Technology in Special Education

Patricia Wright, PhD, MPH
Christina Whalen, PhD, BCBA-D
Phyllis Wolfram, MA

RethinkEd

Together We Power Potential

Executive Summary

Technology has been a key component of K-12 education for decades (Molnar, 1997). Initially, technology was implemented in schools for modest purposes including tutoring of basic facts and word processing (Taylor, 1980). Technology is now an integral part of the education process, with a host of hardware and software solutions integrated into everything from instruction, classroom management, and systems administration for comprehensive school districts (Fermin & Genesi, 2013). Technology budgets are growing year after year with increased costs for everything from hardware to curriculum (Schaffhauser, 2016).

Technology utilization is established within the special education realm as well. Approximately 13% of children enrolled in schools in the United States receive special education services and supports (National Center for Education Statistics, 2017). Within the Individuals with Disabilities Education Act, assistive technology is considered for all learners receiving special education as part of the Individualized Educational Program (IEP) development process (Individuals with Disabilities Education Act, 2004). Each IEP team must determine if assistive technology is necessary for the student to access and benefit from their education. Individuals with disabilities also must be considered in district technology initiatives ensuring that learners with disabilities have access to the general education curriculum (Smith & Okolo, 2010). Given the considerable number of children enrolled in special education, their needs should be considered in all aspects of technology implementation in schools.

Technology is a growing presence in today's schools. Technologies by themselves do not impact learning, it is through the judicious use of technology when applied to good pedagogy that learning is impacted (Thornburg, 2014). As schools become increasingly tech savvy, the effective integration of technology into school practice produces positive educator and student outcomes.

Table of Contents

Curriculum and Assessment

College and career readiness standards (CCRS) were adopted to establish rigorous goals for all students (U.S. Department of Education, 2017). Standards-based Individualized Education Program (IEP) goals and objectives are an expectation for all students in public schools

> **Technology is a means for diverse learners to access** the general education curriculum.

(Caruana, 2015). IEPs must be written to incorporate standards and educators must adapt their instruction to ensure that it addresses the unique learning needs of the students and the established CCRS standards (Wakeman, Karvonen, & Ahumada, 2013). Technology allows access to the standards-based general education curriculum for many learners with disabilities. Calculators and computer systems allow students with learning disabilities to more efficiently learn algebraic concepts (Strickland & Maccini, 2010), braille music notation encourages participation in music for those with visual impairments (Rush, 2015), and the Universal Design for Learning framework can be utilized in STEM to ensure all learners can access the content (Goecke & Ciotoli, 2014). Software programs are also utilized for learners with disabilities. Commercial software such as PowerPoint might provide increased student success (Naik, 2017) and more specialized software may address physical or intellectual barriers to learning (Carnahan, Williamson, Hollingshead & Israel, 2012). Technology is a means for diverse learners to access the general education curriculum.

Formative and summative assessments are imperative to ensure students are acquiring knowledge and skills from their educational experience. High stakes testing is an albeit controversial, prevalent aspect of the publicschool experience (Plank & Condliffe,

2013). For students with disabilities, accommodations must be made to the testing environment to ensure access and to ensure that the assessment is truly measuring each individual's ability (Johnstone & Thurlow, 2012). Commercial technology such as podcasts (McMahon et al, 2016) and the vast array of assistive technologies must be considered. It is reasonable to assume that the technology students utilize to receive their education would be available within the testing environment. Within special education there is also a group of learners, 1% of the total school population, with significant cognitive disabilities for whom an alternate assessment is afforded (Saven et al, 2016). These assessments utilize multiple assistive technologies to ensure that these students can access the content and demonstrate their competencies.

Universal Design for Learning (UDL) encourages the educators to be flexible in their instructional design and delivery.

Assistive Technology

Assistive technology devices and services were first defined in federal law in the Individuals with Disabilities Education Act of 1990 (Public Law 101-476). In 2004 the definition was altered slightly and now is defined as: any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities. The term does not include a medical device that is surgically implanted, or the replacement of such device (Public Law 108-446).

