How to Use Text-To-Speech in the Classroom

IDEAS, SUGGESTIONS, AND VIDEOS

Wisconsin Department of Public Instruction

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Jill K. Underly, PhD, State Superintendent
Madison, Wisconsin

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201 West Washington Avenue
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November 2025

This resource was originally developed by Nissan Bar-Lev, Director of Special Education, CESA 7. The Wisconsin Department of Public Instruction (DPI), with permission of CESA 7, assisted with publishing this resource and this resource is dedicated to the memory of Nissan Bar-Lev. This resource was developed in alignment with changes to DPI's individualized education program (IEP) sample forms that spotlight the importance of considering Accessible Educational Materials (AEM) when discussing the need for assistive technology as a special factor for each and every student with an IEP. DPI does not endorse any of the products, resources, or opinions included in this resource. This resource was developed to share examples of how assistive technologies, such as text-to-speech, can be used to meet the unique individual needs of students with disabilities. For information on how to appropriately match assistive technology to individual student needs, see DPI Bulletin 22.02: Assistive Technology, or the DPI Assistive Technology webpage.

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DEDICATION

Dedicated to the Memory of Dr. Nissan Bar-Lev

The guide, *How to Use Text-To-Speech in the Classroom: Ideas, Suggestions and Videos*, is dedicated to Dr. Nissan Bar-Lev, who spearheaded and coordinated the creation of this document. Nissan unexpectedly passed away on August 2, 2022, prior to its completion.

Nissan Bar-Lev dedicated his life to helping Wisconsin's children with disabilities, their families, and the educators who serve them. He began his career as a speech and language pathologist and worked at Cooperative Education Service Agency #7 for 44 years as the Director of Special Education. Under his leadership, children with disabilities in Calumet County and throughout northeastern Wisconsin were served with high expectations and compassion.

Nissan was committed to making a difference and had a vision to bring parents of children with disabilities and educators together in a collaborative partnership. In 1996, he co-created the nationally recognized Wisconsin's Special Education Mediation System, a non-adversarial way for schools and families to find common ground when discussing the needs of children. Nissan co-authored the *Special Education in Plain Language* document used across Wisconsin and beyond to help parents and others successfully navigate the complex world of special education. Nissan brought a heightened awareness of the importance of family engagement, calling on districts to engage families as part of the IEP process, making Wisconsin the first and only state to do so.

Nissan chaired the State Superintendent's Council for the Blind and Visually Impaired, served on the Governor's Council on Autism, as the past president of the Autism Society of Wisconsin, and as a member of the Office of the Commissioner of Insurance Autism Council. Nissan was a long-time advocate at the legislative level, bringing about positive changes in programming for students on the autism spectrum and ensuring schools were proactive in their approach to students with challenging behaviors. Nissan was one of three recipients in the history of Wisconsin to receive the "Friend of Special Education" award given by the State Superintendent of Public Instruction.

Nissan was a Wisconsin Council of Administrators of Special Services (WCASS) President and for many years served on the WCASS Board of Directors as the Special Projects Co-chairperson. Most recently he worked on resources to ensure students with disabilities had the necessary tools to become successful readers. He created the federally recognized *WCASS Guide for IEP teams: Supporting Students with Print Disability*. This new guide, *How to Use Text-To-Speech in the Classroom*, is intended to be a companion document to the WCASS Guide.

This is just a snapshot of the incredible legacy Nissan left behind. While he has been recognized for his accomplishments, he will be remembered because of the type of person he was:

lifelong learner,

tireless and steadfast leader,

fierce advocate, and

esteemed colleague,

Wisconsin's Father of Special Education.

CONTRIBUTORS' MEMBERSHIP

Chair

Nissan Bar-Lev, Director of Special Education, CESA 7

Assistive Technology Specialists

Lynn Boughton, Assistive Technology Support, Green Bay Area Public Schools
Anna Cliff, Assistive Technology Specialist and Program Support Teacher for Assistive Technology, Madison Metropolitan School District
Jill Firgens, Assistive Technology Coach/Coordinator, Menasha Joint School District
Cassie Frost, Technology Integration Specialist, Stevens Point Area School District
Kirsten Kohlmeyer, Director of Assistive Technology, Redwood Day School and Assistive Technology Consultant to Redwood Literacy, Chicago, IL
Angela Rinaldi, CEO Techknowledgy Rocks LLC, Norwalk, CT
Annie Sims, Assistive Technology Specialist, Marathon County Special Education Consortium
Paula Walser, Assistive Technology Consultant, Statewide

Association of Wisconsin School Administrators (AWSA)

Lynn Bub, Principal, Sheboygan Falls Elementary School
Jennifer Melville, Assistant Principal, Stevens Point School District
Nathan Wesener, Middle/High School Principal, Hilbert School District

Center for Applied Special Technology (CAST)

Allison Posey, Senior Content Editor and Producer, Senior Research Scientist

Higher Education Institutions

Dave Edyburn, Professor, University of Wisconsin Milwaukee
Michelle Kaye Silverman, Assistant Professor, University of Wisconsin Milwaukee
Heather Pauly, Assistant Professor, Concordia University
Richard Jackson, Professor Boston College

Parent/Advocacy Organizations

Toni Chambers, Wisconsin Family Ties, Training Coordinator
Lori Karcher, WI FACETS, Director of the DPI grant
Robyn Morris, WSPEI Coordinator at CESA 5
Jill Gonzalez, Advocacy Specialist, Disability Rights Wisconsin

Reading/Literacy Specialists

Kay Guberud, Reading Specialist/Literacy Coach, Adams- Friendship Area School District
Charla Meyer, Literacy Specialist, CESA 7

School Psychologists

Aimee Burazin, School Psychologist, Stevens Point Area School District
Cindy Payne, School Psychologist and Director of Pupil Services and Special Education, Kohler School District
Tracy Bandt, School Psychologist, New Holstein School District

