



Nevada Ready 21
Year 3
Implementation Summary

Presented to the
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Successful technology integration programs provide devices along with technological and pedagogical support; leadership support along with a vision of supporting a technology-rich school culture; student engagement along with opportunities to engage in personalized, self-directed, project-based, and blended learning; and technologically proficient teachers whose instructional practices reflect a belief that technology can enhance student learning (McKnight et al., 2016).

Nevada Ready 21 (NR21), the state's one-to-one technology and learning initiative, is comprised of multiple inputs aligned with these success indicators, including a tiered approach to web-based, virtual, and face-to-face professional development; tools and resources for site-based capacity building; regionally-based digital learning summits; and monthly grant management meetings. During the 2017-18 school year, NR21 provided high-quality professional development to our schools' digital learning coaches, teachers, and administrators; supported schools with timely and tailored device support; disseminated technology and learning resources through a variety of digital platforms; assisted schools in using data for action planning; and launched Nevada's first state-wide drone-coding project.

“The worth [of NR21] is far more than any concern I have had because the bottom line is we have to prepare our kids for jobs that don’t exist now. If you keep the focus on the students then you’re okay because the kids need this. NR21 to me has been a game changer for our school. Nothing is ever perfect, but if you just look at the whole program, we are over 50% free and reduced lunch, so this [Chromebook] might be the only device in their whole home. I feel like we’ve had a lot of support, and we’re just thankful.” ~NR21 Principal~

Aligned to Governor Sandoval's vision of a "New Nevada" to meet the growing demand for high-quality career opportunities, NR21 boasts many benefits for our one-to-one schools including:

- Increased student engagement, as indicated by teacher reports of increased attentiveness in class and on time homework completion
 - 90% of teachers find that students are more productive when using their Chromebook
- Increased student opportunities and ability to apply skills (critical thinking, communication, collaboration, and creativity) needed in the 21st century job market
- Personalized and expanded learning experiences for all students
- Administrative affordances
- Increased student achievement

Increased Student Engagement

In a review of one-to-one programs in K-12 classrooms, Harper and Milman (2016) found that studies of middle school students' 1:1 use reported increased student engagement and motivation, particularly

when students observed teachers using technology during instruction as well. Data, collected using the BrightBytes online survey tool, highlights similar results from our NR21 implementation findings. Teachers report that their students are “very engaged with the curriculum,” and attribute increased engagement to students’ access to their own anytime/anywhere device. One teacher stated, “Teaching at a 1:1 school has increased student engagement by giving my students an opportunity to take learning into their own hands.” Other teachers commented that students are more engaged because they “have access to tools that assist their own learning style,” while others reflected on the ability to actively rather than passively engage students when they each have a device. One teacher stated, “Students are more engaged in the act of producing content, rather than just observing the content (i.e., taking notes).”

Increased student engagement can lead to enhanced student learning, and there is strong support among NR21 stakeholders that “technology use in class can enhance student learning.” When asked about their level of agreement with this statement, 71% of students, 83% of parents, and 87% of teachers agreed or strongly agreed. When asked if “learning is more engaging when using technology,” 56% of students and 78% of teachers agreed or strongly agreed.

Development of 21st Century Skills

The focus on developing students’ and teachers’ 21st century skills is a core component of Nevada Ready 21. Beginning with the program’s signature Canvas course, Nevada Ready Set Go!, and continuing with a compilation of professional development opportunities, NR21 Professional Development Strategists (PDS) and Digital Learning Coaches (DLC) provide teachers with tools, resources, strategies, and hands-on experiences that promote communication, collaboration, critical thinking, and creativity (the 4Cs) in the NR21 classroom.