Technology has long been held as an equalizer for people with disabilities. Within the field of special education, the IEP Team must not only consider the student's need for assistive technology to access and benefit from their education, but must also provide the

support necessary for the student to access their assistive technology. Assistive technology can be something as simple as a pencil grip for a student that has low muscle tone to a complex dedicated high-tech speech generating device utilized by a student that does not have vocal language. Services to support the implementation of that technology might include a technology expert training the educational team on the technology or increased staff supports to ensure the student with a disability is able to utilize their assistive technology. There are many stories of student success through the utilization of assistive technologies (Finlayson & Hamel, 2003; Stumbo, Martin & Hedrick, 2013; Wolfe & Lee, 2007).

Most recently, Universal Design for Learning (UDL) is being integrated into the public-school process (Salend & Whittaker, 2017). UDL is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn (CAST, 2017). UDL encourages the educators to be flexible in their instructional design and delivery, incorporating technology as appropriate to ensure that the needs of all learners, including those with disabilities are met (Nepo, 2017). The use of the UDL framework moves the consideration of assistive technology from the individual learner level, and places the assumption that the educational environment should be designed for all students to access, including those with disabilities.

Practice Management

IEP development and implementation is a primary component of the special education process. Schools typically utilize IEP software to assist in the development and documentation of IEPs as software improves compliance and increases efficiencies for educators (Serfass & Peterson, 2007). Software programs allow multiple service providers to access documentation at the same time and from remote locations, generates reports in

a timely fashion, and can ensure a systematic approach to the development of the program (More & Hart, 2013). However, IEP software is not without its challenges. Adoption of and fluency in technology requires significant training and many educators struggle with finding the time for training and with the integration of recent technologies into their practice (Kopcha, 2012). Similarly, access to competent coaching and training for all teachers is often a struggle for districts. When adopting a software program to assist with IEP development and implementation, there are many factors to consider including price, training time and availability of qualified trainers, features, and integration with other technologies in the district (More & Hart, 2013).

Another emerging technology supports the management of instructional data for students enrolled in special education. A required component of IEPs are measurable goals and objectives. However, progress monitoring of those

> **Technology can help teachers capture data more efficiently** and improve their ability to make data-based teaching decisions.

goals and objectives is difficult, indeed progress monitoring is the least compliant aspect of IDEA (Etscheidt, 2006). Data-based teaching is beneficial to students with disabilities if the data are reviewed and instruction is modified as the data recommends (Stecher, Fuchs & Fuchs, 2005). Data for the goals and objectives should be captured, analyzed, and utilized to make instructional decisions. Historically, teachers have relied on paper to collect data, however, data can distract a teacher during instructional time (Vannest & Hagan-Burke, 2010) and as noted, many teachers are not compliant with this aspect of IDEA. Paper data can easily be misplaced or lost and may result in confidentiality issues. Technology can help teachers capture data more efficiently and improve their ability to make data-based teaching decisions (Vannest et al, 2011). Open source data collection (e.g. Google forms)

are being utilized by educators, however most of these platforms are not easily adjusted to meet the unique needs of students with disabilities. To adequately address the needs of learners with disabilities, particularly those with intensive needs, data must incorporate tracking of student performance over time, quantify rate of improvement and evaluate program effectiveness to determine when and how to modify the intervention and finally to determine when the intervention is no longer necessary (Danielson & Rosenquest, 2014). The practice of special education requires significant collaboration. Special education by nature is a team approach. The IEP team can include multiple players including educators, parents/care-providers, administrators, related service providers and others (Hartmann, 2016). One of the challenges is communication between team members to ensure synthesis of service delivery and support to the student. Technology can enhance collaboration and information sharing within learning environments and among learning communities (Leaning Forward, 2013). Digital tools that hold data and information allow for asynchronous communication removing the barrier of time and space, and may also improve confidentiality by decreasing written notes. Team members can access and contribute to a shared information source as their schedule allows. Actively engaged educational team members focused on student outcomes produces improved student outcomes.

Technology Adoption and Implementation

Technology adoption and implementation requires professional development focused on functionality and application. Workshops are helpful and support technical acumen but they are insufficient for most teachers to engage in technology initiatives (Topper & Lancaster, 2013). While traditional professional development workshops can be helpful for teachers and provide required technical expertise, they may be

> **A thoughtful implementation plan is required** for an evidence-based practice to be implemented with fidelity.

insufficient for most teachers to experience success in technology integration initiatives (Topper & Lancaster, 2013). Often, the beliefs and values for which the technology was initially purchased are not fully realized due to the complex nature of school systems (Lee, Leary, Sellers & Recker, 2014). Indeed, one of the common complaints of school administrators is that technology is purchased but not utilized to its fullest capabilities. Regardless of the effectiveness of an evidence-based practice in research, without a thoughtful implementation plan, that practice is not likely to be implemented with fidelity, and students are not likely to demonstrate the desired progress. Schools must be thoughtful in their adoption of practices, including technology, and they must incorporate the principles of implementation science to promote change management (Horner et al, 2017).

