



Disability, Multiculturalism, and Neurodivergence: The Growing Need for Communication Accessibility in Education

WHITE PAPER

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Executive Summary

Communication accessibility and inclusion in education remain a significant challenge for U.S. schools. This white paper seeks to aid K-12 and post-secondary educators and administrators in exceeding the minimum communication mandates of students with diverse abilities including Deaf and hard-of-hearing (DHH) students, English language learners (ELL) and multilingual families, students with auditory processing disorder, neurodivergent students, and nonverbal students. Overcoming this challenge ensures that every student can thrive in the classroom.

Of the 7 million students (about twice Oklahoma's population) with disabilities in U.S. public schools, approximately 15-20% have neurodivergent traits¹ and more than 8% qualify as English language learners. Given the chronic shortage of special education teachers, meeting the challenge of communication accessibility is paramount².

Students with diverse abilities often have a range of learning styles and needs, requiring multipurpose language accessibility solutions to become full participants in their education. Such accommodations—Augmentative and Alternative Communication (AAC)—can include captioning, multilingual translation, sign language, physical objects, and communication boards³.

Beyond providing students with free and appropriate education, we also need to consider communication access within the extended learning environment and community, which often overlooks the unique needs and challenges of cultural and linguistic minorities.

Accommodating linguistic and communication diversity jointly can create an authentically inclusive learning environment.



We reiterate our call to action for educators to embrace communication accessibility and take steps to create inclusive classrooms. Educators and administrators can empower students of diverse abilities and backgrounds by anticipating their needs and leveraging appropriate multipurpose language accessibility solutions.

This white paper guides administrators, school board members, and student service professionals to become leaders in communication accessibility and inclusion for students of diverse abilities. We seek to build a path for policymakers and educational institutions to dismantle barriers and embrace equity in education⁴.

Introduction

One of the first mentions of inclusive education was in the late 1980s⁵, in the context of expanding the “responsibilities of schools and school systems to increase access, participation, and opportunities to learn for marginalized populations of students.” While legal compliance with the Individuals with Disabilities Education Act (IDEA), Section 504 of the Rehabilitation Act of 1973, and Americans with Disabilities Act (ADA) is vital, educators must also understand how adopting a culture of accessibility can enhance their academic success and equality of opportunity.

The Deaf and Hard-of-Hearing Student

The DHH student often faces auditory barriers in a classroom that primarily facilitates communication through speech. These barriers can limit their comprehension of educational content and communication with instructors and peers. Furthermore, due to each DHH student’s unique communication needs, an Individualized Education Plan (IEP) is necessary to outline each student’s appropriate modalities, supports, and goals to achieve success in the classroom⁶.

According to the National Association of the Deaf (NAD), DHH students often require access to sign language interpreting, captioning services, and assistive listening devices to be able to fully participate in their education⁷. These services can also be useful for other student groups as many communication needs overlap.

The English Language Learner

ELL students and their families encounter unique communication challenges. They can face severe obstacles when navigating a school system that primarily communicates in English which can lead to limited comprehension and participation. The Department of Education published national data that indicate ELL students have lower graduation rates compared to fluent English students⁸. Family members that lack English proficiency are also disadvantaged as they cannot fully engage with their children’s education. Such barriers limit their relationships with faculty and staff, understanding of school policies and resources, and ability to help their students with coursework. Studies show that family involvement is an overarching factor in children’s academic success⁹.

Students with Auditory Processing Disorder

Auditory processing disorder (APD) is a type of hearing loss that makes it difficult to hear and understand certain sounds and occurs in 3–5% of school-aged children¹⁰. APD is neurodevelopmental in nature and does not stem from any physical cause due to ear damage. Students with APD can struggle to discern where sounds are coming from and differentiate between certain words and sounds. The primary struggle with APD is listening and understanding spoken language, especially in a noisy environment.

Neurodivergent Students

Neurodivergence encompasses a variety of differences in brain function from the majority (i.e., neurotypical)¹¹. Some examples of types of neurodivergence include:

- Attention Deficit Hyperactivity Disorder (ADHD)
- Dyslexia
- Autism Spectrum Disorder (ASD)
- Tourette Syndrome
- Obsessive Compulsive Disorder (OCD)

Considering the range of neurodiversity, there are several ways to optimize the classroom environment (with the goal of easing anxiety and increasing focus):

- **Create a predictable learning environment:** A predictable routine helps the neurodiverse student know what to expect daily. For example, when arriving in the classroom, the teacher can greet the student and explain in clear terms what will be the first activity of the day. A visual representation of the day's schedule can be helpful.
- **Clear communication:** Break down complex information in steps. Speak in a clear, understandable way.
- **Flexible communication:** Give students different ways to participate and help teachers gauge their learning by allowing them to submit written responses, participate in group or individual activities, and submit assignments through writing, visuals, or audio options.