During the 2017-18 school year:

- New hires at NR21 participated in the Ready Set Go! course
- PDS developed and taught web-based and blended courses including Hyperdocs and the 21st Century Learner, Leveraging Online Tools, and Transformative Teaching
- DLCs focused site-based one-on-one and group training on the 4Cs
- Students collaborated with teachers and other students using Google Docs, Flipgrid, Padlet, and other Web 2.0 applications
- Students transitioned from using paper to keeping digital agendas and digital notes
- Students submitted assignments and received peer and teacher feedback electronically
- Students communicated with scientists, actors, musicians, entrepreneurs, concentration camp and World Trade Center 9/11 survivors via video conference
- Students wrote scripts and recorded and edited videos

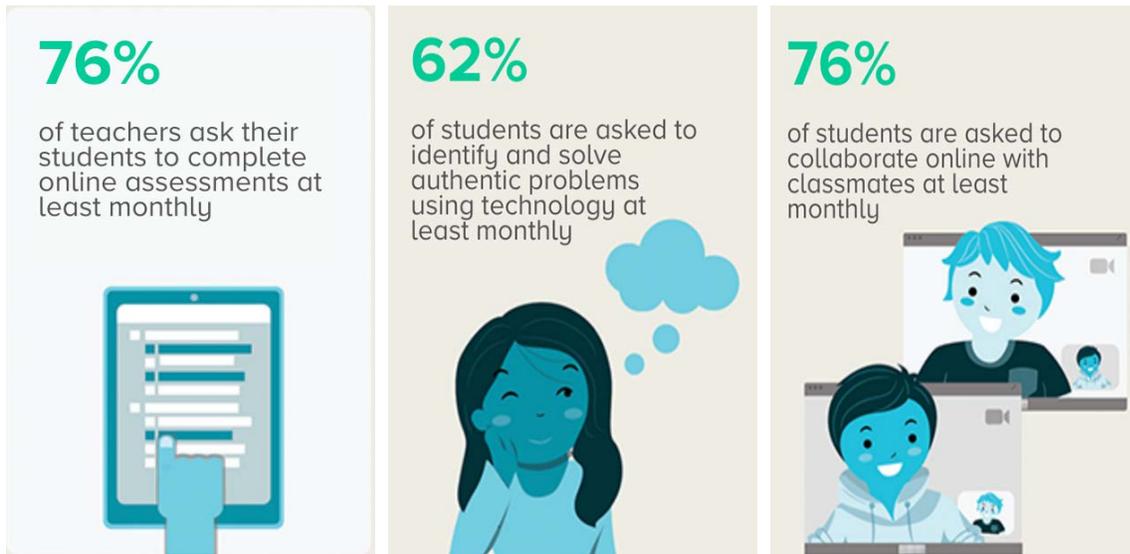
BrightBytes data that measure student and teacher 21st century skills indicate:

- Teacher Use of the 4Cs (as measured by BrightBytes) increased 16 points from Year 2 to Year 3
- Student Use of the 4Cs (as measured by BrightBytes) increased by 16 points from Year 2 to Year 3
- The percentage of students reporting that they use their Chromebook “almost daily” increased from 86% to 90%
- The percentage of students reporting that they are asked to collaborate online with classmates “monthly” or “at least weekly” increased from 70% to 77%
- The percentage of teachers who responded “I don’t teach this” decreased for all success indicators associated with the category teacher digital citizenship (i.e., time spent teaching about legally using web content and time spent teaching about online safety).

“Working with learning disabled students can be quite challenging at times. Providing them with a platform to connect with peers, submit projects, and feel safe is so important. Padlet allows teachers and students to have a place to share and collaborate with others. For shy students in my class, I’m hopeful this will encourage them to participate more in discussion.” ~NR21 Teacher~

As shown in Figure 1, nearly two-thirds of NR21 students are engaged in authentic problem solving at least monthly, and over three-fourths of students are collaborating online with classmates at least monthly.

Figure 1. NR21 BrightBytes Data Highlights on Student Use of Technology



“Students are able to perform at their own pace, their own level, and on their own projects. I am able to collaborate with them, and they are able to collaborate with each other. Students get feedback from me as well as each other. Researching to clarify and understand concepts is at each student’s fingertips on a daily basis.”