Conclusion

Technology is an integral component of contemporary education. The benefits ofquality technology implemented with fidelity are well documented for learners with and without disabilities. However, adoption of technology can be effortful and school districts are limited in their ability to purchase and maintain appropriate hardware and software and in their ability to provide quality professional development in the use of technology. Schools are encouraged to consider the needs of special education students in their utilization of technology. Universal Design for Learning holds promise for implementing technology and ensuring that the curriculum is accessible to all learners. School leaders

should ensure special. education representation when technology decisions are being made for the district. The thoughtful, judicious use of technology benefits all students and truly can act as a mediator for the challenges experienced by some students with disabilities. Technology has a prominent place in education and students with disabilities are members of the educational community.

> **Technology has a prominent place in education** and students with disabilities are members of the educational community.

References

Caruana, V. (2015). Accessing the common core standards for students with learning disabilities: Strategies for writing standards based IEP goals. Preventing School Failure, 59(4), 237-243.

Carnahan, C.R., Williamson, P.S., Hollingshead, A., & Israel, A. (2012). Using technology to support balanced literacy for students with significant disabilities. Teaching Exceptional Children, 45(1), 20-29.

CAST (2017). Retrieved from; http://www.cast.org/our-work/about-udl.html#WWQgUogrI2w Danielson, L. & Rosenquest, C. (2014). Introduction to the TEC special issue on data-based individualization. Teaching Exceptional Children, 46(4), 6-12. Etsheidt, S.K. (2006). Progress monitoring: legal issues and recommendations for IEP teams. Teaching Exception Children, 38(3), 56-60.

Fermin, M.W. & Genisi, D.J. (2013). History and implementation of classroom technology. Social and Behavioral Sciences, 93, 1603-1617.

Finlayson, M. & Hammel, J. (2003). Providing alternative financing for assistive technology. Journal of Disability Policy Studies 14(2), 109–118, 125.

Goeke, J.L. & Ciotoli, F. (2014). Inclusive STEM: Making integrative curriculum accessible to all students. Children's Technology and Engineering, 18(3), 18-22.

Hartmann, E. (2016). Understanding the everyday practice of individualized education program team members. Journal of Educational & Psychological Consultation, 26(1), 1-24. Hughes, J. E. and Ooms, A. 2004. Content-focused technology inquiry groups: Preparing urban teachers to integrate technology to transform student learning. Journal of Research on Technology in Education, 36(4), 397–411.

Horner, R., Sugai, G., Fixsen, D., Horner, R.H., & Fixsen, D.L. (2017). Implementing effective educational practices at scale of social importance. Clinical Child and Family Psychology Review, 20(1), 25-35.

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004)

Kopcha, T. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. Computers & Education, 59(4), 1109-1121.

Lee, V., Leary, H., Sellers, L, & Recker, M. (2014). The role of school district science coordinators in the district wide appropriate of an online resource discovery and sharing tool for teachers. Journal of Science Education & Technology, 23(3), 309-323.

McMahon, D., Wright, R., Cihak, D.F., Moore, T.C., & Lamb, R., (2015). Podcasts on Mobile Devices as a Read Aloud Testing Accommodation in Secondary Science Assessment. Journal Science Education and Technology. Published online first November 9, 2015.

Learning Forward (2013). Leveraging technology in professional learning. Retrieved from: https://learningforward.org/publications/transform/2013/11/technology-in-professional-learning

Molnar, A.R. (1997). Computers in education: A brief history. T.H.E. Journal, 24(11), 63-68.

More, C.M. & Hart, J.E. (2013). Use of electronic individualized education program software. Teaching Exceptional Children, 45(6), 24-29.

Naik, N. (2017). Dual PowerPoint presentation approach for students with special educational needs and note-takers. European Journal of Special Needs Education, 32(1), 146-152.

