a 1:1 program, and more specifically the device selection process. An example of this is the district-wide investment in *Adobe Creative Cloud*, and on a smaller scale, *AutoCAD*. *Adobe Creative Cloud* was purchased to fulfill Career and Technical Education (CTE) requirements across the district for our middle and high schools. It also standardized the entire district on *Adobe Acrobat Pro* for PDF creation and editing. However, this software can only be run on Mac OS X 10.9 and Windows 7, or later. This rules out iOS devices (iPads) and Chromebooks as a potential 1:1 device. This is a critical point to ensure the district doesn't make an investment in devices and lose its existing investment in software.

**21st Century Learning Specialists support the development and use of the learning tools described above**.

### *21st Century Learning Spaces*

In addition to devices and digital learning tools, 21st Century Learning benefits from **flexible physical spaces** that enable students to undertake individual and interactive work. While it is not feasible to significantly redesign or rebuild most WCSD schools for this purpose, it is possible to re-envision classroom designs within

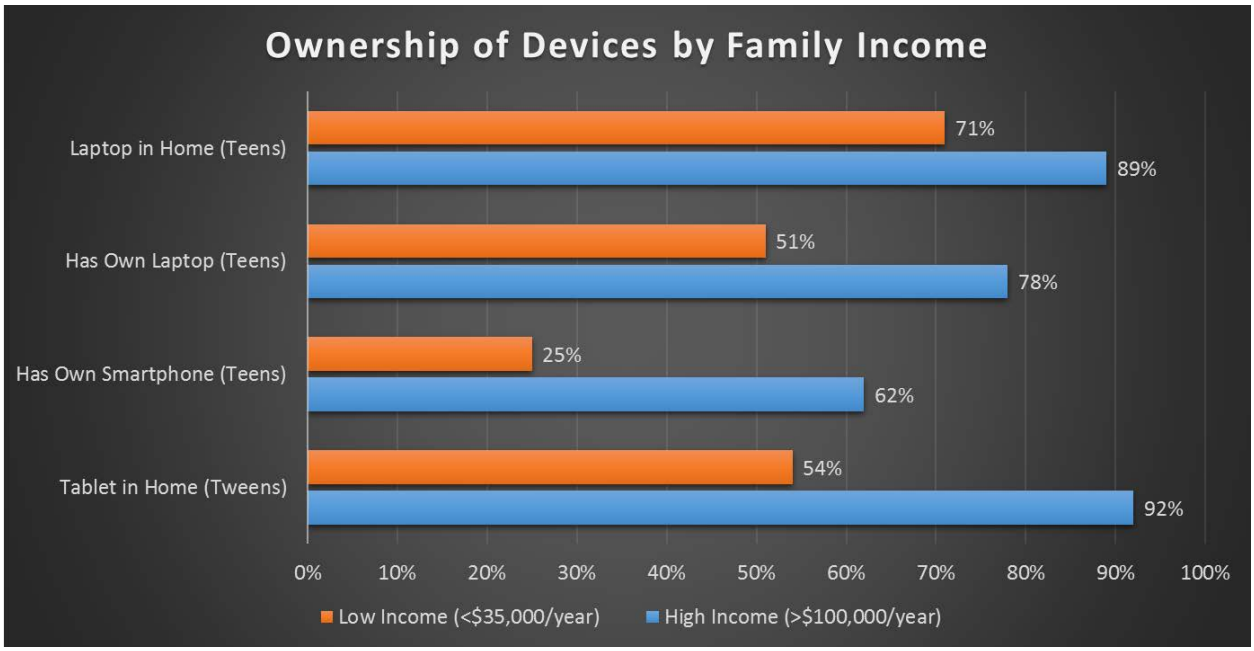
existing learning spaces, and yet-to-be-built learning spaces, that enable group collaboration and communication along with space for students to work individually. It is also possible to enable flexibility in furnishings that can be rapidly rearranged to meet multiple educational needs, and providing spaces for media production and real and virtual student presentations.

Creating such spaces is a long-term commitment, and will require significant planning, time, and policy development. To explore the ways in which instructional priorities, district purchasing practices, and capital needs align to foster learning spaces that promote 21st Century Learning environments *WCSD21* establishes a **21st Century Learning Spaces Committee**.

# Equity and Access

*WCSD21* **increases educational equity** for the students of Washoe County School District. Like other districts across the United States, WCSD struggles with persistent achievement gaps—we have an obligation to address these inequities with innovative strategies. Contributing to these achievement gaps is a national **"digital equity gap"**—children from lower-income families are significantly less likely to live in homes with access to technology (see Figure 9).[37]

**Figure 9: The Digital Equity Gap**




Of further concern is that while 89% of higher-income households have broadband internet at home, the percentage is around half that—47%—in lower-income households. [38]

In their report, *Rethinking Educational Equity in a Digital Era*, the *Consortium for School Networking (CoSN)* and the *National Title I Association* ask an important question:

> [If] informed use of robust digital tools … is clearly key to inculcating in our children the kind of higher-level, dynamic thinking required of

> 21st century citizens and workers … what happens to the child who has limited access to these tools? Even if schools enable students to use digital technologies in the classroom, what happens when they go home and do not have the same access?[39]

*WCSD21* addresses this question by providing **equal access at school to meaningful 21st Century instruction through technology resources** which have proven to be an important approach to closing the achievement gap.[40] As stated above, there is significant evidence that **traditionally underserved groups benefit from 21st Century instructional strategies and the use of technology for learning**—especially English Language Learners[41], students living in poverty[42], and students with special needs[43].

### *Policies and Procedures to Assure Equity and Access*

Assuring equity in any educational program requires a system-wide, ongoing commitment to every student. Appropriate practices, outlined in WCSD's policies and procedures, serve to establish and communicate *WCSD21*'s commitment to educational equity. The policies and procedures outlined below necessarily focus on a broad spectrum of district practices that affect equity—ranging from student behaviors to access to resources, and from the classroom environment to technical standards.

#### Responsible Use

Helping students learn to use technology appropriately and capably requires the creation and communication of positive behavioral frameworks through which students may learn to become responsible digital citizens. As outlined in the WCSD *Digital Learning Policy* (see Appendix D) the district will develop new Responsible Use Agreements (RUAs) to govern student and staff technology practices. These RUAs will replace the current Acceptable Use Policies (AUPs) which focus too heavily on prohibited actions and do not establish meaningful expectations for students when using technology. RUAs will emphasize education over compliance and treat students and staff as individuals responsible for their ethical and legal use of the Internet and digital devices.[44]

WCSD's new Responsible Use Agreements will be written in language understandable by students, and will address:

- the responsibility to maintain, and value of, a positive digital identity,
- procedures for violations of the RUAs that focus on education and are tied to the district/school progressive discipline procedures, and
- prohibited uses, including commercial, political, illegal, indecent, and disruptive uses.

## Bring Your Own Device (BYOD)

WCSD *Board Policy 7200 - Digital Learning* (see Appendix D) states that the district will "establish procedures for bring-your-own-device programs at schools." Simply stated, BYOD means that students and teachers are permitted to bring personal devices to school and connect them to the district Internet. Presently, BYOD is authorized for staff only, but it can just as easily be enabled for students.

Anyone utilizing BYOD by accessing the guest wireless network still goes through the same Internet filtering system as a standard network connection. This ensures that no one is bypassing the filtering system and accessing sites or applications that they shouldn't be. The guest network is also a direct connection to the Internet and does not allow for connections to WCSD internal network resources. One example of an application that cannot be accessed from the guest network would be Business Plus.

BYOD programs are often suggested as an alternative to a 1:1 program. However, BYOD does not meet the goals and objectives of *WCSD21*. There are several reasons why it is better to provide the same computing device to all students, including:

- **Instruction:** As a district we have purchased several software packages that will not be available on BYOD devices due to either compatibility or licensing issues. In a 1:1 environment the same software and version will be on each district device so teachers will be able to quickly and more efficiently teach class and support students.
- **Technical support:** The IT Department, school based technical staff, and teachers can't offer appropriate support to an unlimited number of devices. Supporting an endless array of personal devices would lead to more classroom downtime and lost instructional time across the district at all grade levels.
- **Equity:** Many of our families cannot afford the latest computer or in some cases even a computer at all. If all students are using the same device, they can focus on learning. A 1:1 initiative, unlike a BYOD initiative, truly enables the district to deliver on its motto of ***"Every child, by name and face, to graduation."***

To illustrate these concerns, a BYOD scenario might look like this: imagine a teacher standing in front of a classroom of 30 students. The teacher asks everyone to get out their personal device and use it to edit a OneNote document as a group. Now picture 20 of those students pulling out 20 different types of devices running different operating systems and simultaneously asking the teacher how to do that on their device. Also consider the fact that the other 10 students don't have a device and therefore cannot participate in the exercise at all. Classroom instructional time

just went out the window because the teacher has now become the IT technician. One-third of the class is unable to do the work at all.

There are also issues with application availability and compatibility across devices and operating systems. To use the *Adobe Creative Cloud* example, if you expect a student to use that software but they can't run it on the device they own you are at a standstill, and obviously the work assignment will not be completed. There are software licensing issues with this scenario too since almost all district software is only licensed to run on district-owned devices.

*WCSD21* proposes using BYOD access for students and teachers as a **supplement** to a 1:1 program. This would, for example, allow students to quickly check email or look something up in between classes without having to get out their district issued device. WCSD's draft BYOD procedure is at Appendix E.

### Social Media

Social media sites, like Facebook for example, have been blocked for students in WCSD since they first hit the Internet. That is because they were categorized to be blocked by our Internet filtering vendor, not because we have a district policy to block it. Since the inception of Facebook the world, and especially the social media world, has changed dramatically. There are many more sites that fall under the categorization of social media today than just Facebook. Some are relatively harmless, while others can be much more dangerous.

Apps and sites such as Snapchat which allows messages and/or images sent to someone to disappear, or YikYak and Whisper which allow people to post online anonymously present obvious hazards for students of any age or grade level. There have been petitions across the country to ban some of these applications, even from college campuses. There is probably no legitimate educational need to allow these types of programs to become accessible in the district for students or staff.

However, there are many online activities like blogging, social networking, online collaboration, and content sharing that fall under the category of social media. There are many sites that, while considered social media, do have content that provides value in an educational environment. Using Facebook as an example, many of our schools have a Facebook page, yet the students and staff cannot access Facebook on the district network. Schools use their Facebook pages to post information about what's happening at their site that could be helpful to students and staff.

There are also social media components built into the Office 365 environment such as Skype, Yammer, and SharePoint which will be available to students and staff. These are a little bit different than general webpages or apps in the sense that we can control the access and the content and we are able to audit usage in the event

that there is abuse or misuse of these services. WCSD has the ability with some of the tools available in Office 365 to restrict communications and collaboration to just the members of the *washoeschools.net* domain. That means that getting email for example from external spammers would not be allowed or possible if the "internal only" restrictions are in place.

Because there are **significant educational benefits** to students in having access to many social media tools, ***WCSD21* will include a social media policy focused on responsible social media access in schools while ensuring that students are taught how to use these tools responsibly**. Students cannot learn to use tools appropriately if these tools are unavailable to them. In recognition of our obligation to prepare students for the 21st Century, the WCSD social media policy will enable appropriate educational uses of social media, balanced with student safety, and with a focus on enabling these tools so students can learn to use them in mentored educational environments.

This policy will also address the online posting of student work. Students posting their work online and collaborating through online tools, such as social media, has many potential educational benefits. Examples include students whose families live out of the country or out of state, who become motivated to write by publishing an online blog that others may read; and students participating in online discussions with a variety of experts around the world whose work is relevant to the students' assignments.