Educators

Rachele Breuer, Elementary Special Education Teacher, Lancaster School District
Elizabeth Bruner, Middle School Special Education Teacher, Hilbert School District
Loucricia Carson, Program Support Teacher, Assistive Technology, Milwaukee Public Schools
MaDonna Enkers, Program Support/Teacher Mentor, Marathon County Special Education Consortium
Ann Johnson, Special Education Teacher, Oak Hills, CA
Rebekah Frampton, Speech & Language Pathologist, Brillion School District
Tiffany Hacker, Teacher for the Visually Impaired, Manitowoc School District
Paula Minix, Speech and Language Pathologist, Oconomowoc School District
Susan Parker, Occupational Therapist, Luxemburg Casco School District
Connie Persike, Speech and Language Pathologist, Educational and Behavioral Consultant, and Clinical Professor at University of Wisconsin Madison
Troy Rush, Middle School Special Education Teacher, Chilton School District
Heidi Braun, Middle School Special Education Teacher, Chilton School District
Nicole Sheedy, Special Education Program Support Teacher, Neenah School District
Tracy Staislawski, Early Education Manager, Vision-Forward Association
Jennifer Theisen, Speech and Language Pathologist and AT Specialist, Waukesha School District
Sara Zwiefelhofer, High School Special Education Teacher, Chippewa Falls Area Unified School District

Wisconsin AEM

Stacy Duffy, Education Consultant, CESA 2

Wisconsin Association of School Districts Administrators (WASDA)

Barbara Sramek, Director of Professional Development and Member Service
Michael Trimberger, District Administrator, Random Lake School District

Wisconsin Outreach Services for Deaf, Hard of Hearing and Deafblind

Heidi Hollenberger, Diagnostic Educational Consultant

EC Multi-Level of Support

Jessica Nichols, Early Childhood Multi-Level System of Support, State Coordinator

Wisconsin Speech and Hearing Association (WSHA)

Dawn Merth-Johnson, Speech and Language Pathologist, Iowa- Grant School District and Member of WSHA Executive Board

Wisconsin Universal Design for Learning (UDL)

Melissa Emler, UDL Coordinator, CESA 3

Decoding Dyslexia of Wisconsin

Katie Kasubaski, WI State Lead
Kari Baumann, WI State Co-Lead

Former U.S. Assistant Secretary of OSERS

Alexa Posny, Former U.S. Assistant Secretary for Special Education and Rehabilitative Services

Learning Ally, Accessible Media Producer (AMP)

Terrie Noland, Vice President of Educator Initiatives
Jessica Austin, Partnership Manager

Read&Write Software

Jeff Bonebrake, Texthelp Regional Sales Director for North Central Region

Editors

Jan Serak, Former CEO & Founder of WI FACETS,
OSEP funded Wisconsin Parent Training and Information Center
Janelle Bailey, Former Director of Wisconsin Academic Decathlon (WIAD) and ELA educator

INTRODUCTION

A Message from Dr. Nissan Bar-Lev

In 2021, a group of some 60 educators (contributors) collaborated to develop the publication entitled *WCASS Guide: How to Provide Students with IEPs Access to Their Grade Level Curriculum through Text-To-Speech.* The scope of that publication was to highlight the legal responsibilities of school districts under the Individuals with Disabilities Education Act (IDEA) 2004 to provide Students with Disabilities (SwD) access to their grade- level printed text.

Following the posting of that publication on the WCASS website, the Wisconsin Department of Public Instruction added a prompt to change the assistive technology item in the IEP (the I-4 form) that states:

> **Does the student need assistive technology services or devices?**
> **☐ Yes ☐ No**
>
> *Consider any item, piece of equipment, product system, or service to increase, maintain, or improve the student's functional capabilities. In addition to other needs that require assistive technology, discuss if the student accesses, uses, and derives meaning from age or grade level standard printed text when considering accessible education materials (AEM) and the need for assistive technology.*

Although the consideration of assistive technology, including AEM, has been a long-standing requirement, the prompt was added to remind individualized education program (IEP) teams to consider whether a student may need access to AEM services or devices. For example, a 6th grade special education student whose decoding or fluency in reading is at the expected level of a 2nd to 3rd grade student and has not been provided assistive technology such as text-to-speech or other AEM supports, will not be able to access the 6th grade level instructional materials or books. For students that cannot access, use, or derive meaning from age- or grade- level standard printed text, the IEP team must consider what type of accessible educational materials will provide the student with access to age- or grade- level educational materials. The four (4) accessible formats noted in IDEA 2004 and in the National Instructional Material Accessibility Center (NIMAC) include braille, audio files, text-to-speech, and large fonts.

This publication concentrates on the use of text-to-speech AEM, to support teachers in providing students with disabilities identified under the Individuals with Disabilities Act access to their age- or grade- level printed text.

A Message from Dr. Alexa Posny, Former U.S. Assistant Secretary for Special Education and Rehabilitative Services

I would like to thank the group of stakeholders who developed this timely and important Teachers' Guide.

It is timely, as the Wisconsin Department of Public Instruction requested that, beginning in September 2022, IEP participants need to respond to this IEP item: *Is the student able to access, use, and derive meaning from age or grade level standard printed text?* And if the answer is no, the individualized education program (IEP) team is instructed to *document necessary Accessible Education Materials (AEM) services or devices in the Program Summary*. The Individuals with Disabilities Education Act (IDEA) 2004 includes four (4) specific AEM categories: braille, large fonts, audio files and text-to-speech.

It is important since over 80% of the 119,000 students with disabilities (SwD) in Wisconsin at the time this article was written (2021) would most likely benefit from the use of text-to-speech AEM if unable to access age- or grade- level printed text. Almost 99,000 SwD in Wisconsin comprise the categories of Autism (13,986 students); Emotional Behavioral Disabilities (11,000 students); Other Health Impaired (24,274 students); Specific Learning Disabilities (24,663); and Speech & Language (25,409 students).