~NR21 Teacher~

Development of Career Ready Skills

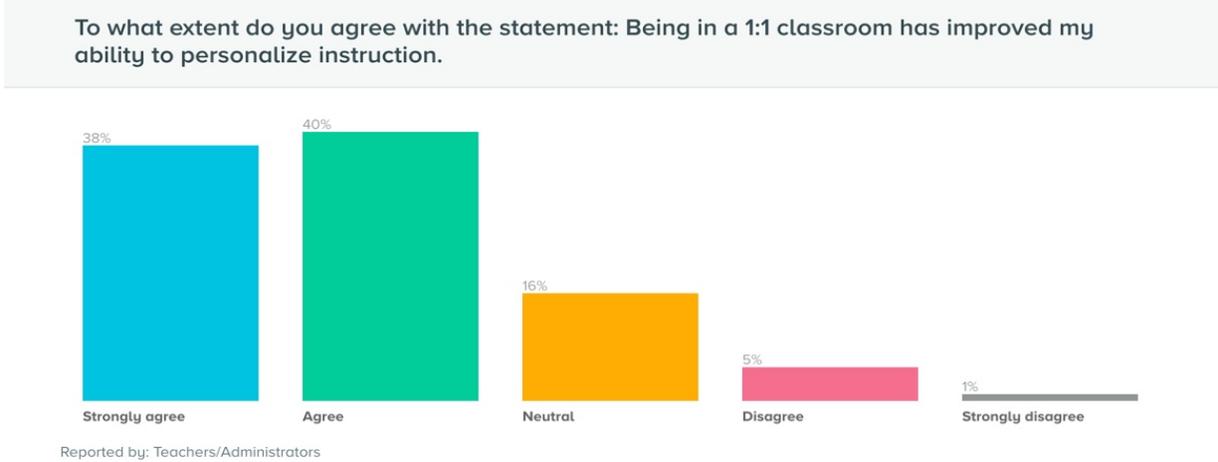
NR21 provides the pathway to schools’ adoption of expanded learning opportunities. Schools are creating electives and expanding their CTE course offerings to include student technology clubs, coding robotics clubs, broadcast journalism, and STEM experiences with 3-D printing and coding drones. These opportunities are not limited to accelerated or general education students. All students are benefitting from these experiences, including a class of deaf and hard of hearing students who piloted the drone coding project. These experiences are exposing students to career opportunities that might not be available were it not for the 1:1 access. As described by one principal, being one-to-one means teachers “don’t have to schedule kids to the computer lab” which leads to increased access to STEM programs.

“The 1:1 gives us more opportunities for the school. We’re on a roll and I love it. We got a \$150,000 grant from CTE and we’re using it to do a makeover on our robotics room. We’re also doing the CISCO training. We’ve become known as a 1:1 school and kids want to come here.” ~NR21 Principal~

Personalized Learning Experiences for All Students

Research conducted by the RAND Corporation suggests that technology plays a crucial role in supporting personalized learning (K-12 Education Team, 2015). When used thoughtfully, “personalized learning approaches provide multiple pathways for students to master the skills and concepts needed to be successful” (Jones, 2016, p. 1). Over three-fourths (78%) of NR21 teachers agree or strongly agree that teaching in a 1:1 classroom improves their ability to personalize learning. When asked to summarize the impact that being one-to-one has had on the learning environment in their classroom, many teachers referenced the increased capacity to differentiate instruction and provide personalized learning experiences.

Figure 2. Teachers' Level of Agreement about 1:1 Improving Personalized Instruction



One teacher stated, "I believe it has been a great benefit in my classroom as I am able to automate some tasks and personalize others for students, which in turn gives me more time to interact with students and give them one-on-one feedback." In NR21 classrooms:

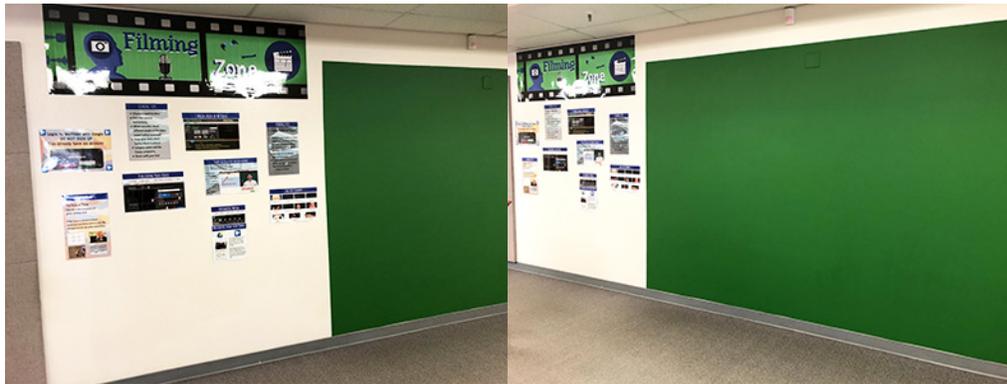
- Students work at their own pace
- Students use content-based software to fill in knowledge gaps
- Students exercise choice in how they want to learn
- Students receive tailored and timely feedback

