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Supporting Students with Disabilities Through the Intentional Integration of Instructional Technology

by Shalika Robie

The experiences of the pandemic—including emergency remote teaching via video calls and fully virtual, asynchronous learning—emphasized a need for more creativity, innovation, and research-supported instruction to address the needs of all students. Nearly every educator rose to the occasion. According to Pryor et al. (2020), some educators valued the opportunity to participate in out-of-the-box teaching initiatives, and some educators planned to take elements of the experience into their everyday practices. The experience of remote and fully virtual learning was a call that challenged educators to stretch not only in their thinking, but also in their instructional practices. As a result of the challenges, many educators learned more intimately how to integrate technology into their daily practice and better understand the potential for using instructional technology to meet the needs of diverse learners, especially students with disabilities.

Merging Instructional Technology and High Leverage Practices for Students with Disabilities

Digital literacy incorporates digital tools with traditional literacy to solve problems such as creating, searching, communicating, and evaluating information. According to Heitin-Loewus (2016) who quotes the American Library Association's digital literacy task force (2013), digital literacy is defined as "the ability to use information and communication technologies to find, understand, evaluate, create, and communicate digital information, an ability that requires both cognitive and technical skills." (p. page 2 in report PDF). Digital literacy skills are required for all students; however, for students with disabilities it can be a challenge if not taught explicitly, modeled, and reinforced regularly by a competent instructor. If literacy involves the proficiencies of reading and writing, then digital literacy requires the capability to extend those proficiencies in order



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to effectively take advantage of and access the digital world (American Literacy Association, 2013). Digital literacy encompasses jointly teaching technical, social, and cognitive skills, as exemplified by High Leverage Practices (HLPs).

High Leverage Practices (HLPs) in Special Education are evidence-based practices critical for leveraging student learning across various content areas, grade levels, and student abilities and disabilities, representing effective practice in special education (McLeskey et al., 2017). HLPs were created as a collaboration with the Council for Exceptional Children (CEC) and the Collaboration for Effective Educator Development, Accountability and Reform (CEEDAR) to provide instructional practices targeted to special educators for supporting students with disabilities across all tiers of disability. HLPs for Special Education fall into four broad categories—collaboration, assessment, instruction, and social/emotional/behavioral (SEL)—and consist of 22 different practices that include, but are not limited to, flexible grouping, explicit instruction, striving for active student engagement, offering positive and constructive feedback, and integrating assistive and instructional technology.

For instance, HLP 19 requires that teachers “use assistive and instructional technologies:

Teachers select and implement assistive and instructional technologies to support the needs of students with disabilities. They select and use augmentative and alternative communication devices and assistive and instructional technology products to promote student learning and independence. They evaluate new technology options given student needs; make informed instructional decisions grounded in evidence, professional wisdom, and students’ IEP goals; and advocate for administrative support in technology implementation. Teachers use the universal design for learning (UDL) framework to select, design, implement, and evaluate important student outcomes. (Council for Exceptional Children, 2022)

Implementing technology for teaching in conjunction with HLPs can be a recipe for success for students with disabilities within all learning environments, and can enrich learning experiences and outcomes for all learners. Though sometimes more time-consuming to prepare than the standard lesson plan, research suggests that integrating technology and online resources can contribute to learning gains with students of special needs and learning disabilities (Smith & Basham, 2014). For example, teachers can use multimedia presentations to add variety, tools like Mentimeter or Nearpod for embedding quizzes, polls, discussion starters, or checks for understanding. As another example, digital response cards are another option for enhancing student learning experiences. Or, perhaps, teachers can use instructional videos as a form of pre-teaching or reviewing concepts. Another example is to use different kinds of digital graphic organizers for writing assignments. Other more recent and cutting-edge examples include using simulations and virtual reality to teach concepts or using artificial intelligence (AI) to provide immediate feedback and customized interventions for students.

