

KDP Reasoned VOICE provides current information for educators and interested stakeholders to reference when advocating a position on an educational issue. Developed by members of the Kappa Delta Pi Public Policy Committee, this issue of KDP Reasoned VOICE is divided into six sections: (1) introduction; (2) an overview of standards and policies to guide technology integration; (3) challenges; (4) success stories; (5) recommendations and resources; and (6) conclusion. Advocates are encouraged to conduct their own investigations to verify and supplement this information.

The authors of this issue of KDP Reasoned VOICE are William Sterrett, Matt Ohlson, and Gary Miller, along with members of the KDP Public Policy Committee, including Nathan Bond, Marilyn Cook, Caroline Courter, John Helgeson, and Anne Roycroft.

ISSUE NO. 3: TECHNOLOGY AND LEARNING

Part 1: Introduction

A century ago, John Dewey argued that the student “ought to *do* things in school” (Dewey, 1915/1979, p. 254, emphasis added). He explained, “If text-books are used as the sole material, the work is much harder for the teacher, for besides teaching everything herself she must constantly repress and cut off the impulses of the child towards action” (p. 255). In the decades since Dewey made these observations, technological innovations have exponentially expanded the range of materials available to encourage students’ impulses toward action, and to provide critical support to teachers and school leaders. The rise of information technology and its associated applications and devices has created exciting possibilities to revolutionize teaching and learning in schools, and thus to allow students to *do* more. With technology, students can gain more access to information and demonstrate their learning in robust ways, teachers can innovate their instruction, and schools can employ greater flexibility in delivering courses in various on-campus and online formats.

The dilemma that educators and policy makers face is the implementation of technology. Early adopters embraced it quickly, while others waited cautiously—as if technology was a fad that would eventually fade away. It did not. In the United States today, public schools provide at least one computer for every five students, spend more than \$8 billion annually on hardware and software, increasingly administer standardized tests via computers, and educate approximately 200,000 students in publicly funded online charter schools (Herold, 2016).

The purpose of this white paper is to provide educators, students, parents, and policy makers with an overview of issues related to technology implementation and use. We review the advice that specialized professional organizations have offered for implementation at the classroom and district levels. Representative challenges and success stories are examined. The paper also discusses resources and recommendations regarding technology implementation, in the hope that proponents of technology will use this information to advocate at the local, state, and national levels for

expanded technology use. Findings from respected scholars researching in the field support the examination throughout.

Part 2: Standards and Policies to Guide Technology Integration

Various national and international professional organizations exist to support educators who pursue technology integration. These organizations have devoted significant efforts to developing standards intended to support educators' implementation work or to inform their advocacy efforts. Additional forms of guidelines may be developed at the state, local, and school levels. We provide a brief overview of the most relevant standards and guidelines here.

International Society for Technology in Education

The International Society for Technology in Education (ISTE) is a professional organization that advocates for adopting technology strategies that positively affect teaching and learning in elementary and secondary schools, and for transforming classrooms into technology-rich learning environments (ISTE, n.d.-b). ISTE has identified 14 essential elements required to effectively leverage technology for learning, including equitable access, ongoing professional development, student-centered learning, and policies and initiatives supporting teacher and school preparation programs in the effective implementation of technology (ISTE, n.d.-a).

ISTE recognizes that administrators and teachers are critical to the successful design and implementation of effective learning and teaching environments. ISTE has developed standards for administrators (ISTE, 2009) and teachers (ISTE, 2008) that encourage educational professionals to inspire and lead a shared vision of purposeful change through integrating technology into teaching and learning. By helping educators to design relevant learning experiences, digital tools and resources promote student learning and creativity, thereby advancing essential student skills necessary for success in a digital-age learning society.