“One-to-one allows for more individualized instruction, assessment and feedback across digital mediums, which allows for efficient and effective learning. It allows me to communicate with students in new and innovative ways, but more important allows my students to share their ideas in new and innovative ways.”
~NR21 Teacher~

Expanded Learning Opportunities

As teachers' familiarity and comfort with 1:1 device access in their classrooms increases, students' learning experiences have expanded. More teachers are allowing students to create videos as a means of presenting their understanding of content. Video recording, editing, and publishing occur so frequently at one of our NR21 schools that the Digital Learning Coach painted green screens along all of the corridors so multiple groups of students can record videos at the same time. A number of our middle school students are also producing daily and weekly broadcasts for their schools, which include script writing, editing, video recording, video editing, producing, and publishing.

Figure 3. Green Screens in NR21 School Corridor Used for Student Filming



NR21 Drone Coding Project



Students, in five NR21 schools, including one class of deaf and hard of hearing students, coded drones.

Breakout EDU



Students engaged in collaborative game-based problem solving across content areas.

Digital Storytelling



Students created digital storytelling projects in history, science, and English classes.

Student Technology Leaders



Students became “digital advocates” and technology leaders promoting digital citizenship and providing tech support.

Google Expeditions



Students were immersed in virtual field trips with Google Expeditions.

Hour of Code



Students used code.org tutorials to engage in Hour of Code activities.

Affordances of NR21

STREAMLINING STATE TESTING WINDOW

Streamlining the testing window for state assessments is an affordance of being 1:1 that our NR21 principals often cite. NR21 schools have the networking and computing capacity to test all students at

the same time, thus reducing their testing window from weeks to days. Principals report that their ability to decrease their school's testing window provides the gift of increased instructional time.

ASSISTING WITH TEACHER RECRUITMENT AND RETENTION

Principals have also reported that being an NR21 school assists in teacher recruitment and retention. One teacher indicated that after 19 years of teaching, deciding to accept an offer at one of our NR21 schools was the "best professional decision" she had ever made, and many of our returning teachers factor in the shifting culture of being 1:1 as one of the reasons they continue to teach at an NR21 school. As one teacher stated, "Being a 1:1 school is so central to my teaching that I can't imagine what I would do if that were to suddenly change."

BUDGET SAVINGS AND COST AVOIDANCE

Our Program Update administered to school administrators pointed to real or projected budget savings and cost avoidance associated with traditional expenditures such as reduction in printing/copying costs, and decline in textbook purchases. Decreases in one budget area allow for investments in other areas. Many of our schools are allocating expenses for primary and supplementary digital content in mathematics, science, and English language arts that is current and aligned with Common Core standards.

PROJECT MANAGEMENT

The state team manages NR21 with deference to schools' needs. Rather than manage from a one-size-fits-all perspective, NDE is keenly aware that program success lies in offering support aligned with schools' interests and priorities, rather than imposing implementation guidelines. This flexible approach to project management plays out in a number of ways including:

- Offering schools a path to alternative course fulfillment for teachers' whose skills exceed the content presented in the Nevada Ready Set Go course
- Allowing schools to choose Canvas, Google Classroom, or both platforms for their learning management system
- Being responsive to teachers needs and interests when scheduling and planning our digital learning summits.