***WCSD21* establishes the Responsible Use Agreements (outlined above) and ensures every student receives appropriate education in Digital Citizenship.**

### Digital Citizenship Education

An important part of building responsible digital citizens is recognizing we all live in a world where employers and colleges are vetting students and employees by examining their public online activities. This means that **students without a positive digital identity—a "digital footprint"—are already at a disadvantage in applying to colleges or for jobs**. As a core component of digital literacy, *WCSD21* recognizes that **equitable access to comprehensive digital citizenship education is key to closing existing achievement gaps within WCSD, and future opportunity gaps** in the workplace and in post-secondary education.

WCSD presently utilizes a digital citizenship education program called *i-SAFE,* which focuses on online safety and responsible use. *WCSD21* expands this program by exploring a more robust solution able to be used throughout the school year to help students learn developmentally appropriate, grade-level digital citizenship

skills through annual instruction, but also through tools and strategies that teachers can use during regular instruction. **A district solution for digital citizenship education will consider each student's creation and management of a positive digital footprint**.

**21st Century Instructional Coaches will support teachers in helping students develop digital citizenship skills and appropriate online behaviors throughout the school year.**

#### Take-home Agreements

Assuring equity of access for students requires appropriate policies that enable students to take their devices home. These policies will be developed in consultation with schools through the *WCSD21* Steering Committee, and will stress the importance of 24/7/365 access to personal digital devices and the appropriate management of risk such that students and families are encouraged to take devices home.

### *School and Classroom Procedures*

Appropriate, responsive procedures within schools and classrooms enable the educational benefits of a 1:1 program. These procedures require consideration of grade level, educational purpose, school culture, behavioral supports, technical support, classroom environments, and many other factors. While best practices for 1:1 procedures exist, procedures unique to the school must be developed and refined at the school and classroom level throughout a 1:1 deployment. ***WCSD21's* 21st Century Learning Specialists serve as consultants to schools in the development and continual refinement of these procedures.** These specialists will create and share resources to facilitate procedure development across schools. The specialists will also support 21st Century Instructional Coaches in assisting teachers with the management of technology-rich 21st Century classrooms.

#### Loss, Damage, and Theft

A common concern when initiating a 1:1 program is the issue of loss, damage, and theft of devices. It is the experience of many school districts that these issues end up being of **substantially less concern** than initially thought. With the creation and implementation of appropriate procedures, loss, damage, and theft are minimized.

As part of the technology-acquisition process, the district will also develop policies to address loss, theft, and breakage. Much of this will depend on any negotiated contract with vendors, but each school will clearly establish procedures that outline student, parent, and school/district responsibilities.

### *Technical Support*

Technical support is not often considered an equity issue in schools. However, without a district-wide system of responsive technical support, we cannot assure all students in all schools an educational environment in which technology is working to capacity at all times. Central IT services are addressed below, but **site-based technical support is essential in 1:1 programs** as technology is consistently in students' hands in schools**. Site-based Technicians at every site support the technical support needs of schools.**

**21st Century Learning Specialists will work with site-based technical support staff, the IT Department, and 21st Century Instructional Coaches** to provide schools with the necessary training support to assure smooth management and functioning of devices, classroom functionality, issuance/reissuance and collection of devices, and all other technical support needs at sites.

### *Home access*

Home access, and more specifically, home Internet access, is an equity issue within our district and community. While many of our students enjoy access to the Internet at home, we have many that do not. Providing digital online tools and personal devices to students necessitates Internet access outside of school and normal school hours. While there are workarounds to having Internet access, there are just some things that require a connection, like on-demand research, online collaboration, and email. *WCSD21* does not require families to have Internet access, but because of the value for students of home connectivity, WCSD will explore multiple options to increase home Internet access.

There are several avenues that the district can pursue to try and bridge the gap for students. One option is to ask the local Internet Service Providers (ISPs) for reduced rate access plans for student households that may not be able to currently afford one of the plans on the market today. Internet Service Providers in many other urban markets offer this service to families in the areas that they serve. We will ask that they provide the same benefits to the students and families in Washoe County that need it.

There are products available on the market that solve the problem of home Internet access for students such as the *Kajeet SmartSpot*. This device is a personal 4G hotspot that can deliver filtered Internet to a student at home or wherever they are. This would be an additional cost to either the family or the district.

Another option is to purchase devices with 4G/LTE wireless connectivity built in to the device. This allows for connecting the device directly to a carriers' wireless network. There would be an additional cost for the district or the family to do this,

and it could be significant. This also poses a problem ensuring the devices use filtered Internet rather than a direct unfiltered connection which could endanger the district's ability to apply for E-Rate reimbursements. For those reasons, this option is much less desirable than the first two possibilities.

Should the district decide to make home access part of this initiative, through the IT Governance structure, we will explore all available options for our students.

### *Information Technology, Network, and Connectivity*

Assuring equitable access for all students requires the consideration of many "behind-the-scenes" elements. Without these components, we cannot assure equity. This section of the plan deals strictly with **internal bandwidth and connectivity**, which includes connectivity within our buildings and between our buildings. External, or Internet connectivity is covered in the Bandwidth Management section of this plan.

As a district we are currently standardized on *Cisco* network equipment. This standard has been in place for about 10 years and has been renewed through several competitive bidding processes. This standard consists of switches, routers, wireless controllers and access points, firewalls, Internet and email filtering appliances, and our Voice-over-Internet Protocol (VoIP) phone system. Added together, these devices total in the thousands. Just as important as the devices we distribute to users, is the infrastructure they use to communicate and connect. This equipment is that infrastructure. Without a sufficient and efficient infrastructure all devices would end up being useless.

Because we have thousands of networking devices and less than a handful of staff to manage them, device standardization is the key to our survival and our ability to deliver reliable network service to all of our users. Without standardization we would have to train our staff to work on equipment built by multiple vendors that runs unique operating systems and relies on a varied inventory of spare parts. We would also have to deal with technical support from multiple vendors. That causes problems all by itself because vendors tend to blame competitors' equipment rather than thoroughly troubleshooting the problem. This in turn leads to user frustration because the end result is extended downtime.

#### Refresh (Network and Devices)

Computer refresh is something that has been done sporadically over the past five years. This is primarily because of shortfalls in the district budget and the fact that refresh funding has been used to fill some of those gaps. This has put the district in a difficult position in relation to computer aging—**over 25% of our 44,000 devices are greater than five years old**.

Even if the full refresh budget is available starting this year we will never be able to catch up and keep our client devices within a four-year window. This puts our teachers in a difficult position because they are expected to use the BIG portal and other online tools that their current computers can't run because they are too old. It also affects the students, especially in middle and high school, who need to be able to run tools like the recently deployed *Adobe Creative Suite* and can't because many of the computers in their school can't handle it.

A 1:1 project will eliminate the need for the traditional refresh budget since devices will be automatically refreshed every fourth year. This will ensure that students and staff have capable hardware in their hands to guarantee they are able to complete the tasks they are expected to. The Windows devices that are less than five years old will be redistributed out of a 1:1 school to a school where they can be utilized until they too exceed that age limit and can be disposed of. Those that are greater than five years old already will be disposed of as soon as the 1:1 program rolls out in the school that machine is in.

On the network side, we have never had a refresh program for network equipment. Once installations have occurred at schools or administrative sites we only go back to replace failed equipment, but never to update or upgrade existing network equipment. As was stated in the Devices section, devices without a robust infrastructure are virtually useless. There is work underway between Capital Projects and IT to see if some of the needs for a network refresh can be addressed using bond funds in the same way we do other building maintenance.

### Security

Security is certainly an important issue when it comes to any type of technology deployment. In fact, the IT Department considers security the number one priority whenever we take on a project, regardless of the scope. Here at WCSD, we actually had a student data privacy policy in place well before it became a topic of conversation during the 2015 legislative session. We attended the discussions on this subject with legislators, vendors, and other districts across Nevada which led to the current bill, AB221.

There seem to be two distinct subjects related to security that give people the most concern. They are student data collection and privacy, and the cloud. We will cover both of these as they relate to *WCSD21*.

To begin, let's start with what the cloud is. Essentially, cloud computing is using Internet based infrastructure to store, manage, and process data, rather than doing it in our own data centers or on local machines. Imagine if a moving company picked up our data center and brought it cross country and dropped it off, but we were still able to use it remotely as if it were still in the administration building.

That is the cloud in a nutshell, except in reality we use someone else's data center and we access it remotely.

Using the cloud keeps us protected in the event of a catastrophic natural disaster. If a major earthquake were to hit our region and collapse our data centers we would obviously be out of business—potentially, for quite a long time. However, if we have our infrastructure running in the cloud with backups in a different geographic region we only need to establish an Internet connection to be up and running. This is critical since we will need to access our financial systems to write checks for construction and repairs. While we have all of that information on tape in a fire proof safe somewhere in the district, we would have no hardware to restore it to, so our current backups would in effect be useless.

Much of the fear revolving around cloud environments is based on the perception that it is someone else's data center and we don't have control of the data center or our data. While it's true that the infrastructure is owned by someone else and it is located in a different geographic region than we are, we do in fact control the environment and our data. Microsoft is very explicit about the fact that the customer owns their data and it cannot and will not be accessed by Microsoft employees. The only exception to this rule is in the event that Microsoft must comply with a law enforcement request or warrant. This is no different than how the district would have to respond to a similar request.

WCSD uses the same authentication methods and protocols in Office 365 and Azure as we use in our internal domain. This process is called federation and is also used for single sign on to other websites and domains outside of our own. For example, users can log into Google with their washoeschools.net credentials rather than a Google account because we enabled single sign on with Google from our domain. Federation allows us to use our already existing domain usernames and passwords to authenticate to the cloud environment as if we were logging in to the local domain. This is accomplished without sending those usernames or passwords across the Internet, but by the cloud environment verifying the hash of the username and password against our local domain. This means that someone cannot capture your credentials in transit on the open Internet.

For all communication between our network and Azure we use an encrypted VPN tunnel for all data traffic. This keeps users on the Internet from capturing data packets in transit that are readable as clear text. Encrypted packets cannot be read by anyone who captures network traffic whether it's for legitimate or malicious purposes. Office 365 data in transit between our network and the cloud is encrypted both in transit and at rest. Again, this means it cannot be read by someone who captures that traffic in transit, or even if someone were to steal the drives that the data is actually stored on from an Azure data center.

To protect against online threats, Microsoft deploys Microsoft Antimalware for cloud services and virtual machines. They have also enabled intrusion detection, denial-of-service (DDoS) attack prevention, penetration testing, and data analytics and machine learning tools to help mitigate threats to the Azure platform.

Microsoft adheres to many international and industry-specific compliance standards, such as ISO 27001, HIPAA, FERPA, FedRAMP, SOC 1 and SOC 2. Microsoft was the first to adopt ISO/IEC 27018, which governs the processing of personal information by cloud service providers. Much more detailed and continuously updated information on these subjects can be found at the Microsoft Azure Trust Center.

### Bandwidth Management

Currently all elementary schools are connected to the administration building via 100 Mb WAN connections. High schools and middle schools connect to the administration building via 250 Mb WAN connections. Administrative sites connect back to the administration building at various speeds based on size of the site. We have a 10 Gb connection between our two data centers and we have two Internet connections, currently a 1 Gb and 2 Gb connection. This is quite a jump in connectivity over where we were over the last 10 years.