Come September 2022, many IEP participants will be searching for resources on how to use text-to-speech in the classroom. This publication includes, among other topics, information provided by teachers who successfully use text-to-speech in the classroom and share logistics and strategies in the use of text-to-speech in elementary, middle, and high school.

As the former U.S. Assistant Secretary for Special Education and Rehabilitative Services, I can tell you that the U.S. Department of Education always understood that IDEA 2004 requires local school districts to provide SwD access to their age- or grade- level curriculum. I commend the Wisconsin Department of Public Instruction for including this critical item in the Wisconsin IEP form effective September 2022.

Purpose of this Document

Federal law requires school districts to provide students with disabilities access to age- or grade- level printed text. An example of recent guidance related to this requirement includes the U.S. Department of Education's publication *Myths and Facts Surrounding Assistive Technology Devices and Services* (2024). In July 2023, the following prompt was added to Wisconsin's individualized education program (IEP) model forms that asks IEP teams to consider the need for accessible educational materials (AEM) services or devices:

> **Does the student need assistive technology services or devices?**
> **□ Yes □ No**
>
> *Consider any item, piece of equipment, product system, or service to increase, maintain, or improve the student's functional capabilities. In addition to other needs that require assistive technology, discuss if the student accesses, uses, and derives meaning from age or grade level standard printed text when considering accessible education materials (AEM) and the need for assistive technology.*

The four (4) accessible formats noted in IDEA 2004 and in the National Instructional Materials Accessibility Center (NIMAC) include braille, audio files, text-to-speech (TTS) and large fonts. The 4,276 students who are blind or visually impaired will benefit from braille or large fonts, and the 1,580 students who are deaf and hard of hearing will benefit from audio files or sign language.

What accessible formats are available for the nearly 120,000 students eligible for special education services under other disability categories in Wisconsin?

- Autism: 185,580 students
- Emotional Behavioral Disability: 8,217 students
- Intellectual Disability: 5,785 students
- Orthopedic Impairment: 635 students
- Other Health Impairment: 27,442
- Significant Developmental Delay: 11,119 students
- Specific Learning Disability: 26,080 students
- Speech or Language Impairment: 26,698 students
- Traumatic Brain Injury: 249 students

It is very likely that for many of these tens of thousands of students with disabilities, TTS would provide access to their age or grade level printed text. With the new prompt on Wisconsin's IEP model forms, thousands of teachers are seeking information on TTS. That is what necessitates this publication.

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How to Balance Reading Instruction with Text-To-Speech in the Classroom

by Professor Dave Edyburn
University of Wisconsin-Milwaukee

Professor Dave Edyburn suggests that there are several metrics that IEP teams should use in making decisions about text-to-speech. IEP teams are in the unique position of determining what is best for each child with a disability. Edyburn (2007) has described terms equivalent to Reading Instruction (R) and Text-To-Speech (TTS). Together, these two terms provide a method for determining the percentage of time that should be devoted to R and the percentage of time that should be devoted to using TTS to gain access to text.

Refusing to provide access to any assistive technology (AT) means the team has decided the equation should be set at: 100% R – 0% TTS. However, we must argue against this inaction. As we have seen, doing what we have always done simply hardens the achievement gap.

- For example, for a student with a disability in 2nd grade (see Figure 1 below), an IEP team may wish to set the R-TTS equation to 70% R-30% TTS to continue providing high quality reading instruction but also providing text-to-speech to enable the student to gain access to stories, vocabulary, and instructional content that would otherwise be inaccessible because of below grade level reading skills. Research by Parr (2008) has found that the decision to use TTS does not need to be an either-or decision (i.e., use – not use), but can be readily incorporated in the classroom to be used side-by-side with R as educators help all students in their emerging literacy development. This is a key finding as schools implement Multi-Tiered System of Support (MTSS) and Universal Design for Learning (UDL) in the general education classroom.
- For a child in 3rd grade, the IEP team may wish to explore the R-TTS equation at 50% R-50% TTS.
- In grades 4 and beyond, the R-TTS equation may need to be reset such that more effort is devoted to TTS technologies since minimal reading instruction is provided in the general education classroom. Therefore, it is not unreasonable to consider an R-TTS equation at 20% R-80% TTS for students in middle school and beyond.

Figure 1

As students advance through the grades and the reading/achievement gap grows, it may be necessary for the IEP team to develop a cocktail of interventions. That is, providing the student with multiple interventions (Parr, 2011) to make text accessible in ways that enable them to understand the core concepts of a text.

More information about measuring outcomes of TTS AT is provided on Data Collection in the publication (Edyburn, 2007). However, teachers, parents, and the IEP team will know if the R - TTS equation is not properly balanced because a student will avoid reading for pleasure, will fail to complete reading assignments, will spend inordinate amounts of time trying to gain access to text but do so with poor comprehension, and will lack content knowledge that has been acquired by their peers. Individually and collectively, these behaviors are an urgent call for AT like TTS (Edyburn, 2007; Wilcox & Parr, 2017). Failure to intervene with appropriate supports often results in particularly negative outcomes: the student learns to hate reading, has internalized a self-fulfilling prophecy that they can't read, and perhaps most damning, they begin to hold a world view where they tell themselves that not being able to read means that they can't learn.

Reading is a core life function. Similar in some ways to the need for some individuals to use alternative and augmentative communication (AAC) AT devices to support communication, there is a tendency to wait before intervening. The research evidence is strong and exceedingly clear: providing individuals with a method of communicating, the earlier the better, improves a variety of outcomes relative to independence, education outcomes, and quality of life (Dunst, et al., 2013; Morin, et al., 2018; Romski, et al., 2015). It is very clear that we are foolish to think that continuing to do what we have always done (i.e., withhold reading AT) will produce different outcomes (i.e., successful voracious readers).