The idea behind embedding digital literacy into daily practices is that it helps to prepare learners for the

future of careers immersed in technology and the ever-evolving culture of learning with technology. These expectations are standards of achievement for all learners, including students with disabilities. The use of digital literacy grants a level of access and equity to underrepresented students. If implemented with fidelity, digital literacy provides opportunities for all students, especially those with disabilities and other diverse learning needs (Alsalem, 2016; Coyne, Pisha, Dalton, Zeph, & Smith 2012; Strangman & Dalton, 2005). Conversely, the pandemic exacerbated technology use within classrooms, and as a result, some teachers avoided it when in-person learning resumed.

In other words, some educators have, unfortunately, reduced or removed technology from their classroom routines; this has a negative effect for all students, especially for students with disabilities. Yes, it can be conceded that, at times, digital tools can be deemed a distraction or a misuse of learning time that could be better spent without technology. The distractions that devices in the classroom can bring about—whether remote or face-to-face—may sometimes be perceived as a possible threat to teachers being able to effectively conduct the class (O’Scanail, 2021). However, when educators feel more confident in their ability to intentionally integrate technology to benefit themselves and their students, they are then more likely to alter their instructional practices to meet their students’ needs.

A Tale of Two Classrooms

What follows are examples of the ways in which two teachers integrated technology into their virtual classrooms during the pandemic shutdown.

Teacher One: Mrs. Ali

Mrs. Ali (pseudonym) is a veteran elementary teacher with 15 years of experience. Her class consisted of 25 fifth-grade students, 15 boys and ten girls. Of the 25 students in her class, three students had disabilities. There was a student with autism and two with specific learning disabilities. They all participated in virtual class sessions during the COVID-19 pandemic mandatory shutdown using Zoom. It was Mrs. Ali and her class’ first experience participating in school beyond the four

walls of a physical classroom setting. During the second month of virtual class sessions, Mrs. Ali noticed how hesitant her students were to actively engage. There was a regular group of about six students that actively engaged in lessons; beyond that, all others kept their computers muted.

To encourage more participation among students, Mrs. Ali would often allow students to use the comment box feature to respond to questions, reward bonus points for responding to questions and engaging, and allow the use of various reaction icons within the Zoom platform. Her favorite “go-to” for allowing students to respond was the thumbs up and down reactions within the platform because it reminded her of the responses she’d typically use in her in-person class session. Mrs. Ali feared that if she allowed too many extra “bells and whistles,” which is how she referred to technology integration, it would take away from the learning outcomes of her students. Mrs. Ali occasionally used Google Slides to show content to her students and would also play videos during class sessions to pre-teach lessons or reinforce concepts. Still, that was the extent of technology use during her virtual class sessions. Limited technology integration was also Mrs. Ali’s preferred method of practice before virtual class sessions. Mrs. Ali attempted to replicate her same in-person instructional practices during virtual sessions, and those practices (teacher talk, slide decks of information, and some opportunities to respond) didn’t always translate well within the virtual class sessions.

Teacher Two: Mr. Hearn

Mr. Hearn (pseudonym), an experienced elementary and secondary teacher of ten years, is a colleague of Ms. Ali. He taught a class of 25 fourth-grade students comprised of 12 boys and 13 girls. Of the 25 students in his classroom, five had identified disabilities. There were three students with specific learning disabilities, one with a hearing impairment, and one with other health impairments who struggled with focusing and paying attention. Mr. Hearn experienced success during virtual class sessions with his students. During any given session, he would have students responding collectively, working in small groups, leading activities for peers, or participating in discussions.

Before the pandemic, Mr. Hearn had taught his students how to use comments and editing within a Google Document to provide and receive immediate feedback on writing assignments. He also shared multiple ways for students to present their understanding of new learning within Google Slides. He had intentionally integrated this use of technology into his daily classroom stations prior to the pandemic. He was experimenting with a flipped classroom where his students had access to audiobooks to read or listen to at home, and during the next class, they would discuss their reading. He constructed interactive slide decks consisting of Google Slides that students had created themselves. These slides provided a way for students to share their new learning. Mr. Hearn allowed students the choice to respond via text, images, video, or audio.