During that time period we went from having T-1 lines, which are the equivalent of a 1.54 Mb home DSL connection, to increasing elementary school connections to 25 Mb WAN speeds and high and middle schools to 40 Mb WAN connections. Less than three years ago we increased those speeds to our current capacity.

As the IT department looks to the future to anticipate the needs of the district we anticipated two things would cause us the most expense at a district level. They were storage and bandwidth. The storage issue is being addressed by the previously mentioned Office 365 migration. **Bandwidth, though, is a different story and will continue to require additional investment**.

Bandwidth requirements continue to grow across the district. Some of this is due to consumable content in the form of video and animation on the web that is used for instruction. But also the fact that in general, everything is either web- or network-based now. Two examples of this would be YouTube and Khan Academy, and the latter actually uses YouTube for its video feeds. These are two extremely popular and valuable educational resources and they require ample available bandwidth to function properly. While these two websites could be considered optional content by some, there are many things requiring bandwidth that are not optional.

The future of assessments has arrived, and they are being delivered to students online. MAP (Measures of Academic Progress), SBAC, and the EOC (End of Course) exams in high school are all online, and the list will only grow as the entire country

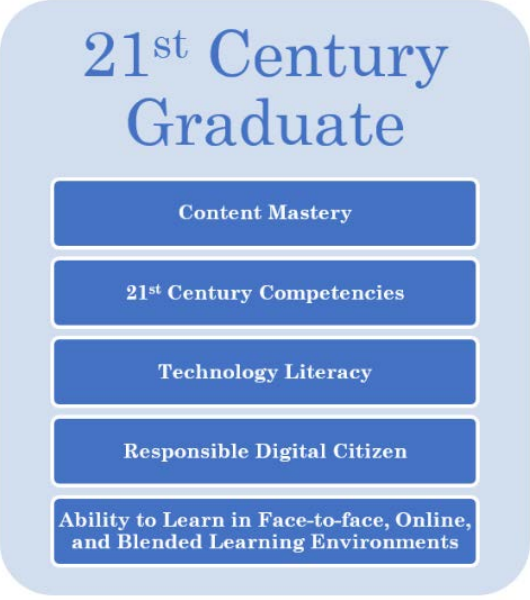
moves away from pencil-and-paper tests to online assessments. In many cases these are not optional for the student or the district. Making sure that assessments can be delivered without interruption is critical. This requires enough available bandwidth to deliver assessments without having to throttle regularly scheduled classroom instruction because we are administering online assessments.

# Communication and Outreach

The *WCSD21* Steering Committee will oversee the development of a comprehensive communication and outreach plan designed to

- communicate the purpose and progress of the project, including the Portrait of a 21st Century Graduate and the importance of instruction that prepares students for the challenges and opportunities of the 21st Century,
- establish appropriate ongoing communication with all stakeholders through multiple methods,
- provide voice to students, parents/caregivers, teachers, and the community in the implementation and continuous improvement of *WCSD21*,
- provide schools with the necessary resources to communicate effectively with their stakeholders,
- assure transparency in the governance of the project, and
- coordinate community resources that may support *WCSD21* over time.

Many districts that have implemented holistic 21st Century Learning initiatives, including Loudoun County (Virginia) Public Schools,[45] Jefferson County (Colorado) Public Schools,[46] and Fairfax County (Virginia) Public Schools,[47] have conducted extensive processes of consultation and community engagement with stakeholders. The development of the *WCSD21* Plan has been informed by the work of these districts, and the WCSD Board of Trustees may choose to undertake a similar process prior to or during the implementation of *WCSD21*.




Well before an implementation at a school, *WCSD21* will utilize multiple forms of communication so that stakeholders are informed about upcoming changes at their school. Methods of communication may include email, Blackboard connect (Direct prerecorded phone calls), district website

notification, school website notification, flyers, school meetings, and Board of Trustee meeting updates.

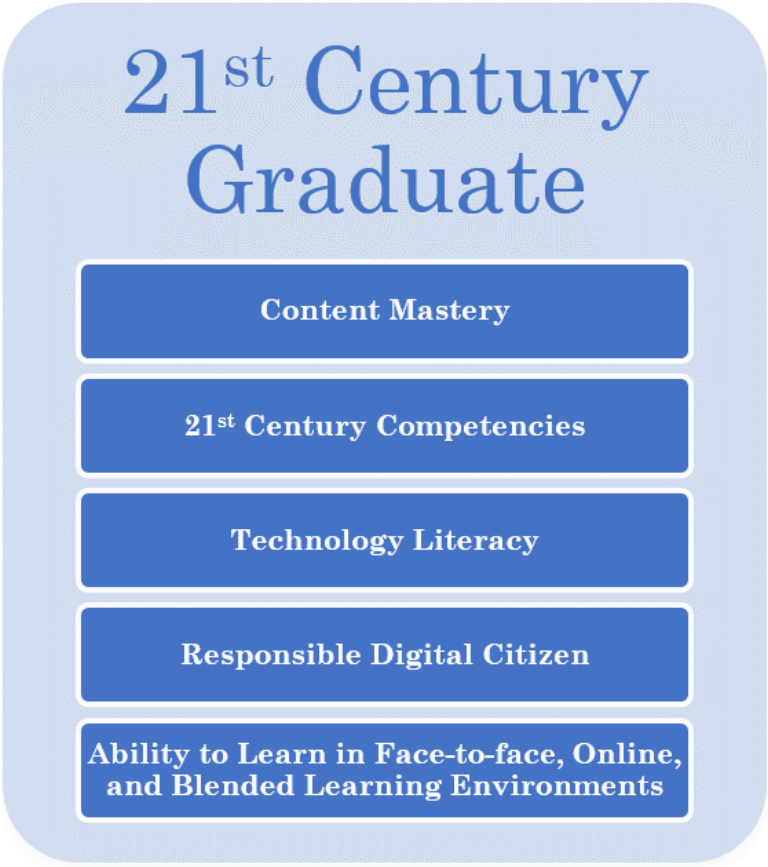

Schools will decide which of the above methods are appropriate and the most effective means of communication for their student and parent community. The WCSD21 plan, including the deployment schedule, will be available at all times as a reference for students, parents, staff, and the community as a whole on the WCSD website.

Our Student Information System, Infinite Campus (IC) can be used for parental notification and acknowledgement of Responsible Use Agreements (RUA), student email accounts being issued to their children, BYOD responsibilities and expectations, and 1:1 device responsibilities and agreements. Having these items become part of the student registration process is much more convenient and efficient for parents and district staff than using paper forms that need to be signed, returned, and filed. We can also include links to our district website for further information regarding specifics at their child's school and overall district plans and policies.

In addition, the *WCSD21* Steering Committee shall oversee the development of a student-facing graphical representation of learning outcomes for students (see Figure 10).

The student-facing graphical representation is intended to clearly articulate that *WCSD21* outcomes are about students, and to create a common understanding of why students are participating in activities that help create these outcomes. It will also serve as a tool for schools to communicate program expectations to students, teachers, and all stakeholders.

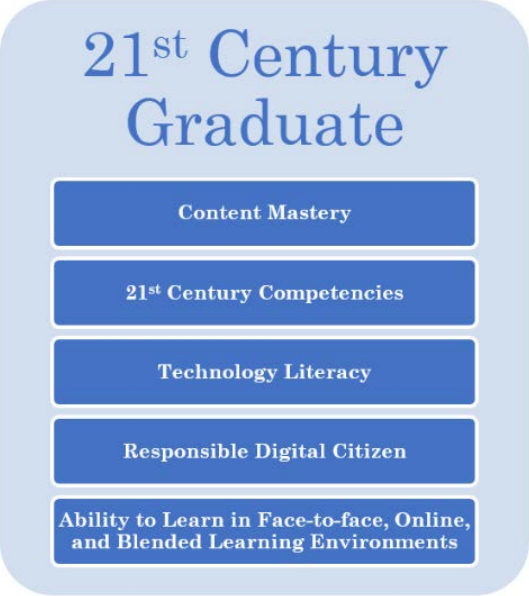
**Figure 10: *WCSD21* Learning Outcomes for Students**



# Evaluation and Continuous Improvement

Meaningful programs that deeply affect students and substantially improve outcomes do not happen overnight. A **robust continuous improvement process** and thorough evaluation with formative and summative components will assure *WCSD21* progresses in alignment with its stated goals. At the core of a rigorous continuous improvement process is a **comprehensive evaluation plan**, to be developed in broad consultation with stakeholders, and undertaken in collaboration with an **external evaluator**. The evaluation will center on *WCSD21*'s outcomes for students:

- content mastery,
- 21st Century competencies,
- technology literacy,
- responsible digital citizenship, and
- the ability to learn in face-to-face, online, and blended learning environments.




## *Continuous Improvement Process*

The continuous improvement process, overseen by the Technology Advisory Group (TAG) and *WCSD21* Steering Committee will guide the implementation of all components.

### IT Governance and the Technology Advisory Group (TAG)

IT Governance is defined by Gartner as "the processes that ensure the effective and efficient use of IT in enabling an organization to achieve its goals."

### IT Department

The IT Department has had its Governance Framework in place since 2012. This framework combined with ITIL (Information Technology Infrastructure Library) and COBIT 5 (Control Objectives for Information and Related Technology) are used to guide the IT Department in its decision making process and project approval and prioritization.

Governance plays a big role in how we prioritize the projects we work on and even more importantly, why we choose the projects we move forward with. We always start by asking ourselves "Why" we are considering a project first. Then we take into account whether we will be helping many, or just a few. Finally, we decide if the project will provide benefits to the classroom or the overall efficiency of the district? That final question is key to the "*effective and efficient use of IT in enabling an organization to achieve its goals*" that is part of the governance definition.

Using governance at the district level to initiate a 1:1 project aligns with our strategic plan, and more specifically, Initiatives 1.3.1 and 1.3.2. It lets the district move forward with the technology components outlined in *Board Policy 7200 - Digital Learning*, that the Board of Trustees approved on May 12, 2015. It is also consistent with the *Nevada Ready 21* plan, which is the official State of Nevada Technology Plan.

### *WCSD21* Steering Committee

Under the guidance of the Technology Advisory Group (TAG), the *WCSD21* Steering Committee will provide input into all aspects of planning, implementation, and evaluation of the *WCSD21* program. The steering committee will be made up of a broad cross-section of stakeholders, including WCSD Departments and site-based staff, students, parents, and community members.

## *Program Evaluation*

The *WCSD21* Steering Committee will work with an **external evaluator** to create and implement a comprehensive, ongoing evaluation of *WCSD21* to inform and guide implementation decisions throughout the process. The evaluation plan will honor the research on organizational change by viewing the program as a long-term process. The evaluation will use a broad range of data collection and analysis techniques that paint a holistic picture of all components of *WCSD21*. Importantly, the evaluation will balance quantitative and qualitative data throughout collection and reporting.

Evaluation elements, framed around the six key components of *WCSD21*, will include, but not be limited to, the items in Table 4.