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Hidden Barriers of Text-to-Speech

by Rachele Breuer
Special Education Teacher, and Director of Special Education
Cassville School District

Acknowledging the hidden barriers of text-to-speech (TTS) is a step we must take to move forward. One barrier is the ability to have immediate access to the technology. This means the teacher must have working knowledge, specific training on the platform of choice, and technology problem solving as it relates to text-to-speech to support the student when it needs to be used in the classroom.

This is an investment of resources, including time and money from the district. Also, the student likely needs instruction when beginning to use text-to-speech. While this may be minimal, it is a necessary step to consider and is based on the needs of each child.

Another hidden barrier is the need for belonging from all students. If only one child in a classroom uses text-to-speech, he or she may experience feelings of being different or perceived as less than compared to his or her peers. If all students are encouraged to use text-to-speech, then we have a model inclusive classroom. The purpose of the usage may be different, such as coming to an unfamiliar multisyllabic word versus accessing an entire textbook.

Another barrier to text-to-speech is the misunderstanding between instruction and text-to-speech. It is imperative for educators to understand that reading instruction continues while text-to-speech provides the access to enhance the student's strengths.

Strategies for Overcoming Barriers to the Use of Text-To-Speech in the Classroom
School districts may avoid many of these barriers noted below by designating a staff member to take the lead role in a “Train the Trainers” model of text-to-speech dissemination or roll out. The following table summarizes some of the potential barriers and offers strategies for overcoming each potential barrier.

Table 1: Barriers and Strategies for Overcoming Barriers	
Barrier	**Strategies for Overcoming Barrier**
Attitudinal: "Text-To-Speech is not really reading"	Text-to-speech offers an alternative format for obtaining information. It can provide access to the curriculum for students who cannot read independently at grade level. Reading is more than decoding – reading comprehension involves making sense of text and applying the knowledge.
Classroom Management	Introduce text-to-speech to all students and encourage them to explore when, why, and how to use it most effectively.
"Won't the noise be disruptive?"	Using text-to-speech in the classroom requires that each student has their own headphones to prevent the audio from disturbing other students. Encourage students to bring their own headphones and leave a set in their desk. Ensure that each classroom has several extra sets of headphones for students who forget their personal headphones or replace headphones that are broken.
Lack of awareness	Some teachers may not be aware that text-to-speech is built into the operating system of all recent technology devices. Explore the accessibility control panel on your device to learn how to activate text-to-speech tools.
Lack of training	Teachers and parents may need a short presentation to learn how to make the most of text-to-speech tools. Check with your district technology specialists or assistive technology specialist on how to learn more about text-to-speech. Also, see section in this document on "Tools, Resources, and Assessment Considerations."
Time	Utilize the school or district's Assistive Technology or Technology Specialist for help accessing electronic versions of reading materials. Also, network with the district's contact person with Learning Ally or Bookshare.

Table 1: Barriers and Strategies for Overcoming Barriers	
Barrier	**Strategies for Overcoming Barrier**
Different curricula	Text-to-speech tools are built into a variety of technologies. Encourage students to explore the applications of their favorite text-to-speech tools when reading a webpage, viewing a PDF, viewing an e- book, writing in their word processor, as well as completing a worksheet.
Collaboration and lead time in providing timely resources	Hold a quarterly overview meeting with grade-level classroom teachers to get major content that they will need in a quarter. Designate a weekly "tech time" with grade- level classroom teachers to review upcoming needs for classroom units to make sure your caseload will have what it needs. Doing this at least a week ahead of time should allow the provision of accessible texts.
What happens when power fails?	Have 2-3 backup computers/tablets available for this or other situations (student forgets device)
Students having a negative stigma/not buying into using it	The best way to overcome this is to start young when possible and to train students on the technology and have them practice using it regularly. Then have them perform similar tasks with and without the technology so they are able to personally see the skill increase from the scores that they get from those tasks- This doesn't have to be the specific wordage, but this is really the best way to get student buy-in.

ENDORSEMENTS

CASE Endorsement Statement
Phyllis Wolfram
CASE Executive Director

The Council of Administrators of Special Education (CASE) is an international professional educational organization and Division of Council for Exceptional Children (CEC). CASE provides leadership to advance the field of special education through professional learning, policy and advocacy and is committed to forward-thinking and the highest standard of access, equity, belonging and inclusion.

Those who receive special education services are individuals who possess basic rights and responsibilities, and who command respect at all times. Special education embraces the right to a free appropriate public education (FAPE) that entails all students to having access to their grade- level curriculum.

The new publication, *How to Use Text-To-Speech in the Classroom: Teachers' Ideas, Suggestions and Videos*, does just that. It informs teachers who are novice to the field of text-to-speech how to use text-to-speech in the classroom. This information is made available by seasoned teachers who successfully use text-to-speech in the classroom on a daily basis.

This publication became necessary due to a change in the Wisconsin IEP form. The Wisconsin DPI is including the following item in the IEP:

> *In addition to other needs that require assistive technology, discuss if the student accesses, uses, and derives meaning from age or grade level standard printed text when considering accessible education materials (AEM) and the need for assistive technology.*

The addition of this language is remarkable, and to our knowledge, is the first in the nation. It links assistive technology / AEM directly to students' ability or inability to access their own grade- level printed text. We know that most students with disabilities (SwD) do not have adequate access to their grade-level printed text. This gap only widens in middle school and high school.

This new item will ensure that IEP teams specifically address and include assistive technology to provide SwD access to grade-level printed text. The Council of Administrators of Special Education (CASE) encourages its members to share this publication with their teachers and consider including a similar item on their state IEP form.

TESTIMONIALS

Attorneys' Views

This section includes articles written by attorneys who specialize in educational law. It includes information about student rights and the obligations of local educational agencies to provide students with disabilities access to age- or grade-level printed text.