When Mr. Hearn’s class sessions converted to video-based class sessions, his students were already familiar with different components of technology integration, so his transition to a virtual learning environment was smooth. He was easily able to engage his students during virtual class sessions. Mr. Hearn created a schedule aligned with the gradual release model (“I do,” “we do,” and “you do”). He would not lecture to his students for longer than ten minutes; he modeled the concept and then engaged them in a check-for-understanding task, requiring them to respond either verbally (by unmuting their microphone) or by text (by posting a chat message). He would have the students place digital sticky notes on the class Google Jamboard parking lot as proof of learning (e.g., students might place a completed math problem on the board). The Jamboard was Mr. Hearn’s form of an exit ticket and thereby served as a formative assessment.

Throughout the period of remote learning, Mr. Hearn researched opportunities to integrate technology. Through that work, he expanded his learning to include accessibility for his students with disabilities. Right away, he noticed some of them still struggled during virtual class sessions. He learned how to add closed captioning to his videos for his student with a hearing impairment, which may have also, even if indirectly, supported comprehension for other students

as well. He also incorporated the Read & Write Google Chrome add-on feature for his three students with specific learning disabilities who struggled with reading. Read & Write converts text to speech for easier reading and also has the potential to help all students with editing.

Additionally, Mr. Hearn introduced his class to Flipgrid (now simply Flip, after a name change in the middle of 2022), a social learning platform that allows users to participate in class discussions via text or video responses across multiple types of devices. Mr. Hearn used Flipgrid to repurpose some traditional scaffolding strategies, such as incorporating visuals, modeling, and connecting background knowledge. His students enjoyed it, and he used it to engage the class in active learning and discussion.

Mr. Hearn's portrait offers one example of the creativity and resilience some teachers showed in integrating technology for the sake of enriching learning experiences for students during the pandemic—and beyond.

Conclusion

While the global pandemic brought about and highlighted several disparities, inequities, and stress, it has also ushered in a renewed spirit for more creative and innovative instructional practices for teaching and learning process. Make no mistake; a technology itself should not be the focus of learning. It is a tool. Learning goals and outcomes are always first and foremost. That said, as educators, we may be able to take examples of what teachers were able to do to overcome challenges of the pandemic and integrate those strategies into our classrooms to better meet the needs of all students, including students with disabilities.

Actionable Steps for Integrating Instructional Technologies to Support Students with Disabilities

- Ask your students what technology tools they are familiar with.
- Ensure you and your students are comfortable with the technology you select and practice

using it before implementation during high-stakes timeframes.

- Model the use of the technology and use exemplars of end products for students to reference. For instance, if you invite students create a digital concept map of text elements featured in a novel, students should be provided with a completed sample and guided practice to demonstrate how to compose a concept map of their own.
- Offer e-books or audiobooks as options for readers who need assistance with reading aloud or support for comprehension.
- Consider Tar Heel Reader, which reads books aloud to students using more simplistic vocabulary to support students at varying reading levels (tarheelreader.org).
- Integrate Google Slides and Microsoft PowerPoint Presentation, with built-in accessibility features such as closed captioning, voice notes, text-to-speech, and speech-to-text features to assist deaf and hard-of-hearing students and students with learning disabilities who require specific IEP accommodations for reading or note taking supports.
- Utilize Hyperdocs (Highfill, Hilton, & Landis, 2016), which are all-inclusive lessons, that organize resources in one place for students for students who struggle with organization.
- Use digital whiteboards to annotate and model skills like mind mapping.
- Research the International Society for Technology in Education (ISTE) standards for students and ISTE standards for educators. They form the foundation of Michigan's own ed tech standards.
- Research High Leverage Practices for all

Learners (Collaboration for Effective Educator Development, Accountability and Reform, n.d.), as well as the Triple E Framework (Kolb, n.d.) and the SAMR Model (Place, 2022) for technology integration.

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