

Technology in Rural Schools



White Paper

Christopher Cook
Data Analyst

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Introduction

The debate around our nation's lowest-performing schools often dismisses rural schools, which comprise an important sector of the education community.¹ Rural schools are rarely the focus of studies and policy analyses. Federal regulations and requirements too often take a one-size-fits-all approach towards school achievement, failing to consider the unique qualities of rural schools and school districts.²

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Public schools in rural areas educate approximately 12.4 million children in America, which accounts for nearly one-quarter of total public school enrollment nationwide, and “although a quarter of American public school students are classified as rural, about one-third of all schools and 57% of school districts are considered rural.”³ Given this, and that a large portion of the US workforce is comprised of rural students, it's unfortunate that rural schools are overlooked in public policy debates and in academic scholarship.⁴

This case study provides an overview of the challenges for rural schools and districts as they relate to technology post-ESSA (Every Student Succeeds Act). In addition, we explore the characteristics of successful instructional technology programs based on research studies involving rural school districts and technology.

Every Student Succeeds Act (ESSA)

Before the passage of the Every Student Succeeds Act (ESSA), rural schools faced six problems, which No Child Left Behind (NCLB) either exacerbated or ignored:

1. Administrative handicaps due to short-staffing at schools.
2. Funding formulas that disproportionately affect schools with low enrollment rates regardless of the percentage of low-income students.
3. Challenges in retaining teachers



4. Teacher quality requirements that were difficult for teachers teaching multiple subjects
5. Low student enrollment
6. Limited and unfinanced access to technology.⁵

As a school turnaround model, many schools integrate technology into classroom instruction. However, these problems, which apply almost exclusively to rural schools, impact the implementation and success of a technology-based turnaround model.

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¹Parsley, Danette, and Rhonda Barton. “The myth of the little red schoolhouse: Challenges and opportunities for rural school improvement.” *Peabody Journal of Education* 90.2 (2015): 191-193.

²Id.

³Schafft, Kai A. “Rural education as rural development: Understanding the rural school–community well-being linkage in a 21st-century policy context.” *Peabody Journal of Education* 91.2 (2016): 137-154.

⁴Id.

⁵Dulgerian, Deena. “The impact of the every student succeeds act on rural schools.” *Georgetown Journal on Poverty Law & Policy* 24.1 (2016): 111-138.

The Every Student Succeeds Act, which was signed into law in 2015, sufficiently resolved some of the problems listed in the previous paragraph. To address administrative handicaps, “ESSA creates three rural-specific systems that have the potential to ease the administrative handicaps from which rural schools suffer:

1. A comprehensive review and report of rural schools’ needs.
2. Outreach and technical assistance to rural schools for competitive grants.
3. An application consolidation plan that allows multiple schools to submit one application for an ESSA-funded program.”⁶

This increases the chances that a rural school district will have a voice on the federal level when competing for grants and other resources.

“ *Rural schools now have the infrastructure to incorporate technology into curriculum and have the grant money to fund that technology.*”

NCLB’s highly-qualified teacher requirement placed a “burden on rural teachers who commonly teach multiple subjects.”⁷ This requirement also made it especially difficult for rural schools to find federally qualified special education teachers.⁸ However, “under ESSA, states have more authority in accountability, teacher licensing, and use of funds, and the contentious highly-qualified teacher requirement was eliminated.”⁹ This gives districts more flexibility in hiring administrators and teachers that may serve a “jack-of-all-trades” role within a school.

While ESSA hasn’t solved every problem rural schools face, it has addressed many of the major problems. Rural schools now, for the most part, have the infrastructure to incorporate technology into the curriculum and have the grant money to fund that technology. This is largely due to online, high-stakes testing in most states. The following sections will look at the value of education technology and the implementation hurdles for rural schools.

Education Technology

Education technology can mean various things, which is why research on the topic can be controversial. Education technology could include a computer lab, 1:1 tablet initiative, educational software, etc. So, claiming education technology “works” or “doesn’t work” is an overly simplistic approach—and the answer would be, “it depends.” There are certain types of targeted education technologies that have been shown to promote student achievement, however teacher buy-in and fidelity of implementation can impact the success of any program.

The most basic form of education technology is providing students with access to computers and the internet. This type of initiative is the most controversial in the academic literature because students’ learning gains depend entirely on how they are spending their time on the devices. A group of researchers analyzed the impact of a technology initiative in Ohio where students were given laptop computers. Researchers found that spending too much time on computers was actually detrimental to student GPA—quality of time was more valuable than quantity.¹⁰ The technologies that had a positive impact on student GPA “were those related to specific subject areas and that emphasize student construction.”¹¹ There’s a consensus in the academic literature around the idea of providing students with technology tasks that are relevant to subject areas and coursework.

⁶Dulgerian, Deena. “The impact of the every student succeeds act on rural schools.” *Georgetown Journal on Poverty Law & Policy* 24.1 (2016): 111-138.

⁷Id.