Patricia Engel
Parent Attorney
Schott, Bublitz and Engel S.C.

I am pleased with the latest revision to the individualized education program (IEP) form in Wisconsin. It will include a question in the Special Factors section concerning whether a student has the ability to access, use and derive meaning from age- or grade- level printed text. Importantly, there is an essential follow-up requirement to identify the necessary accessible education materials, services or devices ("AEM") if the answer to the question is "no." This revision is the best and most direct effort to date to focus the IEP team on the need and the strategies, such as text-to -speech, to be used by a student to obtain access and use and derive meaning from grade- level printed text.

This is critical because providing access to grade- level printed materials and curriculum has been the law for years but has often been glossed over by IEP teams using the current IEP forms. For a number of students, receiving AEM is a necessary component for a district to meet its obligation to provide a student with a disability a Free Appropriate Public Education.

In addition, access to grade-level printed material through AEM offers the ability to gain exposure and knowledge of instructional content in a variety of subject areas, the opportunity to expand a student's vocabulary, and importantly, to participate in the general education classroom discussions in a more robust and meaningful way. It is just as important for the student to trial, utilize and master the accessible educational materials, services, and devices in the special education classroom. A student's ability to access grade- level printed materials can also reduce frustration, a sense of inadequacy, withdrawal, or even behavior issues if the student can utilize AEM, such as text-to-speech.

It cannot be overstated how important this is for so many students with disabilities, not just students found eligible for special education due to a reading disability. There are numerous other students, such as students eligible under the categories

of Emotional Behavioral Disability (EBD), Other Health Impairment (OHI), and Autism who cannot access, use, and derive meaning from age- or grade- level printed text and, therefore, would benefit from, and in fact require, the use of AEM. It is imperative that IEP teams critically consider and analyze this new question in the Special Factors section of the IEP in every student's IEP meeting.

Monica Murphy
Parent Attorney, Disability Rights Wisconsin (DRW)

Disability Rights Wisconsin (DRW) is a private non-profit organization that protects the rights of people with disabilities statewide. Our mission is to advance the dignity, equality, and self-determination of people with disabilities. We work to pursue justice on matters related to human and legal rights.

Providing Students with Disabilities (SwD) access to their age/grade- level printed text has always been a priority for DRW. The ultimate goal for all SwD is to become independent productive members of society. In order to achieve this goal, it is imperative for SwD to have access to their grade-level curriculum.

Accessible Educational Materials, whether it is braille, text-to-speech, large fonts, or audio files, help level the playing field, so SwD would have the same educational experiences as their peers.

From my experiences as a parent attorney and advocate for the past 28 years at DRW, many behavior issues of students are related to their inability to access the curriculum. Often, acting out in class is preferable than to appear stupid when called upon to read the next page or paragraph. When SwD are provided access to the curriculum through text-to-speech, for example, they understand the subject matter being discussed, they can participate and contribute to the discussion. Being part of the classroom dynamics does wonders to one's self-concept. Being a contributing member of the group reduces the need to act out and create behavioral issues in class.

DRW is very pleased with the latest Wisconsin DPI IEP revision that requires IEP participants to provide access to SwD's age- or grade- level printed text.

Parent View on the Use of Text-To-Speech in the Classroom

The articles in this section were written by parents and parents' advocates. They reflect the authors' experiences and views on the use of text-to-speech in the classroom.

Family Engagement is Essential to Success of Using Text-To-Speech in the Classroom

Article by Toni Chambers
Training Director, Family Ties, WI
Edited by Lori Karcher, WI FACETS Parent Advocate

Text-to-speech can be a life changing resource for children, and families. To be so, there must be a collaborative approach between home and school to support informed decision making within the individualized education program (IEP) process. Instruction on the use of the technology to empower families to support their learner in its use both at school and home is also imperative.

So, how do we best accomplish this?

Communication. Yes, it can be as simple as ongoing, open discussion. We don't know, what we don't know, whether parent or educator. When it comes to the use of technology, especially for learners with IEPs, sharing knowledge and engaging with each other makes a difference, and helps us to practice within the spirit of the law, and increase positive outcomes for learners.

Collaboration could be a parent coming to a teacher or a teacher coming to a parent with concerns regarding a child's access to print. Although, the conversation often begins with concern around the child's 'refusals,' below grade level performance, frustration, and/or overall child well-being. It is not uncommon for us to see a child's behaviors as their way of communicating their challenges when it comes to academics, especially when access to print is the barrier. When such discussions are occurring, parents and educators should look to see whether or not the child is struggling to access print. Are they reading at a level lower than expected for their grade level, and/or is it lower than the majority of their peers? This question is important, as children who struggle to access age- or grade- level print, relative to the majority of their grade- level peers, feel the impact of the deficit, often causing discouragement, frustration, and lack of confidence.

This can begin as early as kindergarten for some learners. While these discussions can be difficult to have, they are essential to meeting learners' academic needs and overall well-being. The IEP, by law, requires us to consider a learner's access to age-

or grade- level print. This question requires discussion within the IEP team meeting, and hopefully there has been discussion prior to the meeting. This discussion may include information that speaks to the power of access to age- or grade- level print and how the use of it can facilitate not only academic learning but also independence, and overall well-being, at school and home. When the same technology is used in both environments, learners have an increased proficiency which leads to increased learning.

Before technology is used with a child it is essential that parents and families are a part of the process. Per the Individuals with Disabilities Education Act (IDEA), within the IEP process, the question regarding the use of technology for a child to make progress toward their individual goal(s) must be addressed, which gives meaning to the box being checked during the IEP meeting. To do so, parents must have the information to be a part of the discussion long before an IEP meeting.

There is nothing keeping a teacher from reaching out to a family and introducing the idea of assistive technology (AT) i.e., text-to-speech. Timely communication that solicits parent input and creates a collaborative approach can be a game changer for students with IEPs. With the right assistive technology, a student gains better access to the curriculum, learning, and opportunities for success inside and outside the classroom.