Increased Student Achievement

Research on the outcomes of one-to-one computing programs indicates that "regardless of students' SES background or ability level" implementing a 1:1 device program "can positively influence achievement in a variety of content areas" (Harper & Milman, 2016, p. 133). Our NR21 schools include IEP populations ranging from seven percent to 19 percent; free and reduced lunch populations ranging

from 20 percent to 100 percent; and English language learner populations ranging from two percent to 47 percent. Among our 23 Cohort 1 schools and five Cohort 2 schools, 61 percent have a 3-Star or higher Nevada School Performance rating. Viewed within the context of these demographics, and comparing baseline data (2015-2016) for all Cohort 1 schools to first year implementation data (2016-2017):

- 6th grade proficiency on Smarter Balanced Assessments increased 40% in ELA and 55% in math
- 7th grade proficiency on Smarter Balanced Assessments increased 45% in ELA and 60% in math
- 8th grade proficiency on Smarter Balanced Assessments increased 10% in ELA and 35% in math
- Across all grade levels (6th-8th), NR21 schools had higher proficiency rates compared to statewide proficiency in both ELA and math

Figure 4. 2016-17 Smarter Balanced Proficiency: ELA

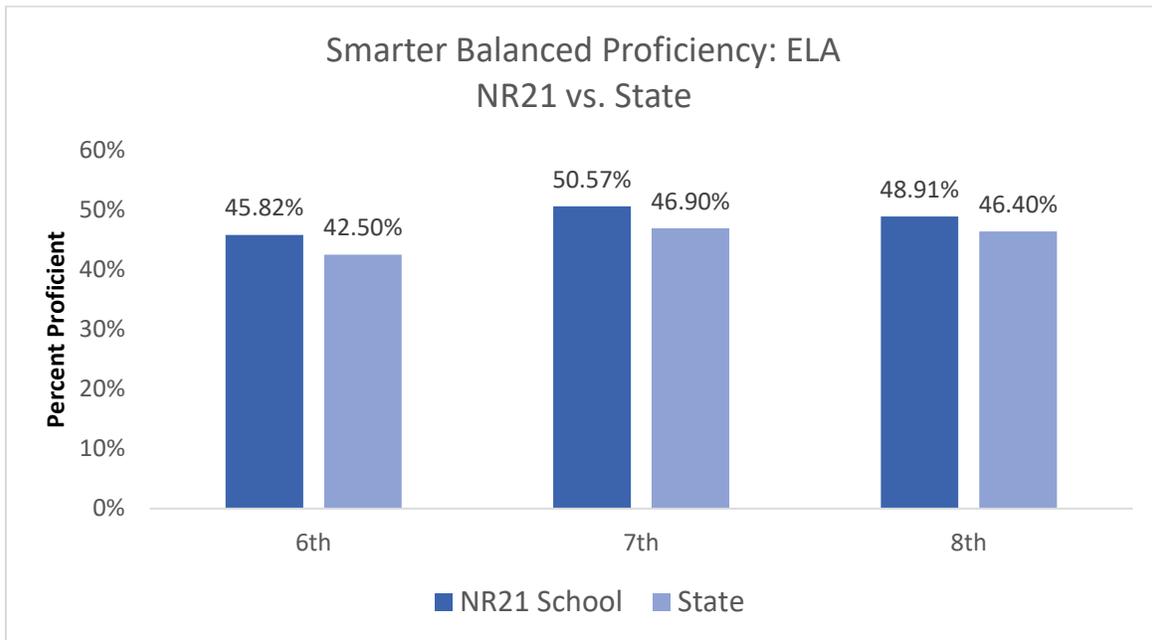
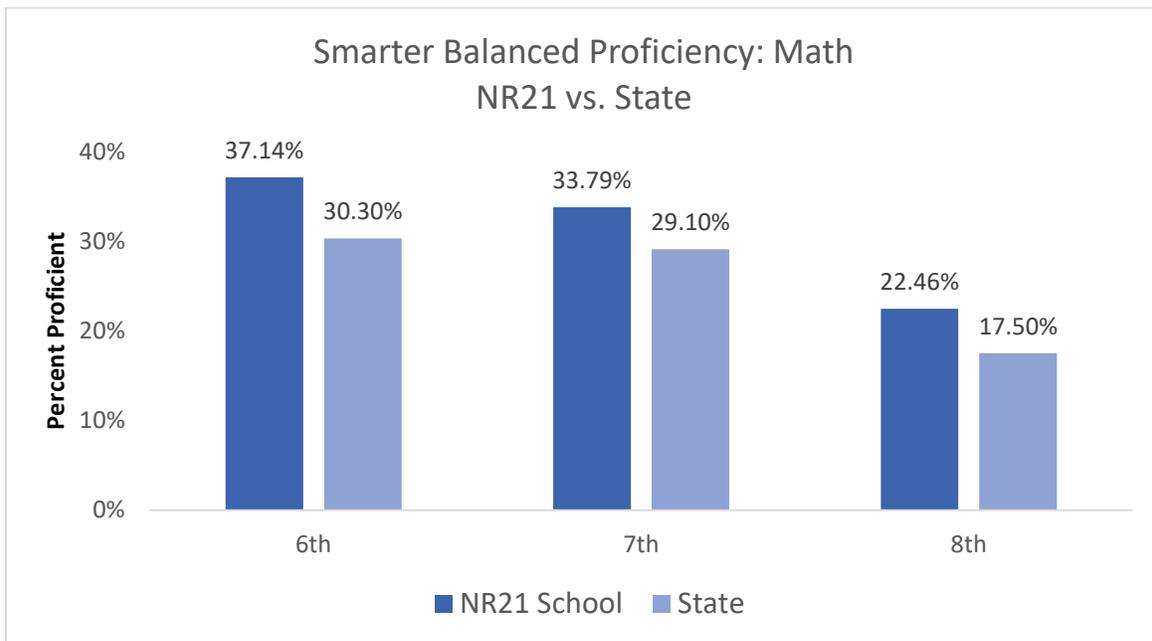