International Association for K–12 Online Learning

The International Association for K–12 Online Learning (iNACOL) urges the equitable and effective incorporation of digital learning in the online and blended environment, and recommends the use of the association's national standards for quality (iNACOL, 2011a; iNACOL, 2011b) for both teachers and course providers. With millions of students now enrolled in blended or online courses each semester, iNACOL champions the increasing need for vigilance in the marketplace and quality assurance in the classroom, including policy changes that promote student access, such as efforts to increase broadband connectivity. Additional policy considerations suggested by iNACOL involve the expansion of support for innovative educators, including those blending and using open educational resources; competency-based educational systems and policies that rely on mastery-based evidence of learning rather than seat-time calculations to measure learning gains; and improvements in measuring effectiveness (Worthen & Patrick, 2015).

Acceptable-Use Policy

In addition to adopting standards developed by national and international professional organizations, educators create and adapt policies at the state, local, and school levels. An example is an Acceptable-Use Policy (AUP), which communicates guidelines that are agreed upon by students, families, educators, and staff members regarding terms and conditions of technology use. These policies should clearly define the expectations and guidelines for using school technology and Internet access, serving to support student learning, protect the greater school community, and ensure compliance with existing laws. In an educational era when issues related to student privacy, excessive advertising, access to inappropriate material, and exposure to online predators have become more common, an AUP can provide clear direction on how to navigate the use of digital technologies with competence and a sense of security (McLeod, 2015).

The attributes of the most comprehensive AUPs support the design, implementation, and integrity of various aspects of technology usage, including digital citizenship, prevention of cyberbullying, equitable access, technology professional development customized to meet the needs of diverse learning environments (e.g., school or districts), and web filtering. Augmenting the effectiveness of an AUP is the communication of relevant and timely policy statements in relation to the ever-changing advances in technology and diverse needs of schools, districts, and students. Therefore, consistently soliciting feedback and continuously modifying policies and practices to fit the vision and outcomes of technology implementation are imperative.

Privacy Standards

The privacy of student and staff data has become a significant policy issue for leaders and stakeholders at the local, state, and national levels. Noteworthy data breaches in locations throughout the United States have resulted in identity theft, Family Educational Rights and Privacy Act violations, and legal actions.

In response to this growing issue, policy makers and practitioners are beginning to offer new guidance today to help school systems and educators interpret and understand the major laws and best practices protecting student and staff privacy while using digital resources. Schools and districts are urged to ensure the security of information privacy in the contexts of offsite resources such as data warehousing, cloud-based technology, and mobile applications, in addition to maintaining the security of onsite systems and personal accounts. The U.S. Department of Education's Privacy Technical Assistance Center (PTAC, 2015) has provided resources to support schools in developing student privacy programs, which it defines as "a set of policies and procedures, roles, and responsibilities designed to help districts keep students' personal information safe; comply with privacy laws; and protect both students and districts from harm resulting from unauthorized disclosure of private information" (PTAC, 2015, p. 1). Privacy programs should also address the safeguarding of staff data. Recommended practices and policies when considering the development of such programs include the following:

1. Engage leadership in the development, implementation, and evaluation of the student and staff privacy program.
2. Involve a variety of stakeholders when determining school and district resources, policies, and potential needs.
3. Designate roles and responsibilities for individuals to monitor, maintain, and implement policies relating to data use and privacy.
4. Provide relevant and timely training to users.
5. Develop a transparency and communication plan to ensure school, district, and community stakeholders are aware of privacy policies and practices (PTAC, 2015).

Part 3: Challenges

Many schools and districts grapple with challenges related to technology access. Affluent areas tend to have a greater ability to integrate technology in classrooms compared to poor or rural districts. Rideout and Katz (2016) reported that “many lower-income families are under-connected” (p. 5) with unreliable or inconsistent Internet access. Districts are trying different approaches to embracing the world of technology, such as experimenting with 1:1 and bring-your-own-device (BYOD) programs. Schools and districts often choose BYOD when 1:1 options are not available. BYOD is becoming a more popular choice, as 88% of teenagers have access to mobile phones and 73% have access to smartphones.