Nonverbal Students

Students who are nonverbal are typically those with Autism Spectrum Disorder and hearing loss. Some causes of nonverbal communication are neurological disorder, hearing loss, physical disability (including cerebral palsy), and genetic causes.

The unique challenges of the nonverbal student include:

- **Communication barriers:** The inability to communicate needs and express understanding can cause frustration and misunderstandings.
- **Social interaction:** Being unable to speak with their peers can contribute to social isolation.
- **Self-expression:** Expressing emotions is a challenge that can lead to behavioral issues.

These students have communication needs that overlap with the needs of other students with diverse abilities. They can benefit from AAC, gestures, and white boards. AAC has helped nonverbal students achieve success in the classroom; peer support is a substantial contributor to this success¹².

Other ways to build an accessible learning environment are to use multimodal communication methods (visual aids, written materials, audio) and assistive technology (text-to-speech and speech-to-text software, and notetaking and communication apps).

Building the Inclusive Classroom

Building the inclusive classroom requires a comprehensive approach that embraces multipurpose language accessibility solutions and cultural diversity. By doing so, educators create an accessible learning environment that grants true equality of opportunity.

By recognizing and addressing the needs of students with diverse abilities, educators can develop tools and strategies that ensure all students are equipped to graduate as lifelong learners and successful members of society.

Learning Environment Design

Design the learning environment from the ground up, incorporating Universal Design for Learning (UDL) through all stages. Consider whether each part is accessible and engaging to the DHH and English learner, regardless of their learning style. The UDL guidelines involve¹³:

- Providing learning materials in different formats (text, audio, video)
- Giving students different ways to demonstrate their knowledge
- Stimulating interest in learning

The key to creating a productive accessible classroom that meets each DHH and English learner's needs is flexibility. A student's communication and learning requirements and preferences may change.

By adopting the framework, it's possible to accommodate students with diverse communication needs and eliminate barriers to learning¹⁴. The framework emphasizes flexibility and inclusivity above all.

Technology Solutions

Advancements in technology for learning environments have increased the flexibility and affordability of accessibility solutions. Modern iterations of interpreting, translation, captioning, and media production allow educators to customize tools to:

- In-person remote learning
- One-time or recurring needs
- Scheduled or on-demand sessions

These advances have sped up the development of apps and programs accommodating students with diverse abilities¹⁵.

Additionally, the rise of digital conferencing platforms and machine learning have driven exponential growth of real-time support, providing immediate inclusion and interaction in educational settings¹⁶ to bridge communication gaps and provide equal access to learning for a wide range of students.

Captioning and Transcription

Captioning and transcription services are invaluable to a wide range of students with diverse abilities. Real-time captioning (speech-to-text) and text-to-speech software are especially beneficial to DHH students and those with auditory processing disorders. The ability to access spoken language in real time can enhance comprehension and improve classroom participation.

Post-production captioning and transcriptions provide a permanent record of spoken content, which benefits all students—some of whom may need to review the content several times before fully understanding it. This especially benefits ELL, as the written content can be translated and used to improve English proficiency.

Video Remote Interpreting

Video remote interpreting (VRI) services, scheduled and on-demand, ensure that DHH students and sign language users have full access to classroom learning. Scheduled VRI allows for planned sessions where interpreters can be present for classes, meetings, and other educational activities. On-demand VRI provides flexibility and immediate access for spontaneous or unexpected situations.

These services not only support DHH students and sign language users but also teachers and school administrators, by facilitating clear and effective communication, thereby creating a positive learning environment.

Multilingual Translation and Interpreting

For ELL and their families, as well as DHH students, access to multilingual translation and interpreting is crucial for full participation in a learning community. Incorporating these services in educational settings (including administrative offices) allows multilingual learners and their families to have equal access to all materials and resources¹⁷.

Bilingual Education

Bilingual education can be invaluable for ELL and DHH students. Cases involving American Sign Language (ASL) for DHH students have been effective in creating positive educational outcomes¹⁸. Bilingualism and dual immersion programs¹⁹ can offer an equitable education that recognizes knowledge across linguistically diverse learning environments.

Visual Aids

Visual aids (infographics, diagrams, interactive digital content) can significantly increase understanding of academic material, especially complex information.