Figure 5. 2016-17 Smarter Balanced Proficiency: Math



In addition to being a technology and learning program, Nevada Ready 21 is also a capacity building program. NR21's program management support, high-quality professional development, and individualized data analytics platform set schools on the path to transform and thrive as the 21st century learning environments where educators create engaging and personalized instruction, and student-

centered learning becomes the norm. We know anecdotally, and from our BrightBytes data, that schools are transforming. This NR21 Year 3 Implementation Report highlights the early outcomes of investing in a statewide 1:1 program that provides students with equitable access to a technology-rich education in which they develop the skills needed to fuel the economic growth of the state.

NR21: More Than a Device Program

Research on the use of technology in classrooms (McKnight et al., 2016) identifies five roles of technology that influence students' learning experiences. Technology integrated into the classroom improves access, builds the capacity to enhance communication and feedback, restructures teacher time, shifts teacher and student roles, and extends the purpose and audience for student work. McKnight et al. (2016) contend that "Access to technology is an important first step in the digital conversion of school systems; however, for the conversion to be successful, it is critical to move the focus beyond the technology itself, to how technology enables teaching and learning" (p. 194).

As a 1:1 program, NR21 eliminates the access barrier for 24,000 5th – 8th graders and 1300 educators across the state. Through a variety of inputs, NR21 builds capacity across Nevada's unique educational landscape, equipping educators with the skills, tools, and resources they need to provide 21st century learning experiences, and preparing students with the technology-enhanced skills they need to compete in the digital age global economy. Built around a solutions-based approach to meeting the needs of 21st century teachers and students, NR21 is shaping Nevada's future through its capacity building efforts, high-quality professional development, and data analytics.

Capacity Building

NR21 sets schools up for successful implementation by providing ongoing device support, which includes CTL's in-state repair depot and unlimited replacement policy. During the 2017-18 school year, only 21 devices, or less than one percent, required replacement due to loss or theft. Each school maintains a three percent buffer stock of Chromebooks which works in conjunction with the repair and replace protocol to support students' uninterrupted access.

The other signature capacity building components of NR21 include networking infrastructure, networking supports, and funding a full-time on-site Digital Learning Coach and Site Based Tech, each of whom has access to training and support from our Professional Development Strategists and CTL, respectively.

High Quality Professional Development

NR21 participants have multiple access points to high-quality professional development. During Year 3, our Professional Development Strategists responded to coaches' and teachers' requests for differentiated support for beginning, intermediate, and advanced technology using educators.