When students use assistive technology both at school and at home, their proficiency with it will increase, which leads to more opportunities for learning and success in both settings. When there is collaboration between home and school on access to age- or grade- level print, the focus is on the academic tasks (access to print) and integration of the technology into the learner's everyday routines and activities to help ensure the AT is a useful tool to help the student overcome barriers to learning, which for many often includes frustrations around homework.

It is important for educators and families to know how to access the technology a learner may be using, so it can be effective both in the classroom and at home. Being aware of possible glitches and what to do about them or how to obtain support to address them, is also important. When it has been determined that a learner will be using some form of assistive technology to access print, some have found it helpful for the student, family, and teacher to have a learning session together to understand its use, discover potential glitches, and learn together about the power and potential that technology can have for the learner. Home and school collaboration in the use of a child's access to print is critical to the user's success.

Assistive Technology: When Teaching and Life Collide

Article by Rachele E. Breuer
Special Education Teacher and a mother,
Lancaster School District

Two words come to mind as describing students' abilities in both reading and in the use of assistive technology: *proficient and automatic.* Not only am I a special education teacher for nearly 20 years, but I am also a mother of a daughter who has struggled with cracking the reading code.

The effects of not being a proficient and automatic reader are devastating both socially and academically. I will always remember a conversation I had with a teacher about my daughter where the teacher pulled out a basket of devices known as "assistive technology" or spelling aides when I expressed my concerns for her education. By the time she would have turned on the device, asked for working batteries, and then got the assignment completed, her classmates would have been out to recess and lunch. This example is, yes, definitely exaggerated, but it gives profound pause to the knowledge needed to not only provide, then teach, followed by consistent monitoring for the access of assistive technology.

Move forward a year and now my daughter is in New York City, Ellis Island to be exact. Can she read? Yes. Proficient? No. Automatic? No. Do her test scores say she's okay? Yes. Well, I can tell you, I watched her walk the entire first floor of the museum reading nothing at all, quickly scanning pictures and moving on. When someone would stop her and read to her or reminisce, she was eager to learn. I too didn't read anything, as I became so intrigued observing her behavior that I continued to ask myself this question: *"If she had instruction in assistive technology, I wonder if she would have the confidence to use it?"* This is the example and justification needed to devote time in the day for assistive technology. But instruction takes time. Time is always finding the perfect balance of if we add, what do we take away?

Let's break down that barrier today and know that our students learn assistive technology faster than the speed of light. Way faster than we learn it! Let's add it without taking anything away. Assistive technology is a lifelong skill, resulting in self-help, self-advocacy, accessibility, and the ability to learn. So, I say to you, whatever your role is reading this guide, you're in the right place! Maybe you're here as a novice, and maybe you're here as an expert. Keep learning and advocating for each individual child/student. Technology advances so rapidly and yet still has not caught up to the typical brain automaticity with proficient reading. Maya Angelou says, "Do the best you can until you know better. Then when you know

better, do better." Not just for my daughter, but for all. I've developed an acronym because in education, that's what we do.

Acronym: AIM

- **A**—Assess students to find out what technology is needed and document.
- **I**—Identify & educate students (and their teams) what assistive technology is required for access to grade-level content.
- **M**—Monitor the usage of the technology and continue to provide instruction in reading.

Teachers Describing the Use of Text-To-Speech in the Classroom

This section includes articles written by educators, researchers and consultants who have successfully used text-to-speech with students. It includes information related to AT assessment as well as suggestions for tool selection. Articles follow the same format for the convenience of the reader. The articles are arranged in the order in which they were submitted and reference the employer at the time the article was submitted.

How I Use Text-To-Speech in the Classroom: Selecting Resources and Teaching for Independence

by Tiffany Hacker
Accessible Educational Consultant, CESA 7
and Teacher for the Visually Impaired

Assessing the student

Here is a list of resources I use to assess if text-to-speech (TTS) would benefit a student. All are wonderful resources; pick what works best for you and your district.

A. PAR (Protocol for Accommodations in Reading) Don Johnston Learning Tool, tool to assess one student at a time to make a decision in selecting a reading accommodation. All passages and questions provided are from 1st grade through 10th grade. First, the student reads one passage at their independent reading level and then answers the comprehension questions. You, then, read a passage to the student at their grade level and the student answers comprehension questions. Lastly, the student uses a text-to-speech reader to listen to a grade- level passage and answer comprehension questions. All information is recorded and used to make a decision on if TTS would benefit the student. This is a free download for teachers.

B. uPAR—Don Johnston Learning Tool; same process as the PAR, though is all online and can be used to assess multiple students at the same time. Passages range from 1st grade through 12th grade. You will receive data in real time, which includes how they comprehend the text, how much time spent reading the passage, and time spent answering questions. It will show you which students benefit from TTS, which ones do not benefit, and if they were able to make it to grade level or above grade level. Depending on if a student needs breaks, the assessment can take as little as 30 minutes to complete. You will need to purchase a subscription, though there is an option for a free trial.

District reading inventory with teacher-made TTS Assessment Form created by myself. Pull out a reading inventory or program available in your district and use this form to collect data and see if TTS would benefit your student. Remember to add assessment data to the IEP.

What TTS options are available in your school?
These are the most common devices I have come across used in a variety of districts. I have not found that one option is better than another, it depends on which device best fits the needs of your student.

A. Chromebook
B. iPad
C. Mac Book
D. Windows computer
E. Android device

Factors that may play a part in choosing a device: mobility difficulties (ability to use arms, hands, or fingers, ability to move head or eyes, etc), age and ease of use (iPad may be easier for younger children to navigate), and what students have access to at home (tablet, phone, computer, etc.). I recommend starting with built-in accessibility features on that device (always FREE!). Links are included for instructions on how to set up the features.