The number of devices in schools and the ability to access technology present various challenges. One of the challenges is mindset. Providing opportunities for students to engage with technology itself does not necessarily make a difference in their learning. Teachers need to have a specific purpose for the use of technology that aligns with designated learning targets to prevent technology from being a distraction. Other challenges may arise due to lack of service, bandwidth issues, or incompatibilities between the range of devices or software platforms in use. Such problems may propel frustration and the fear of exploring different apps or programs when teachers are put in the position of troubleshooting technical situations in which they may not have expertise (Dyer-Duerr, 2016). Professional development opportunities may ease teacher concerns, but such offerings may also be overwhelming in an area where teachers already feel bombarded.

BYOD initiatives have their own unique challenges, such as ensuring devices are adequately charged, correcting for the range of capabilities across students’ devices, and accommodating access impediments due to lost or broken phones or phones that were taken away as a disciplinary action (Dyer-Duerr, 2016). Teachers need to be aware of students without their own devices and provide alternatives for access. BYOD initiatives also face digital literacy and digital citizenship concerns, such as the fear of an increase in cyberbullying. The student mindset concerning devices is also something to consider, as schools educate students that these devices can be used as learning tools. BYOD programs are often seen as options for reducing costs, but costs saved need to be allocated

for infrastructure, support, and additional technology devices (Sheninger, 2012). Schools must also consider the need for on-campus and off-campus network filters.

Part 4: Success Stories

Student Successes

Research has shown that students with specific educational needs have benefited greatly from technology integration (Kirk, Gallagher, Coleman, & Anastasiow, 2011; Zorigian & Job, 2008). Meeting the learning needs of the rapidly expanding English language learner (ELL) population across the United States is an excellent example of the prominent role technology can play in supporting student growth and understanding in the classroom. Billings and Mathison (2012) described the implementation of technology for ELL students, specifically in connection to vocabulary and content development, as a motivating instructional tool and a crucial support of ELLs' linguistic and academic success. Students in the study accessed podcasts via iPods before a teacher-initiated learning sequence. The researchers found that technology was effective in activating schema and scaffolding the unit's vocabulary, and as a result students learned more.

Many of the obstacles to meeting the needs of students with diverse abilities and learning styles can be overcome with the effective use of technology. By creating a differentiated learning path and pace based on a variety of learning modalities, technology can support an engaging and challenging learning environment (Hobgood & Ormsby, 2011; Stanford, Crowe, & Flice, 2010). There are numerous technology-related resources for helping students to access information and augment understanding, including the use of multimedia, text-to-speech applications, concept mapping tools, digital/audio textbooks, and screen/presentation captures. To support the ability of diverse learners to present information, effective technology tools include word processors, speech-to-text features, blogs/wikis, presentation software such as PowerPoint and Prezi, and audio/video recordings (Forgrave, 2002; Hobgood & Ormsby, 2011; Sturm & Rankin-Erickson, 2002).

Teacher Collaborative Efforts

Technology-driven collaboration and professional learning among teachers serve to strengthen not only overall instruction but also the effectiveness of the use of technology with students. Berry (2015/2016) highlighted how teachers from around the world can find support and professional development online more readily than may be available to them in their physical setting. Best practices include using videos available on sites such as the Teaching Channel to observe classroom instruction and train staff in various observation and evaluation models. Teachers also use dynamic online tools such as edWeb, Twitter, and Pinterest to share tools, strategies, and even collaborate on lessons to meet the needs of teachers and students. These technology tools allow for peer collaboration and cross-curricular, customized teaching and learning while overcoming the barriers in traditional settings such as scheduling, coverage, and costs (Sawchuk, 2010; Stevenson, 2004).

Part 5: Recommendations and Resources

It is imperative for schools to create effective professional development opportunities in the area of technology that are timely, affordable, accessible, and meaningful to teaching and learning practices and outcomes (Ohlson & Hanes, 2009; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). The recommendations and resources detailed in this section shed light on the pitfalls that may derail opportunities for successful technology integration and offer proven strategies for meeting the teaching and learning needs of educators.