Research supports the impact of visual aids for ELL in particular²⁰, but many students of all abilities benefit from — or simply prefer — visual learning tools.

A picture board or a touch screen may be an effective device for DHH or nonverbal students²¹.

For the ELL community, visual aids help close the language gap and make complex information easier to understand. For the neurodivergent student, visual aids provide other ways to process and understand information. Additionally, visual communication platforms serve as AAC tools for nonverbal students with speech disorders, enabling them to comfortably express themselves and fully participate in the classroom.

Building a Culture of Accessibility: Celebrate Achievements and Cultural/Linguistic Identity

Creating a culture of accessibility requires an open mindset and intentional policy implementation. These steps will bolster that effort as educators expand and enhance the accessible experience for their students and community:

- **Educator Training Sessions:** The National Center on Accessible Educational Materials (AEM) provides free resources and professional development in accessibility best practices²².
- **Student Awareness:** Initiatives that promote empathy among students contribute to a supportive school culture. Peer support has positive benefits for all students²⁴.
- **Family and Student Involvement:** Working with parents and students can yield valuable insights into creating an ideal accessible learning environment. The U.S. Department of Education's Office of Special Education and Rehabilitative Services stresses the importance of parents and teachers working together to create a tailored IEP, to increase the child's academic success²⁵.
- **Adopt Accessible Educational Technologies:** Leveraging accessible technologies can reshape the teaching and learning experience. The Center for Applied Special Technology (CAST), which created the UDL framework, provides digital tools to help teachers in the classroom²⁶.
- **Create Accessible Content:** Educators can create accessible content by taking advantage of The National Center on Disability and Access to Education (NCDAE) cheat sheets²⁷.
- **Promote Extracurricular Activities:** Including DHH and ELL students in extracurricular activities cultivates belonging within the school community. Accessible sports and activities promote social-emotional development, inclusion, and physical health²⁸.

Communication Technologies For Inclusive Education

Video Relay Interpreting (VRI)

- Scheduled sessions with interpreters for classes, meetings, and educational activities
- On-demand VRI provides immediate access to interpreting services for unexpected and spontaneous situations

Captioning (Real Time + Post Production)

- Speech-to-text and text-to-speech software for DHH students and students with auditory processing disorders
- Enhances comprehension and participation in the classroom

Visual Tools

- Infographics, diagrams, interactive digital content increase understanding of classroom materials
- Benefits ELL, neurodivergent, and nonverbal students

Multilingual Translation + Interpreting

- Access to translation and interpreting services encouraging family involvement and full participation in the classroom
- Bilingual education yields positive educational outcomes

Act Now to Transform Education Through Accessibility and Inclusivity

The future of educational equity for students with diverse abilities and backgrounds hinges on our collective ability to create classroom environments that acknowledge, celebrate, and include all students. We've identified barriers to inclusivity and outlined solutions to create a learning environment that compels diverse learners to thrive.

This vision of an accessible and inclusive school system can become the standard. Education is not a one-size-fits-all-process, and adopting innovative teaching tools will allow schools to accommodate the learning needs of students with increasingly diverse abilities.



Innovative technology is an investment in reaching students of all abilities and various learning styles, from interactive software and personalized digital learning platforms to communication accessibility solutions.

Step up to make communication accessibility and inclusivity a standard in education so each student can reach their full potential. You can create a learning environment where all differences are acknowledged and embraced.

Sorenson offers a range of communication accessibility solutions: scheduled VRI, Sorenson Express, on-demand ASL interpreting and multilingual translation, real-time multilingual captioning and interpreting, and post-production translation and localization services. Set up a call with our dedicated education accessibility team to discuss how the latest solutions fit into your plan to enhance communication accessibility.

[Book a meeting now](#)

or reach out directly at (800) 659-4783, option 8 or sales@sorenson.com

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About Sorenson Communications

Sorenson is one of the world's leading language services providers and the leading provider of communication tools for Deaf and hard-of-hearing people. We combine patented technology with human-centric services to connect signed and spoken languages: captioning and video relay services, over-video and in-person sign language and spoken language interpreting, translation and localization services.

Our company impact extends beyond the connections we support. Under Sorenson's Impact and ESG (environmental, social and governance) criteria Vision and Action Plan, we're reviewing our carbon footprint, addressing accessibility and advancement barriers for Deaf employees, and implementing a supplier diversity program.

Sorenson is a minority-owned company committed to expanding opportunities for underserved communities and championing a culture of belonging.

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