A. Chromebook: Select to Speak
B. Android Devices: Select to Speak
C. Apple Devices: Speak Selection
D. Mac Computer: Speak Selection

If the built-in reader is not enough and the student(s) would benefit from options for annotating, translating, or other visual adaptation capabilities, try a web browser extension or app. There are subscription costs for these options, though ask for a trial and most will give some "time to try before you buy":

A. Read & Write: Text Help (extension)
    a. Youtube Tutorial
B. Capti Voice: Capti (extension and app)
    a. Claro PDF (app, free for first 50 OCR scans, then subscription)

Don Johnston & Text Help products both have a toolbar for students to access the features. Both toolbars can be modified (decide which features are needed) and turned on/off at the student's preference and need. All web browser extensions

have options for students to set their preferences for audio and visual look of the screen.

Accessible Books: Options for accessible books for students with print disabilities include Bookshare and Learning Ally.

- Bookshare is a free resource for students. There are options for a membership through the district or students can sign up for their own individual membership. Bookshare offers options for digital, audio, and braille accessible books. The student can access their books through the web browser or a 3rd party app.
- Learning Ally is a paid subscription, though has options for human reader voices.

What other TTS options would you like to have?
The TTS options I choose to use and teach are all listed above. What I would most like is a teacher subscription for each of the web browser extensions so I can demonstrate the tools or allow trials of the tools, so teachers/students get the best initial experience. Other options I would prefer to know about are those that are available through online curriculums. Often, we are not aware that the district online curriculums have either TTS options built in, or a PDF copy may be readily available. That may save time and money from having to purchase a digital, pdf, or any other accessible copy from another source.

How do you provide access to pdf files or individual instructional sheets?
I recommend the use of 2 apps for providing access to pdf files or individual instructional sheets:

1. Claro PDF
2. Adobe Scan

After a picture is taken of a worksheet or you have uploaded a pdf file, each app allows the person to run OCR (optical character recognition). When OCR is run, it detects text to be usable with a TTS reader. Then documents can be shared to a variety of apps (Google apps, Microsoft apps, email apps, etc.).

How do you teach your students to become independent users of TTS?
I've created my own set of lessons to use to teach text-to-speech to one or more students. I have the lesson plan packet listed on my Padlet website. (Padlet is a cloud-based software web platform that allows users to upload, organize, and share content to virtual bulletin boards called "Padlets.")

5 Lessons to Teaching Text-To-Speech

What are your recommendations on the best ways to introduce TTS into the daily classroom instructions?

In five easy steps, here is how I recommend to teachers to begin integrating into the classroom.

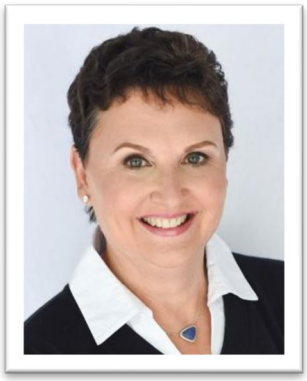
1. Choose 1 class with high amounts of text to read (most common is English or Social Studies).
2. Demonstrate & model use of tool with classroom materials.
3. Remind student(s) often to use their TTS tools.
4. After a quarter or trimester, add in one or more classes based on student(s) success.
5. Continue a bi-monthly tracking of student's comprehension with and without TTS to document use of the tool. Use one of the tools listed above in the Assessment section.(i.e. Teacher made tracking form.)

Any other information that a novice teacher to TTS will need?

Start with one or two students and get yourself comfortable with using the assessments and tools. Then branch out to other students on your caseload or in your class. Also have students, who are currently using the TTS tool, teach other students. Students may be more excited to use the tools if they see peers using them as well. Integrate accessible book options such as Bookshare or Learning Ally. Lastly, assist your students in building not only their independent skills of using TTS but also their skills for advocating for their needs. Teach them to inform teachers of the type of materials they may need in class and the technology they may be using to access the curriculum. Teach them what to do when they need to have materials made accessible.

Facilitating Literacy Participation for Students with Specific Learning Disabilities: Leveling the Playing Field with Assistive Technology (AT)

by Kirsten M. Kohlmeyer
Director of Assistive Technology, Redwood Day School, Chicago, IL



Listed below are suggestions for AT tools that can be used to support student participation, engagement, and completion of academic tasks. While students today are considered "digital natives," they need to be explicitly taught how, when, and where to use various AT tools. Students who use AT integrated with reading and writing often improve their level of independence, access, and understanding of academic material, in addition to academic performance, empowerment, and self-esteem. Some AT tools have "lite" versions that are free, as well as more robust support in paid versions. The tools identified here are not an all-inclusive list.

Note: Due to varying privacy policies of AT applications and tools, no endorsement should be implied from inclusion of AT identified in this document. The school district's legal counsel should review the privacy policy of AT tools to determine its conformity with the school district's policies when considering use (adopted from WCASS (2021).

Reading:Text-To-Speech (TTS)
What: Reads text to students

Types: digital (computer generated); audio (human-narrated)

When: Students need to gain access, interact with, *and* derive meaning from grade-level or above text

Examples:

- Students are interested in reading text above their independent decoding level for pleasure.
- Students need to read text above their independent decoding level for academic purposes.
- Students need to comprehend text above their independent decoding level in order to learn, derive meaning from content, participate in discussions, and show understanding.
- Students need to interact with text (i.e., highlight, extract notes, look up definitions, etc.)
- Students need to hear text to edit their written work.

- Students need to hear text to help organize their ideas.

Why: Students should not be limited to text they can decode. They need to be able to gain meaning from course content, engage in class discussions and have an opportunity to develop a love for reading independent of their decoding level.