**Table 4: *WCSD21* Program Evaluation Elements**

**Learning**

- Content Mastery*
- 21st Century Competencies
- Technology Literacy
- Responsible Digital Citizenship
- Ability to Learning in Face-to-face, Online, and Blended Environments
- Student Engagement
- Transition to the Workforce and Post-Secondary Education

*Academic achievement data will be tracked but not reported until Year 4 of implementation in each school

**Teaching and Professional Learning**

- Instruction and Assessment
- Instructional Coaching
- Site Leadership Activities
- Teacher Absenteeism
- Teacher Engagement

**Student Centered Technology**

- IT Services
- Frequency and Quality of Device Use
- Devices
- Vendor services

**Equity and Access**

- Absenteeism
- Engagement
- Discipline
- Home Access

**Communication and Outreach**

- Student, Staff, Parent, and Community Perceptions

**Evaluation and Continuous Improvement**

- TAG and the IT Governance Process
- Value Added through the Evaluation Process

**Cost Savings**

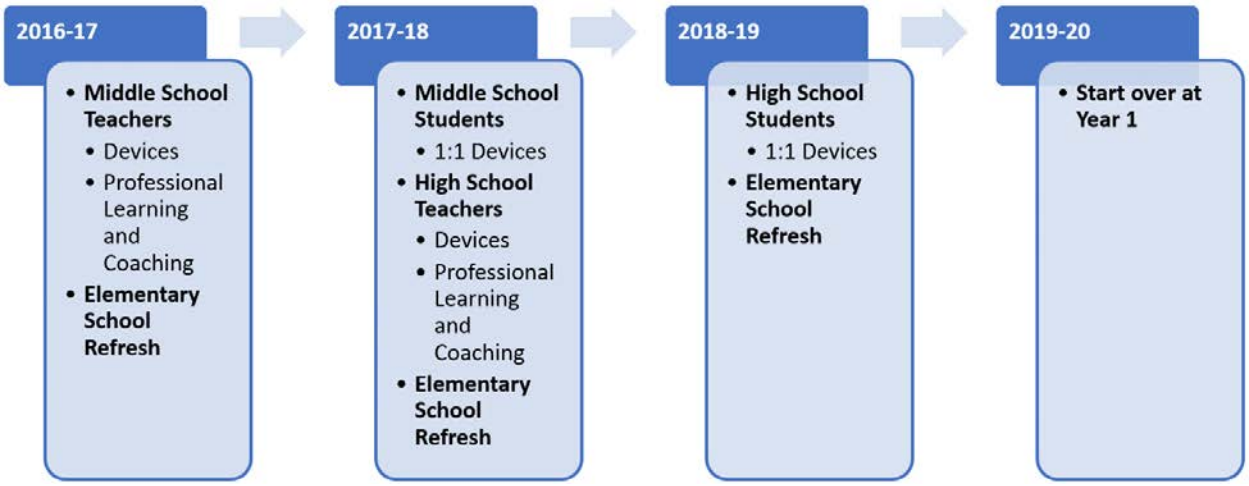
# Implementation Timeline

*WCSD21* establishes a timeline that reflects the needs of schools in preparing for, implementing, and managing a successful 1:1 program. This timeline enables school planning teams to thoughtfully consider the many necessary success factors outlined in the *WCSD21* plan, while ensuring each school plan meets the needs of all stakeholders. Importantly, the *WCSD21* timeline honors the experiences and recommendations of other school districts—the "best practices" that establish a path to success. Some key features of the *WCSD21* timeline include

- planning time for individual schools,
- devices for teachers 6-12 months ahead of devices for students, and
- professional learning for teachers before students receive devices, and throughout implementation.

*WCSD21* proposes a rollout schedule that begins with a pilot of two schools, then expands to cover the entire district over the next four years. This schedule is scalable, and a final schedule based on available resources would need to be determined. The proposed rollout schedule is presented in Table 5.

**Figure 11: WCSD21 Proposed Rollout Schedule**




A detailed proposed rollout schedule is at Appendix F.

## Timeline / Project Schedule

The following is a breakdown of the major tasks that will occur each year for the next ten years as this project moves forward. Schedules are subject to change but the tasks that need to be completed are standard and continuous. A timeline of major tasks, and a graphical timeline is presented at Appendix F.

# Required Resources

This section details the resources necessary for a successful implementation of *WCSD21*. Some items are already possessed by the district; others will need to be added. It is important to note that in many cases, the items identified here will result in cost savings in other areas. Some of these cost savings are identified below, but actual cost savings would depend on the scale and timeline of implementation.

## Costs

As covered in previous sections, many elements are required to make this plan successful across the district. Equipment and software, along with human resources are essential for a successful program. Specific costs are not included in this section but are provided in the detailed budget at Appendix G.

### *Cost Items Already Possessed by WCSD*

Several items necessary for a successful WCSD21 program are already possessed by WCSD. These include the following.

Office 365

Office 365 is provided as a free service from Microsoft for K-12 Education and so the district will not incur any charges for using it.

Cloud Computing – Microsoft Azure

There are advantages of using this type of infrastructure over a traditional data center, many of which we have already covered. Cost savings are the primary reason that most people cite first. Consider the comparison in Table 7.

In a cloud environment you pay for the above items based on your usage and it is instantly scalable. In a private data center, you pay for these items whether you utilize them or not.

For example, let's say you need a new SQL server for a database that is required by the Transportation Department. To install this in our data center we would need to estimate the usage of the new server so we can purchase one with enough processing power, memory, and disk space so that it isn't a bottleneck or obsolete before we install it. We would need to buy a Windows Server license and a SQL Server license. We would install it in a rack in the data center and configure it where it will consume power, require cooling, need to be backed up, updated, and maintained in the event of a software or hardware failure. This would continue for the life of the server until eventually it needs to be replaced and the process and costs start over. The timeline from conception to installation can be anywhere from

**Table 7: Comparison of Cloud Computing with Local Solutions**

| Cost | Cloud | WCSD Data Center |
|---|---|---|
| Server hardware | Included by provider | Purchased by WCSD |
| Equipment Racks | Included by provider | Purchased by WCSD |
| Power | Included by provider | Purchased by WCSD |
| Cooling | Included by provider | Purchased by WCSD |
| Network equipment | Included by provider | Purchased by WCSD |
| Replacement parts | Included by provider | Purchased by WCSD |
| Support personnel | Included by provider | Purchased by WCSD |
| Cabling | Included by provider | Purchased by WCSD |
| Battery Backups | Included by provider | Purchased by WCSD |
| Backup tapes | Included by provider | Purchased by WCSD |
| Building (physical location) | Included by provider | Purchased by WCSD |

4 to 8 weeks, or longer depending on the availability of the hardware once it's ordered.

In the cloud, we would provision a virtual server using a Windows Server image that we already own and add SQL Server licensing. This takes about ten minutes and we are up and running. The server can be instantly scaled up or down depending on need and can even be set to auto scale itself down at night, on weekends, and during breaks when usage dips. This allows us to control our costs since we only pay for the actual processing and bandwidth we consume.

### *Cost Items*

In addition to positions (outlined below), there are tools, software, and equipment needed to ensure *WCSD21*'s success. These include the following. Budget specifics for the items referenced in this section can be found in the budget spreadsheet (see Appendix G).

#### Network Infrastructure

Network infrastructure includes switches, routers, firewalls, filtering appliances, wireless controllers, wireless access points, cabling, servers, storage, UPS's (uninterruptible power supplies), and data center racks. There are also many other smaller miscellaneous pieces that are used to connect these devices to the network.

### Devices

This is self-explanatory and refers to the actual computing device that all students and staff would be issued. This category would also include spare batteries, spare device inventory to cover loss, damage, or theft, battery chargers, spare power supplies, and carrying and/or protective cases for the devices if needed. The services for deployment, collection, and maintenance previously mentioned also falls in this category.

### WAN Upgrade

Just like our Internet connection, sufficient WAN connectivity is crucial to program success and device usability. If we begin to have slow or unusable WAN connections at our schools, this will fail quickly and people will revert to previous methods of teaching and learning. That is not something we can let happen given the investment this will require from the district. Therefore, the IT Department will continuously monitor network capacity and usage to increase bandwidth as needed.

### MDM solution

MDM, or Mobile Device Management, is used to manage mobile devices such as laptops, tablets, and phones, inside but even more importantly, outside of our network. As students and staff take devices in and out of our network it becomes increasingly important to know where those devices are and controlling what can be done with them. No one wants to have happen here what happened in Los Angeles when they deployed their iPads.

It is important to ensure that mobile devices are being kept up to date and secure whether they are in our network or not since they may contain sensitive information. In the event that a device is lost or stolen we need the ability to wipe that device remotely and know that any data on it remained secure. That is what an MDM solution provides.

What it will not be used for is tracking student or staff movements or activities. MDM's can be configured to block restricted activities such as attempting to download and/or install unauthorized software. They can be used to notify the IT Department when a device travels outside our region in the event of a theft, but IT will not be actively tracking devices or usage. An MDM is not a substitute for teacher, or parental supervision and management.

### Azure Services

This is the gradual transfer of cost from our current data center environment to the Microsoft Azure cloud environment. What we would have to spend to replace the cabling, racks, servers, storage, battery backups, and pay for power, building space, and cooling will eventually be spent in annual installments to utilize the Azure

infrastructure. In the long term our data centers will only hold the necessary network equipment we need to provide connectivity to our district sites, the cloud, and the Internet.

### Internet Connection Upgrade

Ample connectivity and device usability are key to the success of *WCSD21*. If we begin to have slow or unusable Internet connections this will fail quickly and people will revert to previous methods of teaching and learning. That is not something we can let happen given the investment this will require from the district. Therefore, the IT Department will continuously monitor network capacity and usage to increase bandwidth as needed.

### Learning Management System

A Learning Management System is an essential tool to enable effective, efficient workflow in online and blended learning environments. Most LMSs are presently cloud-based, and *WCSD21* includes an annual subscription to a commercial LMS.

### Student Technical Support Instructional Programs

An extremely effective way to increase technical support capacity in schools, and advance students' 21st Century Competencies, is to establish student-led technical support programs. In these programs, students are empowered to provide technical support to their schools—learning these skills through elective classes or extracurricular clubs. *WCSD21* includes support for schools choosing to create these options for students.

### Digital Citizenship Education Program

A digital citizenship education program is an essential component of any 1:1 initiative, and enables students and teachers to develop appropriate online habits and literacies.

### Digital Portfolio System

A digital portfolio system allows allow students to collect, curate, and share their work that demonstrates growth over time.

### Support for Professional Learning

Several items identified above related to professional learning cannot happen without continued resources. These items include immersion training stipends, annual training stipends, instructional planning and peer observation, and the 21st Century Leaders Network. Costs are outlined in the detailed budget at Appendix G.

#### 21st Century Leadership Consulting / Training

1:1 programs promote significant change at schools and in districts. Ensuring district and site leadership activities foster and manage appropriate instructional and administrative changes requires the services of a nationally-recognized consultant well versed in 1:1 programs, 21st Century Learning leadership, and change processes.

#### External Program Evaluation

Program evaluation is a critical component of any large-scale process. Assuring the continuous availability of data and formative input regarding *WCSD21's* progress requires impartial assessment and evaluation, along with benchmarking against similar initiatives in other districts. An external program evaluator who is well versed in 1:1 programs and large-scale change initiatives will provide these critical formative contributions to *WCSD21*.

### *Cost Items – Site-Based Personnel*

*WCSD21* requires many different components to become, and to remain successful. Obviously, it also adds a huge amount of work and responsibility to our existing technology environment. The goal of *WCSD21* is to enhance the current educational environment and to expand where and when learning happens, not place additional burdens on students and teachers. To reach that goal we will need staff to deploy, maintain, manage, train, and support all of the components that make up this project.

There are multiple positions that will be required to handle this work and ensure the schools receive the appropriate level of support. The positions needed at the schools include the following.

#### Technology & Software Technicians

These positions provide front line, first level support for all of the technology used in the schools. They are there to help with hardware, software, connectivity, and basic network administration such as changing passwords. Anything that they are unable to take care of they will escalate to the central services IT staff.