⁸Sindelar, Paul T., et al. “The demand for special education teachers in rural schools revisited: An update on progress.” *Rural Special Education Quarterly* 37.1 (2018): 12-20.

⁹Dulgerian, Deena. “The impact of the every student succeeds act on rural schools.” *Georgetown Journal on Poverty Law & Policy* 24.1 (2016): 111-138.

¹⁰Lei, Jing, and Yong Zhao. “Technology uses and student achievement: A longitudinal study.” *Computers & Education* 49.2 (2007): 284-296.

¹¹Id.

A popular way to integrate technology with relevant learning materials is the use of educational games. One of the most widely cited research papers on the impact of educational computer games on student achievement found positive results. The researchers gave a group of students, kindergarten through eighth grade, access to educational computer games, testing them before and after the intervention. In analyzing the pre and post achievement tests, the researchers found that “students made significant learning gains by participating in the game-based learning environment.”¹² The educational games affected more than just test scores, “it was found that students demonstrated statistically significant higher intrinsic motivations and statistically significant lower extrinsic motivations learning in the game-based environment.”¹³ Using technology to provide students with information relevant to their coursework promotes student achievement. So, the right technology does promote student growth, but the technology must be well implemented, and teachers need to be bought in.

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One requirement for education technology, like educational computer games, to work is for students to actually use the technology. If teachers don’t buy into the implementation of a new educational software, it’s more likely to fail (or collect dust). A synthesis of four empirical studies on 1:1 laptop initiatives found that “teachers play an essential role in the effective implementation of 1:1 initiatives and that the on-us of responsibility for implementation often falls to the teacher.” Bebell and Kay concluded it is “impossible to overstate the power of individual teachers in the success or failure of 1:1 computing.”¹⁴ Shapely found “core-subject teachers’ extent of Classroom immersion was associated at a statistically significant level with their perceptions of the strength of the school’s administrative leadership, teachers’ collective support for technology innovation.”¹⁵

One way to promote teacher buy-in is to provide professional development to the teachers—in these papers, quality professional development was correlated with better teacher buy-in and implementation. In a survey, respondents at higher implementing schools reported “that committed leaders, thorough planning, teacher buy-in, preliminary professional development for teachers, and a commitment to the transformation of student learning were keys to their successful implementation of technology immersion.”¹

Iowa's Adoption of Education Technology

Another area in which rural schools have been overlooked in the academic research is in the adoption, implementation, and efficacy of educational technology. However, in the summer of 2019 a case study was published on this very issue. A group of rural school districts in Iowa were given a 1:1 technology initiative, and the results were published.

Rural Iowa school districts served by the Central Rivers Area Education Agency formed the “Iowa Learning and Technology Networked Improvement Community.” These rural school districts provided a tablet or laptop to every student and teacher, with a goal of incorporating technology into the classroom to promote student achievement. To inform the implementation and measure the success of this program, the American Institutes for Research (AIR) conducted “a descriptive research study to describe the extent to which teachers are using technology to support the development of 21st century skills and describe teacher perceptions and school supports related to technology integration.”¹⁷

This survey data was collected by AIR to measure the implementation of rural Iowa's 1:1 technology initiative. The data reflects teacher attitudes towards the implementation and efficacy of the technology.

The Iowa schools were able to implement the technology quite smoothly, “93 percent of teachers reported having access to computers for student use, and 64 percent reported that technical support is above average or excellent.”¹⁸ Survey data also showed that “89 percent of teachers reported that their students use technology almost daily or weekly.”¹⁹ However, implementation is about more than just providing the physical hardware to the teachers and students. Implementation also includes professional development, embedding technology into daily routines, meetings, evaluations, and classroom observations.

¹² Tüzün, Hakan, et al. “The effects of computer games on primary school students' achievement and motivation in geography learning.” *Computers & Education* 52.1 (2009): 68-77.

¹³Id.

¹⁴Bebell, D., & Kay, R. (2010). One to One Computing: A Summary of the Quantitative Results from the Berkshire Wireless Learning Initiative. *Sheehan Journal of Technology, Learning, and Assessment*, 9(2).

¹⁵Shapley, K.S., , D., Maloney, C., & Garanikas-Walker, F. (2010). Evaluating the Implementation Fidelity of Technology Immersion and its Relationship with Student Achievement. *Journal of Technology, Learning, and Assessment*, 9(4).

¹⁶Id.

¹⁷Margolin, Jonathan, Jingtong Pan, and Rui Yang. “Technology Use in Instruction and Teacher Perceptions of School Support for Technology Use in Iowa High Schools.” *Regional Educational Laboratory Midwest* (2019).

¹⁸Id.

¹⁹Id.