National Center for Education Statistics (2017). Retrieved from https://nces.ed.gov/programs/coe/indicator_cgg.asp.

Nepo, K. (2017). The use of technology to improve education. Child & Youth Care Forum, 46(2), 207-221.

Plank, S.B. & Condliffe, B.F. (2013). Pressures of the season: An examination of classroom quality and high stakes accountability. American Educational Research Journal, 50(5), 1152-1182.

Rush, T. (2015). Incorporating assistive technology for students with visual impairments into the music classroom. Music Educators Journal, 102(2), 78-83.

Salend, S.J. & Whittaker, K.R (2017). UDL: A blueprint for success. Educational Leadership, 74(7), 59-63.

Saven, J.L., Anderson, D., Nese, J., Farley, D., & Tindal, G. (2016). Patterns of statewide test participation for students with significant cognitive disabilities. Journal of Special Education, 49(4), 209-220.

Schauffhasuer, D. (2016). Report; Education tech spending on the rise. T.H.E. Journal retrieved from https://thejournal.com/Articles/2016/01/19/Report-Education-Tech-Spending-on-the-Rise.aspx?Page=1

Serfass, C, & Peterson, R. L. (2007). A guide to computer-managed IEP record systems. TEACHING Exceptional Children, 40(1), 16-21.

Smith, S.J. & Okolo, C. (2010). Response to intervention and evidence-based practices: Where does technology fit? Learning Disability Quarterly, 33(4), 257-272.

Stecker, P. M., Fuchs, L. S., & Fuchs, D. (2005). Using curriculum-based measurement to improve student achievement: Review of research. Psychology in the Schools, 42(8), 795–819.

Strickland, T.K. & Maccini, P. (2010). Strategies for teaching algebra to students with learning disabilities: Making research to practice connections. Intervention in School and Clinic, 46(1), 38-45.

Stumbo, N., Martin, J. & Hedrick, B. (2013). Assitive technology: Impact on education, employment, and independence of individuals with physical disabilities. Journal of Vocational Rehabilitation, 30(2), 99-110.

Taylor, R. (1980). The computer in the school: Tutor, tool, tutee. Teachers College Press, New York, NY.

Thornburg, D. (2014). Ed. tech: What's the use? T.H.E. Journal, 41(6), 27-30.

Topper, A. & Lancaster, S. (2013). Common challenges and experiences of school districts that are implementing one-to-one computing initiatives. Computers in the Schools, 30(4), 346-358.

United States Department of Education (2018). College and Career Readiness Standards. Retrieved from: https://www.ed.gov/k-12reforms/standards

Vannest, K.J., Burke, M.D., Payne, T.A., Davis, C.A., & Soares, D.A. (2011). Electronic progress monitoring of IEP goals and objectives. Teaching Exceptional Children, 43(5), 40-51.

Vannest, K. J., & Hagan-Burke, S. (2010). Teacher time use in special education. Remedial and Special Education, 31, 126-142

Wakeman, S., Kavronen, M. & Ahumada, A. (2013). Changing instruction to increase achievement for students with moderate to severe intellectual disabilities. Teaching Exceptional Children, 46(2), 6-13.

Wolfe, G. & Lee, C. (2007). Promising practices for providing alternative media to postsecondary students with print disabilities. Learning Disabilities Research and Practices, 22(4), 256-263.

White Paper

RethinkEd

Together We Power Potential

Rethink First | 49 W. 27th Street, 8th Floor
New York, NY 10001

About Us

Rethink Ed was founded on a simple, yet powerful idea: To re-think education. To make it better and easier. To unburden school districts and empower educators. To improve outcomes and elevate accountability. To promote collaboration and inspire learning. And most importantly, to make a difference in the school day for everyone – administrators, educators, and students.

The Rethink Ed solution is part of Rethink First, a global company that is transforming behavioral healthcare. Similar to Rethink First's other solutions that are innovating and improving outcomes for clinicians and employers globally, Rethink Ed is pioneering EdTech with our relentless pursuit of innovative methods that put evidenced-based, data-informed, digitally delivered instruction and assessments into the hands of educators, clinicians, and parents who share our singularly minded focus: To power the potential of all children and to work together to help them succeed.

Get in touch

info@rethinked.com
(877) 988 - 8871
49 W 27th Street, 8th Floor
New York, NY 10001

RethinkEd
Together We Power Potential