As stated previously, in addition to positions, there are tools, software, and equipment needed to ensure the success of this endeavor. Those needed at sites are:

#### Implementation/Management Services

Services will be vital to this program. Once fully implemented the district will be refreshing up to 24,000 devices per year. That means 24,000 new devices being distributed at schools and the collection and return of 24,000 devices to the reseller or hardware vendor. Along with that is inventory management, tagging devices,

removing tags from collected devices, imaging the 24,000 new machines, and wiping the hard drives on the 24,000 collected machines. There is also the packing of old and unpacking of new and the disposal of the shipping materials. This would take an enormous amount of staff and man hours to complete and would not be the type of positions we would have a full time need for on a year round basis. That is why paying for services is the recommendation for completing these tasks.

#### 21st Century Instructional Coaches

21st Century Instructional Coaches support teachers in the process of becoming 21st Century educators. Through direct involvement in PLC planning, teaching model lessons, co-teaching technology-integrated lessons, participating in site 21st Century planning, and other activities, 21st Century instructional coaches will facilitate 21st Century instruction and assessment across school sites. It is critical that 21st Century instructional coaches are **embedded in every school** to ensure teachers have the on-demand support necessary to enable them to plan for technology-integrated learning activities.

### *Cost Items – Central Services Personnel*

*WCSD21* emphasizes placing human resources in schools. Certain services, however, serve the entire district, and are more efficiently utilized centrally. Detailed one time or annual costs for the positions and items below can be found in the Budget spreadsheet attachment (see Appendix G).

#### IT Director

The IT Director would report directly to the CIO (Chief Information Officer) and handle the day to day project management and consultative needs of the IT Coordinators.

#### IT Coordinators

The IT Coordinators are the direct supervisors of the entire IT department staff. They manage the day to day operations of the department and the deployment of staff and resources based on the needs of our users. They are required based on the additional IT staff that need to be hired for this deployment.

#### Network Analysts

This group handles service escalations that involve servers, wireless and wired network access, network administration, backups and disaster recovery, VoIP phones, CCTV, and everything that cannot be handled by the IT System Specialist group because of the delineation of access based rights. As their title implies, they deal with everything network related.

### ITSO (IT Security Officer)

The IT Security Officer will report directly to the CIO (Chief Information Officer) and be the direct supervisor of the Security Analysts. They will be responsible for recommending to the CIO any enhancements needed to ensure our users, network, and data remain secure. This position will focus on directing the Security Analysts to conduct security and compliance testing on our network, both internally and externally. The IT Security Officer will also be tasked with editing and updating existing IT policies, recommending and writing new policies, deleting older or irrelevant policies if needed, and enforcing security standards at a district level.

### Security Analysts

These positions will focus on conducting security and compliance testing on our network, both internally and externally. They will also provide internal IT audit capabilities. This will include penetration testing on our servers, switches, routers, and our wireless and wired networks. They will also ensure we are up to date on any and all appropriate patches and security updates needed on our network equipment. They will work with the rest of the IT staff to deploy timely solutions to any security related issues they uncover.

### IT Systems Specialists

This is the group that will handle desktop, software, and classroom technology calls that need to be escalated from the school sites by the Technology & Software Technicians. They will help determine the standards for computing devices and establish documentation for the technology that is deployed in the schools.

### Help Desk Specialist

Additional Help Desk staff will be needed to handle the increased call volume that will come with adding this many devices and network equipment to our existing environment.

### BI (Business Intelligence) Analyst

As the technology landscape grows so will the need to report on it and to provide even more access to information than we have today. The BI Analysts are responsible for building and maintaining our current BIG portal, the Online Checkbook, and the Data Gallery. As we have seen recently though, this is just the beginning. The data warehouse can provide endless answers to our questions about how we can operate more efficiently, make budget decisions based on data, how budgets affect academic outcomes, and on and on. To be able to utilize the data effectively and keep up with future demand we will need additional personnel.

### Application Developers

Application Developers will work hand in hand with the BI Analysts to develop enhancements to our BIG portal, Online Checkbook, Data Gallery, and other portals that have yet to be built. They can also work with Academics to develop customized applications for students and teachers.

### *WCSD21* Director

The *WCSD21* Director answers directly to the Chief Information Officer and oversees the district's 21st Century and 1:1 programs, coordinates committees identified in this plan, consults with schools regarding program goals, planning, implementation, and evaluation, and oversees the 21st Century staff. An Administrative Secretary serves in a support capacity.

### 21st Century Administrative Coordinators

Under the direction of the *WCSD21* Director, 21st Century Administrative Coordinators oversee the day-to-day operations of central office 21st Century staff, and coordinate all professional learning as outlined in this plan for 21st Century Instructional Coaches and Technology and Software Technicians at sites.

### 21st Century Learning Specialists

21st Century Learning Specialists are certified teachers on special assignment who support the creation and deployment of curricular, instructional, and professional learning resources and programs to sustain *WCSD21* in schools. Under the direction of 21st Century Administrative Coordinators, 21st Century Learning Specialists serve as instructional designers, professional learning providers, Web 2.0 resource curators, and digital learning tool managers, and work directly with 21st Century Instructional Coaches and Technology and Software Technicians in the provision of curricular, instructional, professional learning, and technical support services to schools. 21st Century Learning Specialists also serve as coaches and mentors to the 21st Century Instructional Coaches.

### 21st Century Instructional Designers

21st Century Instructional Designers support the development of NVACS-aligned online and blended content for use in WCSD classrooms through the use of a Learning Management System (LMS) and digital and web 2.0 tools. 21st Century Instructional Designers work with teachers, 21st Century Learning Specialists, coaches, and WCSD departments to develop and maintain academic content, and curate and disseminate Open Educational Resources. Instructional Designers work under the direction of the 21st Century Administrative Coordinators.

### 21st Century Digital Tools / LMS Specialists

21st Century Digital Tools / LMS Specialists support the deployment, management, and training needs associated with the Learning Management System (LMS) and digital and web 2.0 tools. 21st Century Digital Tools / LMS Specialists work with 21st Century Learning Specialists, coaches, and teachers to assure the regular, meaningful integration of digital tools and the LMS in WCSD classrooms. A combination of technical expertise and classroom experience is required for the successful deployment of these digital resources. These specialists work under the direction of the 21st Century Administrative Coordinators.

## *Cost Savings and Benefits*

Cost savings from a full implementation of *WCSD21* cannot be fully identified, as many of these benefits will be realized over time due to efficiencies in many areas.

### Monetary Savings

A couple of examples of the savings potential from Office 365 are the ability to provide every user with 50 GB's (gigabytes) of storage space for their email account and 1 TB (terabyte) of storage space for their personal documents. Given the fact that the district has 70,000 users counting staff and students, that is the equivalent of 70,000 TB's of user storage and 3.28 TB's of email storage. The district currently has just 40 TB's of storage in its SAN, or Storage Area Network. If IT were to purchase that much storage for users, plus redundancy for backup purposes, we would easily consume the entire school districts annual budget. Obviously that is not an option. However, through the use of these free online services we can save the district hundreds of thousands of dollars, and eventually millions of dollars by eliminating the need to upgrade, install, maintain, and replace our equipment on a regular refresh cycle. We also save the expense of powering these systems and cooling the data centers to ensure that they run efficiently. While we still have equipment in our data centers that needs to be cooled, the demand on the cooling systems goes down significantly as equipment is moved out of those data centers and into the cloud environment.

Examples of the savings potential for Google Apps for Education are the same as above in Office 365 but with differences in storage limits. GAFE provides every user with 7.5 GB's (gigabytes) of storage space for their email account and unlimited storage space for their personal documents.

- Savings on printers, paper, and toner are easily achievable using technology.
- Using digital signatures instead of school mail can cut costs and increase efficiency.
- Using an online fax service instead of paying for phone lines and fax machines at many of our sites can increase efficiency and reduce costs.

- Using online meeting sites to share documents and project updates can replace the need to bring multiple printouts to meetings.
- The district will be saving millions of dollars over the next several years on hardware, software, power, and cooling by moving all user storage and email to Office 365 and Azure.
- Distance education by video, Skype, etc. can help alleviate the need for transportation of students.
- Video, Skype, and similar tools can help to better utilize teachers in hard to fill subject areas by giving them the opportunity to reach more students without having to travel or transport students.
- Using distance education in higher grade levels can help manage the need for more space in the schools and help with dual credit classes from TMCC and UNR.
- Using remote capabilities can help students keep up on their studies even if they are out sick for extended periods of time.
- The continuous expansion of the data warehouse not only creates centralized and secure availability of district data, but it eliminates the need to work with spreadsheets and other outdated methods of data manipulation. It gives everyone that has access the power to ask questions and get instant answers without having to wait for someone to create a report.

## Non-Monetary Benefits

Recently, the management team in IT was invited to participate in site based meetings at all of our high schools to discuss the new online EOC (End of Course) exams for high school students. These meetings were organized by Assessment and included Area Superintendents, principals, and the technology staff at each school. The goal was generally the same as it was last year when we were preparing for the new online SBAC exams, to determine the readiness of the district and individual schools to deliver the tests within the specified testing window.

The good news is; from an infrastructure standpoint we are either already in good shape at the schools or we will be by the time the testing window arrives. Device readiness though is a different story.

There are some schools that have a sufficient number of devices to get their students through the assessments in the allotted testing window without much trouble. But even in those schools many of the devices are older and ready to be refreshed.

In the rest of the high schools, not only are they severely lacking in the quantity of devices, most of the devices they do have are old and in need of repair and/or replacement. For example, Damonte Ranch High School has nine laptop carts and none of them are usable for the online assessments and in fact aren't capable of

doing much at all because of their age and hardware specifications. The subject of 1:1 computing came up at every meeting and everyone agreed that it would solve multiple problems at their schools and enhance the learning environment. Some of the non-monetary benefits are:

- Ability to deliver online assessments in a timely and efficient manner.
- Ability to recapture lost instructional time due to the scheduling of online assessments.
- Increased student engagement.
- Ability for all students to access district owned software whenever needed.
- Ability for all students to store their documents and educational portfolio online and access it from anywhere, at any time.
- Increased computer literacy and technology familiarization skills.
- Exposure to multiple platforms like they will experience in higher education environments and in their careers.
- Ability to communicate and collaborate with teachers and fellow students at any time and from anywhere.
- Extension of the learning environment. Learning can happen anywhere and shouldn't be confined to seat time in a classroom.
- Ability to participate in distance learning opportunities within the district and from outside the district.
- Equity. A 1:1 computing program can impact every single student across the district equally and immediately.

# Appendices

## Appendix A: WCSD Strategic Plan, *Envision WCSD 2020*, Initiative 1.3.2

*Every Child, By Name And Face, To Graduation*

### Office of Information Technology – 21st Century Learning

**Goal 1, Objective 1.3**

***Initiative 1.3.2:*** Elevate students' readiness for college and careers through learning environments that develop 21st Century Competencies

***Purpose:***

*Students who possess 21st Century Competencies are better prepared for careers and college. In support of* Envision WCSD 2020, *the Nevada State Technology Plan, the WCSD Technology Plan, and the Nevada Academic Content Standards (NVACS), WCSD will foster students' development of 21st Century Competencies across all areas of the K-12 curriculum. This initiative will support student-centered instruction aligned to the District's 21st Century Competencies framework. Where possible, and dependent upon funding, this initiative will support the acquistion of student-centered digital devices, access to platforms for blended learning and digital content, and 1:1 digital device programs.*

**Brief Description of Initiative:**

Today's learners require 21st Century learning environments with frequent opportunities to develop 21st Century Competencies and create products of learning through the personal use of digital tools that reflect the world and the workplace. The Nevada Academic ContentStandards (NVACS) call on students to use and create with digital tools and integrate learning skills with content knowledge through the English Language Arts (ELA) *College and Career Readiness Anchor Standards*, the *Mathematical Practices*, and the *Science and Engineering Practices*. Also woven through the NVACS is the requirement for students regularly to use digital learning tools for creating products of learning that demonstrate 21st Century Competencies.