The survey data revealed one flaw in Iowa's implementation, only "36 percent of teachers rated the quality of technology-focused professional development as above average or excellent."²⁰ Teachers had adequate access to computers, the internet, and technical support, but teachers did not receive technology-focused professional development. The academic research around professional development is quite clear, "a broad research consensus suggests that to be effective, technology-focused professional development must be sustained and directly relevant to teachers' content-specific instructional practice."²¹

Iowa's implementation was successful because all the students and teachers had physical access to the technology. Additionally, this teacher survey data provides us with a blueprint for a successful sustained implementation that embeds the technology into the daily and weekly routines of teachers and students. The teachers also believe the technology is useful, "78% of teachers agreed that technology enhances student learning and that they have the ability to integrate technology with instruction."²² Only 1% of teachers disagreed or strongly disagreed that technology enhances student learning. Therefore, the challenge is finding the right technology that provides both relevant coursework for students and can be easily implemented by teachers and other staff.

Effective technology solutions

The right technology solution should have the following characteristics:

1. Instructional technology that embeds teaching the curriculum and is not just used as a reward for students.
2. Individualized learning - a massive benefit of technology is its ability to analyze data and provide students with relevant instruction to remediate or enrich. Individualization is a must-have when looking for technology particularly in rural schools where teacher capacity may be even more of a challenge.
3. The research cited above makes it clear that teacher buy-in and adoption is critical to success. An intuitive platform paired with professional development to support teachers will increase adoption and buy in.

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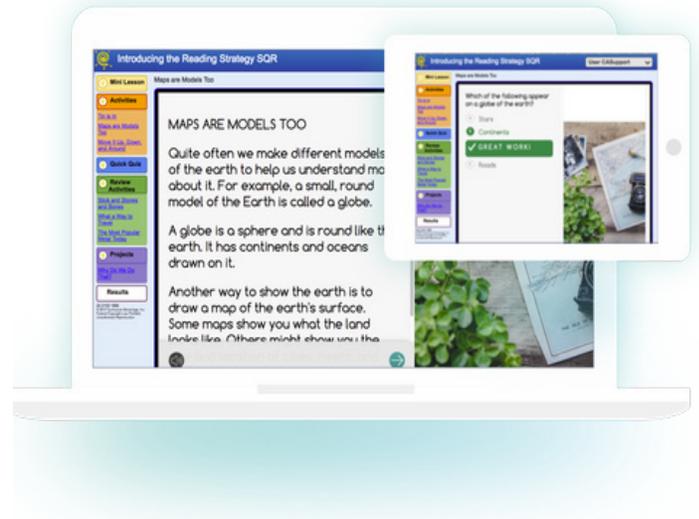


Classworks instructional technology program

Classworks is an innovation that bridges the gap between technology and curriculum. In the Iowa case study, although students were frequently using technology in the classrooms, sometimes teachers had a hard time incorporating technology in ways that promoted student growth. Teachers also found it challenging to come up with lesson plans that incorporated technology usage. Classworks provides teachers with weekly technology-based lesson plans in Reading and Mathematics that support rigorous teaching of state standards through the platform.

Lei and Zhao found that education technology relevant to grade-level subject matter is more closely related to student growth than free-range technology use.

Classworks also provides students with curriculum games and activities that challenge students based on their prior achievement. We use student test scores on our nationally validated assessment, or a partner assessment like NWEA MAP Growth or Star, to identify skills and materials that can help struggling students catch up with their peers or challenge high-performing students. This approach is confirmed by Tuzun's analysis of educational computer games (that are relevant to student's coursework) and student achievement.²³



²⁰Id.

²¹Croft, Coggshall, Dolan, & Powers, 2010; Davies & West, 2014; Jang, 2010; Kopcha, 2012; see also Darling-Hammond & Rothman, 2015

²²Margolin, Jonathan, Jingtong Pan, and Rui Yang. "Technology Use in Instruction and Teacher Perceptions of School Support for Technology Use in Iowa High Schools." Regional Educational Laboratory Midwest (2019).

²³Tüzün, Hakan, et al. "The effects of computer games on primary school students' achievement and motivation in geography learning." Computers & Education 52.1 (2009): 68-77.

Approximately half of the schools or districts Classworks partners with are considered rural or town school districts, using the NCES classifications. In an analysis of student achievement across these rural schools, we found that students using Classworks saw 10% more growth in mathematics and 12% more growth in reading (as compared to their peers who weren't exposed to Classworks). These results are consistent with academic literature cited above, specifically Lei and Zhao & Tuzun's conclusion that targeted, relevant education technology promotes student achievement.

To support rural school districts to overcome the common challenges of adoption and fidelity of implementation, Classworks provides professional development that includes a variety of approaches from hands on coaching and workshops to online certification courses. An analysis of the 2018-2019 professional learning survey data shows that Classworks training is highly recommended. Analysis of over 7,000 responses show the following:

- 98.9% of teachers would recommend training;
- 94.1% felt the pace of training was just right;
- 72.1% felt ready to achieve their goals with Classworks;
- 97% knew where to find help.

There are some clear challenges experienced by rural school districts with regards to increasing achievement and improving overall school performance. However, research clearly indicates that finding the right educational technology and investing time and resources in providing professional development can lead to greater student success and increased overall school performance.

For more information, contact Classworks at help@classworks.com, call 770-355-5555 or visit www.classworks.com.