Throughout the year NR21 met educators' professional development needs through online Canvas courses, in-person training, monthly conference calls, webinars, and regional Digital Learning Summits. At each of the Digital Learning Summits, teachers and coaches took on leadership roles and presented Summit workshops. The opportunity to engage in peer-to-peer learning is another way that NR21 supports site-based and statewide capacity for long-term implementation of the one-to-one program. Feedback shared by a Cohort 1 principal and teacher who presented at one of the Summits is indicative of how these opportunities are an essential part of our capacity building efforts.

I feel that through presenting, I was able to add to my PLN [Professional Learning Network] by sharing our implementation experiences with those that attended sessions that I was a part of or leading. I am especially excited to work with folks new to NR21 as they learn and grow through this grant experience. I am learning that it is critically important to share what we are doing with other schools so that we can exchange insights and continue to get better and better at what we do for the benefit of our students.

~NR21 Principal

Just the ability to sit and commune with other like-minded educators to share ideas, apps, extensions, etc. is so very helpful. We as teachers do not have much free time on our hands individually, but as a collective whole we have all sorts of time to research and look up what is of interest to us. Learning from other people that are putting into practice the apps and extensions alone is such a huge time saver. I have yet to leave a Digital Learning Summit without a hundred new ideas.

~NR21 Teacher

NR21 Data Analytics

Nevada Ready 21's partnership with BrightBytes is an essential part of the NR21 Solution. BrightBytes, including technology and learning questionnaires, data dashboards, insights, reports, and action planning workshops, is bundled into the seat price of the NR21 device. The Technology & Learning module is built around BrightBytes' CASE™ framework and includes indicators related to Classroom, Access, Skills, and Environment domains. A CASE score is color-coded and aligned to a 5-point maturity scale: Beginning, Emerging, Proficient, Advanced, and Exemplary.

Starting with our baseline data collection in fall 2016 and continuing with our most recent collection in spring 2018, NR21 schools have consistently returned overall CASE™ scores well above the national average. Statewide, the NR21 score is 1122, or Advanced, compared to 1069, or Proficient, for all schools measuring Technology & Learning outcomes. Figure 6, below, shows the upward trend we see in the comparison of Year 2 and Year 3 data. The data indicate that our Overall score is Advanced, and our Classroom, Access, Skills, and Environment scores are, respectively, Proficient, Exemplary, and Advanced.

Figure 6. NR21 BrightBytes Technology & Learning Trend Data

SERVICE AGENCY	DATE RANGE	OVERALL	CLASSROOM	ACCESS	SKILLS	ENVIRONMENT
Nevada Ready 21 Project	2017 - 2018	1122 ↗	1058 ↗	1238 ↗	1153 ↗	1133 ↗
	2016 - 2017	1109	1041	1230	1142	1122

Nevada Ready 21 uses the Technology & Learning module to assist schools in making data-based decisions around instructional practices, professional development, and school policies and procedures. During Year 3 school leadership teams participated in 3-hour workshops designed to help move them from a state of merely looking at their data to using the data as a starting point for developing action plans for teacher support, student learning experiences, and school improvement.

Shaping Nevada's Future

As we enter our third year of implementation, it is apparent by the outcomes-to-date, that NR21 is helping to shape Nevada's future. Students are increasingly engaged in digital age career ready experiences, students at NR21 schools are outperforming the state in math and ELA, teachers are emerging as leaders and technology using influencers among their colleagues, and school leaders have acknowledged NR21 as a program that makes their existing programs and initiatives better. Principals have referred to NR21 as the "magnet" that precipitated the expansion of STEM initiatives through partnerships with businesses and vendors, and others have highlighted how NR21 supports their recruitment and retention efforts, as well as attracts new students interested in technology-based elective and enrichment courses.

During Year 3, NR21, through a variety of inputs, positioned itself as a program focused on supporting all stakeholders (teachers, students, and administrators, and parents) in understanding that being one-to-one is about more than access to devices. Our efforts continue to support the concept of NR21 as a capacity building program that equips schools with the resources, tools, and strategies they need to produce college and career ready Nevadans.

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