WCSD will support the meaningful integration of technology into student learning and students' acquisition of 21st Century *Competencies through the District's 21st Century Competencies Framework*, which highlights Six Dimensions of 21st Century Learning: Collaboration, Knowledge Construction, Real World Problem Solving and Innovation, Use of Technology For Learning, Self Regulation, and Skilled Communication.

In support of Board Policy 7200: Digital Learning, the Nevada State Technology Plan, the WCSD Technology Plan, and the Nevada Academic Content Standards, the District shall continue to seek the necessary resources to provide essential supports for 21st Century learners, including:

- the essential tools for blended learning and technology integration, including a common district-wide commercial Learning Management System (LMS), and district-wide access to online learning platforms and digital tools for creating products of learning;
- NVACS-aligned digital content, including digital textbooks where appropriate and Open Educational Resources (OER);
- the creation of grade-level performance expectations for students' development of 21st Century Competencies, aligned to the WCSD *21st Century Competencies Framework* and the NVACS;
- student-centered devices, such as laptops and tablets, with an emphasis on school-wide 1:1 programs as prioritized by the Nevada State Technology Plan: *Nevada Ready 21*;
- policies, regulations, and procedures that enable 21st Century learning environments that promote students' participation in the world of collaborative and individual learning inside and outside their schools; and
- the professional learning and instructional supports addressed in Initiative 1.3.1.

This initiative will continue to be an integral part of the WCSD Comprehensive Professional Learning Plan. WCSD will continue partnerships with national organizations, such as *EdLeader21* and *CoSN*, in furthering best practices in 21st Century Learning and benchmarking WCSD's practices nationally and internationally.

WCSD shall continue to actively seek resources for this initiative through multiple sources, such as the *Nevada Ready 21* program.

**Metrics:**

- TBD, dependent upon available resources

# Appendix B: WCSD Strategic Plan, *Envision WCSD 2020*, Initiative 1.3.1

*Every Child, By Name And Face, To Graduation*

## Office of Information Technology – 21st Century Learning

**Goal 1, Objective 1.3**

***Initiative 1.3.1:*** Empower teachers with 21st Century instructional strategies

***Purpose:***

*In support of* Envision WCSD 2020, *the Nevada State Technology Plan, the WCSD Technology Plan, and the Nevada Academic Content Standards, WCSD's 21st Century Learning Division will provide teachers, and site and district staff, with a range of professional learning opportunities centered on technology tools that foster meaningful classroom technology integration for students.*

**Brief Description of Initiative:**

Supporting the educational needs of today's 21st Century learners requires instructional methods that help students graduate with 21st Century Competencies and the skills to succeed in our increasingly technology-reliant world. Consistent with Board Policy 7200: Digital Learning, the Nevada State Technology Plan, the WCSD Technology Plan, and the Nevada Academic Content Standards (NVACS), WCSD, through the work of its 21st Century Learning Division, supports teachers in their efforts to prepare students with 21st Century Competencies for college and careers.

Working with teachers, schools, and district departments to advance student-centered instructional strategies and the meaningful use of technology for learning, the Division provides professional learning opportunities, technology tools, and strategic support to schools, including:

- the *21st Century Educator* Badge Program, which directly supports 21st Century Competency development through instructional coaching, professional learning, and training in the use of digital tools to promote blended and online learning, and the instructional integration of technology;
- the *21st Century Learning Leaders Network*, which supports all WCSD schools in their efforts to advance student-centered learning through 21st Century instruction and technology use;
- professional learning support for cohorts of early adopters of 21st Century learning environments, including blended learning approaches, and where possible the provision of digital devices for the creation of exemplar classrooms;
- professional learning and professional networking support for 21st Century instructional coaching; and
- differentiated professional learning programs to support the meaningful educational uses of technology in support of students' development of 21st Century Competencies.

Working with the Department of Professional Learning and other WCSD departments, the 21st Century Learning Division will support the use of online and blended learning strategies in formal professional learning opportunities throughout the district.

This initiative will continue to be an integral part of the WCSD Comprehensive Professional Learning Plan. WCSD will continue partnerships with national organizations, such as EdLeader21 and CoSN, in furthering best practices in 21st Century Learning and benchmarking WCSD's practices nationally and internationally.

WCSD shall continue to seek resources for this initiative through multiple sources, including the *Nevada Ready 21* program.

**Metrics:**

Through the 21st Century Educator Badge Program, increase the number of teachers who are familiar with 21st Century instructional strategies and lesson design

| Total 21st Century Badged Teachers | |
|---|---|
| FY 15-16 Target | FY 19-20 Target |
| Baseline TBD | 1500 teachers |

Increase the number of district professional learning opportunities that utilize online and blended learning methods

| Total WCSD PD Opportunities Utilizing Blended Learning, Online Learning, and/or Technology Integration | |
|---|---|
| FY 15-16 Target | FY 19-20 Target |
| Baseline TBD | 50% |

# Appendix C: WCSD Student Email Procedure (Draft)

STUDENT EMAIL ACCOUNTS

**Responsible**: Office of Information Technology

**PURPOSE**

This administrative procedure shall establish the guidelines related to use of email by students within the Washoe County School District.

**PROCEDURE**

1. Ownership of Account

   a. All student email accounts are the property of Washoe County School District (WCSD). Email and all other network activities must comply with this procedure and the WCSD's Acceptable Use Procedure. WCSD Acceptable Use Procedure (IT-P002)

2. Student email overview

   a. Beginning in the 2016 school year WCSD will be providing student access to Microsoft's Office 365 environment. Office 365 includes web based programs providing email, word processing, spreadsheet, presentation, conferencing, calendaring and collaboration tools for WCSD students and staff.

   b. Elementary and middle school students will only be able to send emails to, or receive emails from, someone with an @washoeschools.net or @washoeschools.org email address. That means they cannot communicate with anyone outside the Washoe County School District. High school students will be able to communicate with anyone whether they are in the Washoe County School District or not.

   c. Office 365 is available at school and at home via an Internet connection. Even though email from known inappropriate sites is blocked, there is always a chance that students will be exposed to inappropriate content. School staff will monitor student use of Office 365 when students are at school. Parents are responsible for monitoring their child's use of Office 365 when accessing this from home. Students are responsible for their own behavior at all times. Additional details and information regarding student online security within the Office 365 environment can be found at: http://trust.office365.com

   d. Office 365 utilizes the washoeschools.net domain which is owned by WCSD and is intended for educational use only. Each student will be assigned an official Washoe County School District (WCSD) email account upon their enrollment. That account will remain the same, and retain the same username throughout their career at WCSD. A WCSD assigned student email account is one of the official means of communication for staff with WCSD students.

e. Teachers and site administrators will determine how electronic forms of communication (e.g., email, sharing of documents and other content, etc.) will be used in their schools and classrooms. This "Washoe County School District Student Email Procedure" will ensure that all students will be able to comply with email-based classroom requirements specified by school staff. WCSD email communications are used to meet the academic and administrative needs of the WCSD and are not intended or issued for personal use.

3. Email Privacy

a. Electronic mail sent or received through the WCSD email system should not be considered confidential, as is the case with any form of electronic communication. Although WCSD does not make a practice of monitoring individual electronic mail, the administration reserves the right to filter and retrieve the contents of user mailboxes for legitimate reasons, such as finding lost messages, to conduct internal investigations, when there is reason to believe that violations of the law or of WCSD policies have taken place; or to recover from system failure.

b. System administrators may create and use filters to scan for and eliminate viruses and malware and/or emails that do not abide by Child Internet Protection Act (CIPA) regulations (e.g. "spam" communications, obscene email, attempts by adults to lure students into dangerous situations, and any other items that could pose a threat to individuals or the electronic systems of the WCSD).

c. Students should take care to send messages only to the intended recipient(s). Particular caution should be taken when using the "Reply" vs. "Reply All" command during email correspondence.

4. Account Information and Responsibilities

a. The Washoe County School District may deny or revoke access to its electronic mail services and may inspect, monitor, or disclose electronic mail to appropriate authorities when required by, and consistent with local, state, and/or federal law.

b. The student email account will be removed from the system after graduation, or upon withdrawing from the school district.

c. All WCSD students are responsible to become familiar with the contents of this procedure and the WCSD Acceptable Use Procedure (IT-P002). Infractions of this procedure or the WCSD Acceptable Use Procedure (IT-P002), will be addressed in accordance with WCSD Board Policy 5100 – Student Behavior. The student email account may be suspended or removed from the system as a result of these actions. Failure to comply with the procedures may lead to serious consequences, up to and including legal action depending on the seriousness of the matter.

d. Every student will be provided with an official WCSD e-mail address. This will be the formal email address for all communication between students and staff of WCSD. THIS IS THE ONLY AUTHORIZED EMAIL ADDRESS FOR STUDENTS. Accounts from Google, Hotmail, AOL, or any other third party provider are not allowed and should not be issued by schools or teachers, and should not be used to communicate with students.

e. The format for these official email addresses is as follows:

   For staff: <staff username>@washoeschools.net (ateacher@washoeschools.net)

   For students: <student ID#>@washoeschools.org (123456@washoeschools.net)

f. Individual users assume full responsibility and accountability for their actions and mailbox when using WCSD systems. The use of these systems by individuals at WCSD assumes and implies compliance with this procedure, without exception, and every user of the email system has a duty to ensure they practice appropriate and proper use and must understand their responsibilities in this regard.

5. Support

a. Email account support will be handled by the IT Department during regular school and business hours.

b. The Information Technology Department cannot provide support for personal devices. This includes connecting to the wireless, troubleshooting access or application issues on an individual's personal device, or email/calendar syncing issues.

c. Users should consult their carrier's website for the model phone or device as most, if not all, have online support for connecting to Exchange.

6. Disclaimer and Waiver

a. The District is not liable for any loss or damage to an individual's personal device based on his/her decision to use it on District property. This includes physical damage or loss as well as any problems caused by malware which may be encountered during normal use. The safety and security of the user account is the responsibility of the owner.

**DEFINITIONS**

1. Personal devices are defined as smart phones, cell phones, laptops, tablets, or any devices capable of connecting wirelessly to the Internet, that are not owned by the District.

**DESIRED OUTCOMES**

1. That staff and students be able to utilize the WCSD email system to enhance education and learning in the classroom and for educational purposes outside the normal school day.

**IMPLEMENTATION GUIDELINES & ASSOCIATED DOCUMENTS**

1. This Administrative Procedure reflects the goals of the District's Strategic Plan.

**REVIEW AND REPORTING**

1. This procedure and any accompanying documents will be reviewed bi-annually in even numbered years.

# Appendix D: WCSD Board Policy 7200, Digital Learning


**Responsible Office**: Office of Information Technology

**BOARD POLICY 7200**

**DIGITAL LEARNING**

**PURPOSE**

The Board of Trustees acknowledges that all students, faculty, and staff should have regular opportunities to engage in digital learning activities that build the 21st Century competencies necessary to thrive in a globally interconnected world. Learners derive substantial educational benefits through learner-centered use of technology such as mobile devices, digital and online tools and apps, and social media. Both learners and educators benefit by connecting online with peers, resources, and professional learning opportunities, and from access to innovative instructional resources and learning opportunities available only through digital media. Through this policy, and any associated regulations and procedures, the Washoe County School District expresses its commitment to supporting 21st Century learning environments.