Look Within to Support the Process

Rather than merely obtaining technology hardware (Smart Boards, tablets, computers, etc.), schools must increase their focus on technology integration support if they wish to see significant changes in classroom practice. Isolated trainings and infrequent workshops rarely result in large-scale changes in instruction. Instead, looking within the school environment to take advantage of the technology skills and best practices of stakeholders is a viable option. Enlisting the help of teachers, administrators, and community members can be a cost-effective strategy to support professional learning and a collaborative culture. Such technology mentors can be a huge asset to a school through sharing best practices and showing other teachers how to benefit from available opportunities. Therefore, rather than sending a teacher to a daylong training session, it may be advantageous to host an onsite training in which the entire school community can participate. Such simple, easy-to-implement strategies used within the context of the school will alleviate apprehension and foster collaboration among stakeholders.

Schools should harness the knowledge of their students, who have grown up as digital natives, and empower them to play a role in the effective integration of technology. McLeod and Richardson (2013) suggested that schools have student teams or assign teachers their own individual student mentors to support the faculty and staff with technology integration. A high school in Massachusetts developed a student-led help desk, allowing students the authentic and engaging learning opportunities needed to be college and career ready (Scheffer, 2015). These types of student-supported initiatives are mutually beneficial to the students and other members of the school community and can be a great way to tap into students' underutilized technology expertise and enthusiasm.

Embrace Professional Learning Networks

Educators can gain much from engaging in a professional learning network. Examples of larger scale initiatives using a collaborative professional learning framework include teacher-driven [Edcamps](#), at which educators plan and lead discussions and guide the experiences to ensure relevant and meaningful outcomes. In addition, these events can be powerful instruments for fostering collaboration, because learning within an Edcamp is not an individual experience, but rather created through interactions such as explanation, dialogue, and negotiation (Carpenter & Linton, 2016). This

collaboration is also augmented with technology; participants can connect via social media to continue sharing best practices and technology tools and resources long after the Edcamp has ended. Best practices include allowing participants to live-tweet during the sessions to share ideas and increase connectivity beyond the session, using pre- and post-program surveys to engage participants in the development of current and future sessions, and ensuring that presenters serve as facilitators of discussion throughout each session (Warden & Pidala, 2015).

Leadership Is Key

While robust, visionary instructional leadership can serve as a catalyst, teacher leadership is important in realizing school-wide professional development (Bond, 2015). Learning will not happen in classrooms merely by purchasing large quantities of technology hardware or investing in bandwidth. School leaders need to be active, engaged participants and modelers who recognize that digital learning is core work, not an ancillary add-on. When educators take a visible, hands-on leadership approach to technology-suffused learning, students benefit—and they deserve no less.

Part 6: Conclusion

For students to be college and career ready, they must be able to communicate with others, solve problems creatively, and apply critical-thinking skills in the classroom and beyond. Technology integration can enhance instruction in the classroom to meet these needs. Educators should consider the powerful potential of emerging technologies to connect students to boundless resources worldwide. However, effective technology integration in schools does not depend merely on the devices or stand-alone professional development, but rather on instructional policies, practices, and leadership. Teachers and school leaders must look for innovative and manageable ways to infuse the use of technology as a tool to augment classroom instruction. In an era of more rigorous standards requiring students to master increasingly complex concepts, technology can bolster teaching and learning.

The Kappa Delta Pi Public Policy Committee has articulated [a position](#) that acknowledges the contributions of teacher preparation and teacher quality to student achievement. The statement asserts that “once they enter the profession, teachers must continue learning in a collaborative manner” and that “teachers should empower students” as self-directed learners while nurturing the development of reflection, critical thinking, and creativity (Kappa Delta Pi, n.d.). The importance of effective applications of technology for advancing these educational goals is both incontrovertible and only likely to increase in coming years—and as such, educators must devote conscious attention to the role of technology in the classroom. Parents and caregivers not only hope that their children will succeed and flourish in school, but also expect that educators will foster relevant, challenging, and meaningful learning. Schools must share equally in these convictions and create an education system that prepares students to fully engage in today’s digitally connected world. Technology can enable us to realize Dewey’s call to learn and to *do* in profound and creative ways.

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