**POLICY**

1. Guiding Principles

    a. The District will provide a multitude of technology resources and rich learning experiences that help learners:

        i. appropriately select and use technology devices and social networking tools for lifelong learning;

        ii. bridge the gap between formal (in-school) and informal (out-of-school) learning, improving students' readiness for careers and college;

        iii. connect with peers, experts, and information resources beyond school walls, through online and face-to-face learning environments designed to help students collaborate to achieve academically and acquire 21st Century competencies;

        iv. access multiple sources of information and obtain meaningful formative feedback;

        v. document and share work with broader audiences when appropriate; and

vi. manage workflow using digital tools.

b. The District will provide faculty and staff with technology resources and professional learning experiences that:

i. incorporate and model appropriate uses of technology;

ii. advance instructional practices that help students develop 21st Century competencies;

iii. utilize face-to-face, online and hybrid formats;

iv. are frequently job-embedded, differentiated, "just-in-time," and accessible on-demand;

v. facilitate workflow and formative instructional practices using digital tools and apps;

vi. facilitate the engagement of parents/guardians; and

vii. foster the development of online networks, learning teams, and communities of practice.

2. Guiding Practices

a. The District will enable 21st Century learning opportunities for students, faculty, and staff by adopting and maintaining administrative regulations and procedures that encourage the use of technology and digital media for learning, while ensuring responsible use and the safety of students and staff. These regulations and procedures will:

i. assure the responsible use of technology and digital media through Responsible Use Agreements (RUAs) that foster the development of responsible, ethical technology users, emphasize the educational and collaborative value of technology, and outline the expectations and responsibilities of anyone using the District's network;

ii. ensure students are educated in digital literacy, safe internet use, and digital citizenship;

iii. ensure protection of students' privacy in accordance with applicable law;

iv. support teachers' regular use of digital media and internet content in safe, effective, appropriate ways that advance student-centered instruction and help students develop 21st Century competencies;

v. provide students, faculty and staff access to district-provided email accounts, to enable the use of appropriate online tools and resources;

vi. ensure faculty and staff have access to online and hybrid professional learning opportunities;

vii. maintain and administer a list of online tools and apps approved for use in classrooms, including a formal approval process and responsive procedure for staff to request access; and

viii. establish procedures for bring-your-own-device programs at schools.

**DEFINITIONS**

1. 21st Century Competencies – transferable skills, knowledge, expertise, and literacies needed to succeed in work and life, and thrive in a globally interconnected world, including the ability to process multiple forms of information, and communicate skillfully and exchange information across multiple contexts, such as home, school, the workplace, and social networks (Partnership for 21st Century Skills, www.p21.org). WCSD articulates six 21st Century Competencies: Collaboration, Knowledge Construction, Real-World Problem Solving and Innovation, Use of Technology for Learning, Self-Regulation, and Skilled Communication.

2. Hybrid learning – formal educational experiences in which students learn through a combination of online and face-to-face activities.

3. Digital and online tools and apps – computer applications used on a computer or mobile device, such as social media tools (www.oxforddictionaries.com).

4. Mobile devices – portable computing devices capable of connecting wirelessly to the internet, including laptops, tablets, and smartphones.

5. Social Media – websites and applications that enable users to create and share content or to participate in social networking (www.oxforddictionaries.com). Uses of social media include, but are not limited to, blogging, microblogging, social bookmarking, social curation of resources, content-sharing and collaboration.

**DESIRED OUTCOMES**

1. Through the implementation of this policy, the Board of Trustees desires to:

    a. support and sustain student-centered learning environments that lead to students' development of 21st Century competencies at the District's schools; and

b. align the acquisition and deployment of available technologies in the District's schools to foster learner-centered technology use, in support of 21st Century competency development.

**IMPLEMENTATION GUIDELINES & ASSOCIATED DOCUMENTS**

1. This policy reflects the goals of the District's Strategic Plan.
2. This policy aligns with the governing documents of the District, to include:
    a. Board Policy 9031, Safe and Respectful Learning Environment, and the associated administrative regulations
    b. Board Policy 6160, Instructional Materials: Selection, Adoption, and Disposal, and the associated administrative regulations
    c. Board Policy 6163.2, Internet Safety and Public Network Acceptable Use, and the associated administrative regulations
3. This policy complies with Nevada Revised Statutes (NRS) and Nevada Administrative Code (NAC), to include:
    a. Chapter 201, Crimes Against Public Decency and Good Morals, and specifically:
        1. NRS 201.235-201.254, Obscenity.
    b. Chapter 388, System of Public Instruction, and specifically:
        1. NRS 388.134, Policy by school districts for provision of safe and respectful learning environment and policy for ethical, safe and secure use of computers; provision of training to board of trustees and school personnel; posting of policies on Internet website; annual review and update of policies
    c. Chapter 389, Examinations, Courses, Standards and Graduation, and specifically:
        1. NRS 389.520, Council to Establish Academic Standards: Establishment of standards; periodic review of standards; adoption of standards by State Board; establishment of policy for ethical, safe and secure use of computers
    d. Chapter 393, School Property, and specifically:
        1. NRS 393.160, School Property, Powers of Trustees.
4. This policy complies with the following federal codes and regulations:

a. Children's Internet Protection Act: 20 U.S.C. 6801 and 47 U.S.C. 254(h).

b. Broadband Data Improvement Act, Title II, Protecting Children in the 21st Century Act

**REVIEW AND REPORTING**

1. This document shall be reviewed as part of the bi-annual review and reporting process, following each regular session of the Nevada Legislature. The Board of Trustees shall receive notification of any required changes to the policy as well as an audit of the accompanying governing documents.
2. Administrative regulations, and/or other associated documents, will be developed as necessary for the consistent administration of this policy.

**REVISION HISTORY**

| Date | Revision | Modification |
|---|---|---|
| 5/12/2015 | 1.0 | Adopted |

# Appendix E: WCSD Bring-Your-Own-Device (BYOD) Procedure (Draft)

GUEST WIRELESS NETWORK – BYOD ACCESS

**Responsible**: Office of Information Technology

**PURPOSE**

This administrative procedure shall establish the guidelines related to use of the guest wireless network within the Washoe County School District.

**PROCEDURE**

1. Guest Network

    a. The District has enabled a guest wireless network (guest@wcsd) for use by faculty, staff, and students. Visitors are also authorized to use the guest wireless network.

    b. Access is available to everyone at the following locations:

    c. Administrative worksites (i.e. Central Administration, Edison Complex)

    d. Schools where 1:1 wireless has been installed

2. Responsible Use

    a. Employees, students and visitors are not allowed to connect any piece of equipment (i.e. mini-hubs, switches, personal PC, wireless routers or access points) into the District's private wired network without the written approval of the District's Information Technology Department

    b. All usage and network traffic from an individual's personal device is covered by the District's Responsible Use Agreement (RUA).

    c. The District reserves the right to revoke the use of a personal device(s) on the District's network if the terms of the Responsible Use Agreement (RUA) are not followed.

3. Access Key and Connectivity

    a. The guest wireless network can be accessed using a wireless access key. Such key shall be available through the school principal, supervisor or site administrator.

    b. The District cannot guarantee guest connectivity. During heavy network usage or SBAC/MAP/EOC testing windows, it may be necessary for the Information Technology Department to disable guest access to guarantee the quality of the network for the District's critical operations.

c. Such notification will be communicated through the IT Department Twitter account: https://twitter.com/WCSDIT

4. Support

a. The Information Technology Department cannot provide support for personal devices. This includes connecting to the wireless, troubleshooting access or application issues on an individual's personal device, or email/calendar syncing issues.

b. Staff should consult their carrier's website for the model phone or device as most, if not all, have online support for connecting to Exchange.

5. Disclaimer and Waiver

a. The District is not liable for any loss or damage to an individual's personal device based on his/her decision to use it on District property. This includes physical damage or loss as well as any problems caused by malware which may be encountered during normal use. The safety and security of the device is the responsibility of the owner.

**DEFINITIONS**

1. Personal devices are defined as smart phones, cell phones, laptops, tablets, or any devices capable of connecting wirelessly to the Internet, that are not owned by the District.

**DESIRED OUTCOMES**

1. That staff and students be able to utilize the WCSD network to enhance education and learning in the classroom, and that staff at administration sites can work more efficiently.

**IMPLEMENTATION GUIDELINES & ASSOCIATED DOCUMENTS**

1. This Administrative Procedure reflects the goals of the District's Strategic Plan.

**REVIEW AND REPORTING**

1. This procedure and any accompanying documents will be reviewed bi-annually in even numbered years.

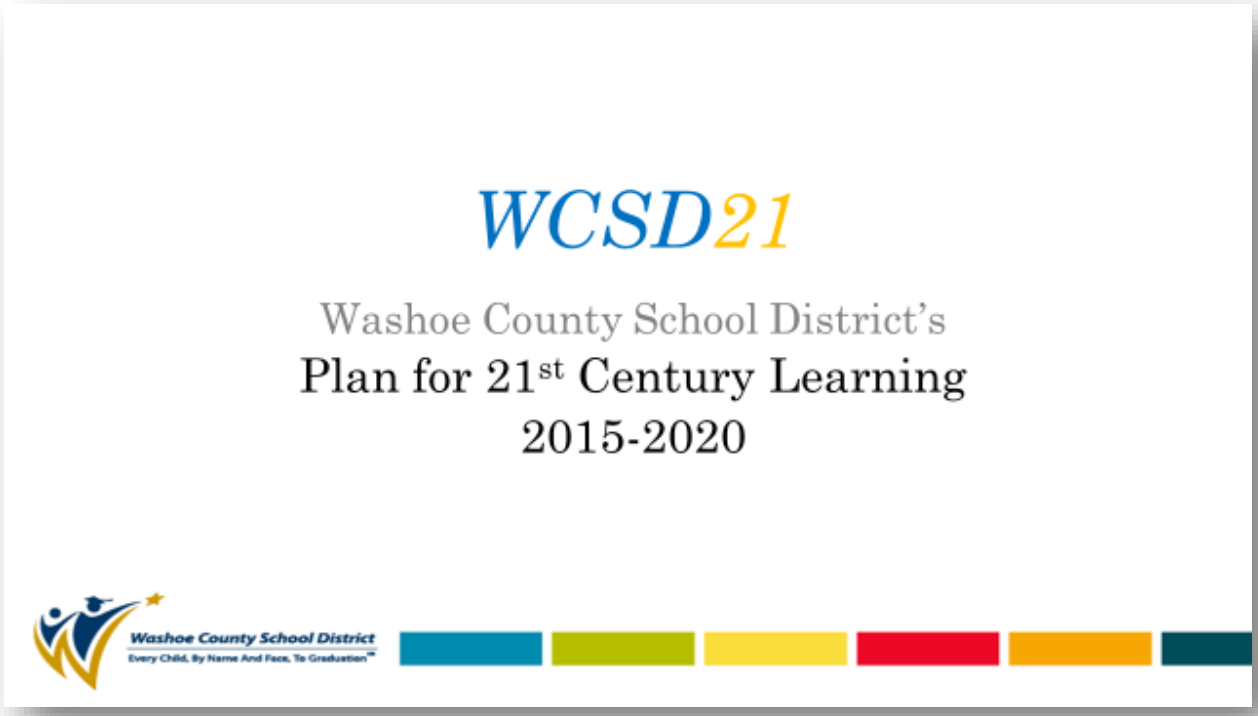
## Appendix F: *WCSD21* Project Timeline

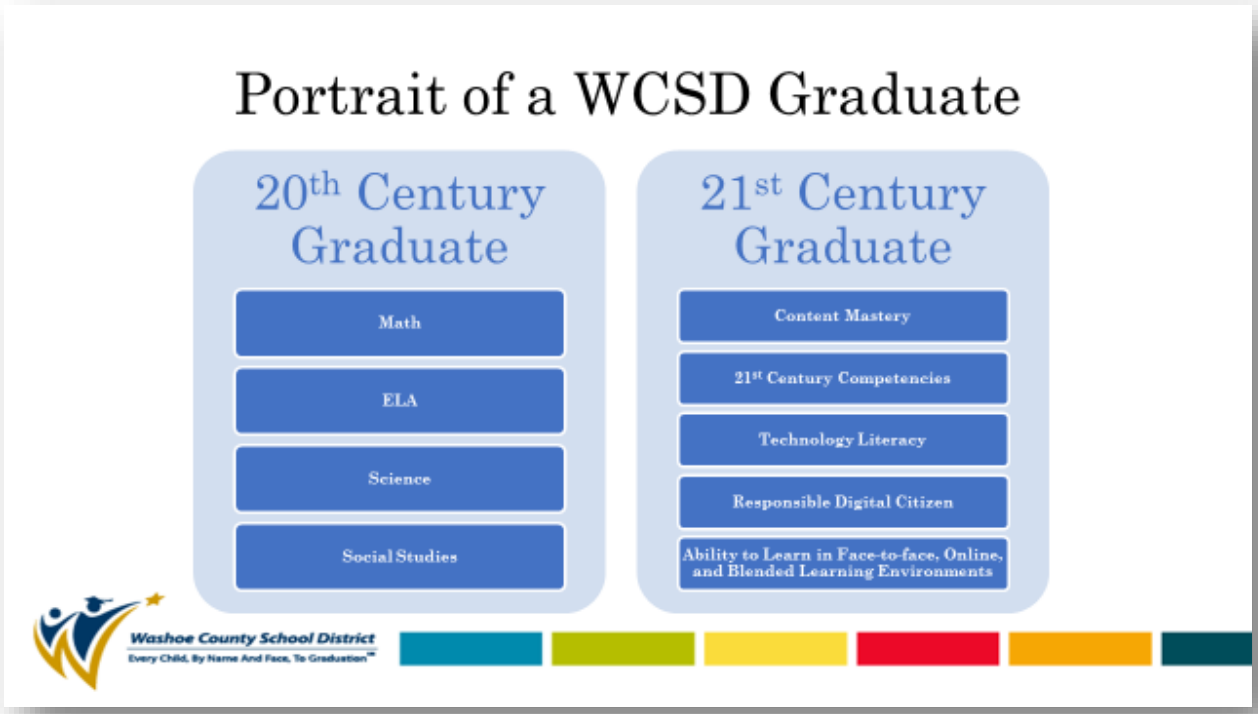
The *WCSD21* Project Timeline is available at https://washoeschools-public.sharepoint.com/InformationTechnologyDocuments/WCSD21/WCSD21%20Timeline.xlsx?d=w2de4fea22d52494f9641f0522efed5e2.

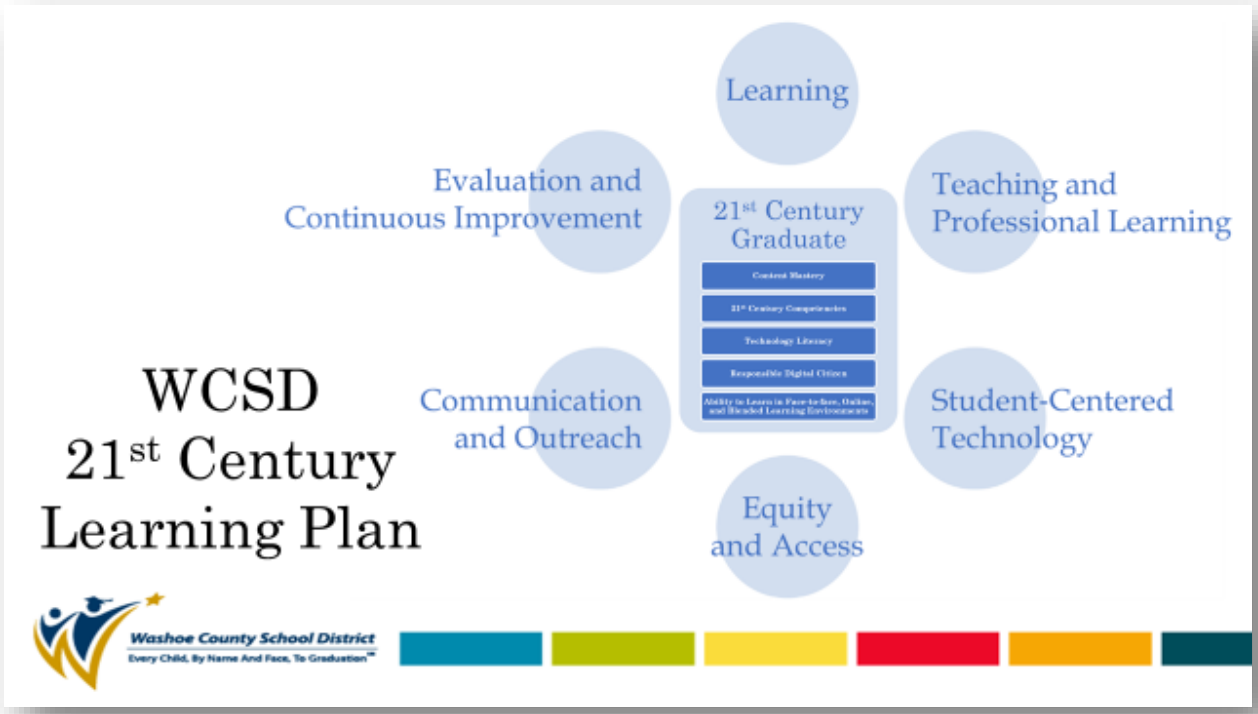
## Appendix G: *WCSD21* Budget Spreadsheets

The *WCSD21* Budget spreadsheets are available at https://washoeschools-public.sharepoint.com/InformationTechnologyDocuments/WCSD21/WCSD21%20Budget.xlsm?d=wf541eb4fbbd44fc6b2f35a2f44819397.

## Appendix H: Board of Trustees Presentation





Portrait of a WCSD Graduate
20th Century Graduate
Math
ELA
Science
Social Studies
21st Century Graduate
Content Mastery
21st Century Competencies
Technology Literacy
Responsible Digital Citizen
Ability to Learn in Face-to-face, Online, and Blended Learning Environments
Washoe County School District
Every Child, By Name And Face, To Graduation


WCSD 21st Century Learning Plan
Learning
Evaluation and Continuous Improvement
Teaching and Professional Learning
21st Century Graduate
Communication and Outreach
Student-Centered Technology
Equity and Access
Washoe County School District
Every Child, By Name And Face, To Graduation

Learning

# Learning Outcomes for Students

## 21st Century Graduate

- Content Mastery
- 21st Century Competencies
- Technology Literacy
- Responsible Digital Citizen
- Ability to Learn in Face-to-face, Online, and Blended Learning Environments

Washoe County School District
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## Student-Centered Technology

- **Regular, equitable access to digital technology is essential if students are to achieve 21st Century outcomes**
- **1:1 Learning Environments assure equitable 24/7 access**

## Equity and Access

- **Traditionally underserved groups benefit from 21st Century instructional strategies and the use of technology for learning**
- **Digital Equity Gap**

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# Policies, Procedures

- Board Policy 7200: Digital Learning
  - Administrative Regulation 7200
    - Responsible Use
    - Student Email
    - Digital Learning and Productivity Tools (O365, Google Apps)
    - Bring-Your-Own-Device (BYOD)
- Board Policy 7205: Data Access

(Policies will adapt to stay current with changes in technology)

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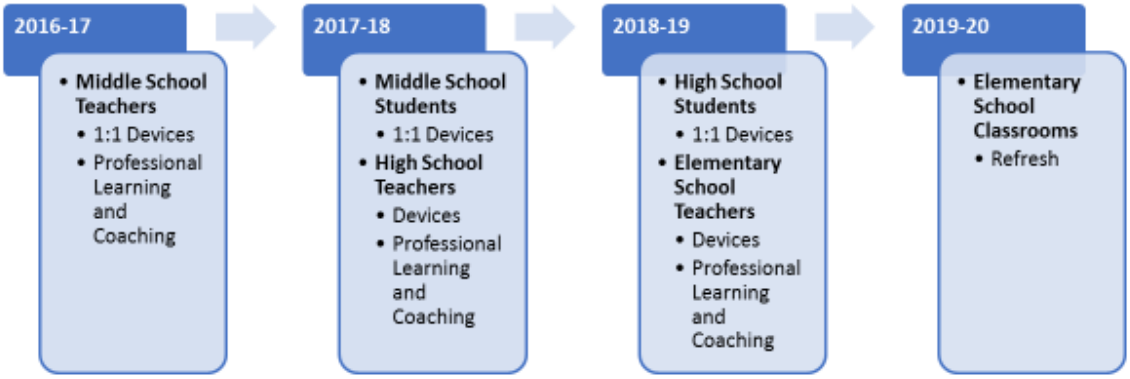
# Rollout Plan

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# Budget

- Infrastructure
- Student / Teacher Devices
- IT Services and Staffing
- 21st Century Learning Support
- 21st Century Instructional Coaching

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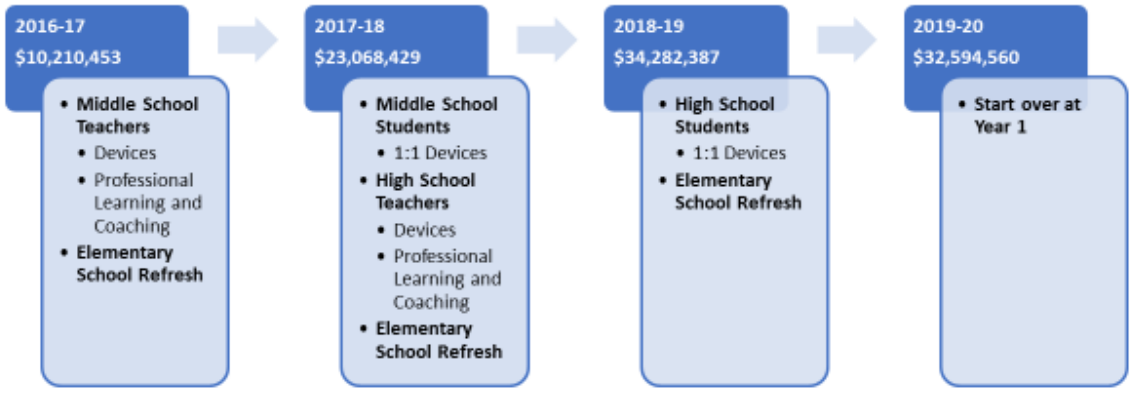
# Budget




**Ongoing Annual Per-Seat Cost: $494**

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Questions?
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## Appendix I: Additional Links

*National Education Technology Plan 2010*

*Nevada State Technology Plan – Nevada Ready 21*

*Washoe County School District Technology Plan, 2014-2017*

*Board of Trustees – Strategic Plan Survey Report by Initiative, 2015*

*Learning Forward Standards for Professional Learning*

*Washoe County School District - IT Governance Framework*

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