Tool options:

- TTS as a free accessibility feature: Apple computers; Windows computers; Apple smartphones and tablets (iOS); some Android smartphones and tablets
- TTS as an installed application or extension:
- Free: Read & Write for Google Chrome (only the text-to-speech feature is free); ClaroRead (free with premium features); Natural Reader; Capti (free and paid versions); Speechify
- Paid: Snap & Read; Read & Write for Windows; Read & Write for Mac; TextAloud 4; Premiere Literacy Solution; Kami
- TTS that works with Bookshare (membership is free for students who cannot access grade-level text):
- What reading tools work with bookshare?; Dolphin Easy Reader app; Voice Dream Reader app; Bookshare Web Reader
- TTS as audiobooks:
- Learning Ally (fee-based for students who qualify with a print disability); Audible.com; Overdrive; Epic Books

**Note: There is a difference in students' ability to interact with digital and auditory text (i.e., highlight, get vocab definitions, extract notes, etc.) between digital and audio text. Students need both types of TTS in their toolbox, depending, in part, on the environment, personal preferences, and the task demands.

Interacting with digital text
What: Sometimes it's not enough to just hear and see highlighted digital text. Students need to be able to act on, manipulate and "use" the text.

When: Students need to gain access, interact with, and derive meaning from grade-level or above text

Why: Students need the ability to interact with digital text to gain greater understanding, study, facilitate the writing process, etc.

Examples:

- Highlight text

- Annotate text
- Cite textual evidence
- Cite references
- Extract notes

Tool options:

Read and Write for Google Chrome (paid features); Snap and Read; Premier Literacy Solutions

Leveling text
What: Students can change the vocabulary level of text they are reading to improve their comprehension

When: Students need to gain access, interact with, *and* derive meaning from **grade-level or above text**

Why: the Lexile level of the written material is too great, vocabulary makes content difficult to comprehend. Text leveling can allow students to process information at various levels under their control.

Tool options:

- Snap & Read
- ReWordify
- Simple English Wikipedia
- Rewording io

Defining Vocabulary
What: Students can use a AT tools to define words including dictionaries that read the definitions (some do not) and dictionaries that provide picture support to facilitate understanding.
When: Students need to gain access, interact with, *and* derive meaning from grade-level or above text.
Why: Even if a student can decode words, comprehension suffers unless they know what words mean. The goal of reading is to gain understanding.

Tool options:

- E-dictionaries such as Snap & Read; Dictionary.com; Kami ; Capti; Premier Literacy Solutions; Read and Write for Google Chrome (paid)
- Visual dictionaries such as Snap & Read; Read and Write for Google Chrome (paid version)

Writing: Speech-to-text (STT)
What: A student talks to a "device" such as a computer, tablet, or phone, and it transcribes the words into text

When: A student needs to produce written work in a "reasonable" time. Other challenges such as spelling, graphomotor, ideation, and/or executive functioning interfere with the writing process.

Examples:

- Getting ideas onto paper quickly
- Going back to organize thoughts once ideas are "dumped"
- "Writing" assignments down into a digital planner or notes

Why: Many students struggle with getting their ideas "out of their head" onto paper. AT can sometimes help mitigate writing challenges due to spelling, graphomotor, visual-motor and/or some learning difficulties.

Note Written language is not oral language written down! STT can remove many roadblocks in the writing process. STT for longer writing assignments needs explicit, scaffolded instruction such as are presented in Speech Recognition as AT: A Guide for K-12 Education.

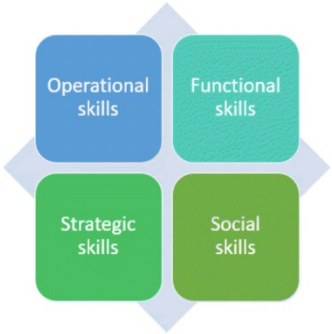
Tool options:

- Speech recognition built into Mac computers
- Speech recognition built into Windows computers
- Speech recognition built into keyboard of iOS devices (e.g. iPhone)
- Voice Typing in Google Docs;
- VoiceIn Voice Typing extension (*i.e. Google Voice Typing outside of Google Docs*)
- CoWriter
- Dragon Naturally Speaking

Spelling and Grammar Support
What: Contextual spelling and grammar support examines the words in context, while word prediction attempts to forecast the word intended (with varying levels of accuracy for those with significant difficulty phonemic awareness).

When: Regular spell check and grammar check may not be enough support for written work if a student's spelling is not "close."

Why: Students need to be able to express themselves in writing so that they and others can read and understand what they write. Without adequate spelling and grammar support, students often change the language they use to words that they can spell, which is not necessarily reflective of their vocabulary or what they want to express.



Tool options:

Contextual spelling and grammar support: Ginger software; ProWritingAid; Grammarly.com; Ghotit; Read and Write for Google Chrome ("check it" in paid version)

Tablets and smartphones: Siri; CoWriter for iOS; iWordQ iOS

Chromebooks: Read and Write for Google Chrome (paid version has "check it"); CoWriter

Word Prediction: CoWriter; Read and Write for Google Chrome; Claro software; SoothSayer; WordQ; Lightkey

Word processing software (sometimes not "powerful" enough): Google Docs; MS Word

Organizational Support
What: Most students need support organizing their thoughts and written output, especially for longer pieces of writing. Digital organizing tools can interface with other AT tools to support the writing process (i.e., spelling, editing) and decrease the amount of manual rewrites and copying.

When: Students need scaffolded support at the sentence, paragraph, or multi-paragraph level. Students may or may not use other AT tools to read and write.

Why: Students need to be able to express themselves in writing so that they and others can read and understand what they write. Some students struggle with ideation and organizing their thoughts. Digital outlines and visual mapping tools can sometimes facilitate the writing process, as it is easier to "move around" ideas and edit than when using a pencil and paper.

Outlining Tools options: Google Docs; MS Word; Snap & Read; Workflowy; Sarah Ward Schema tables

Visual Mapping tool options: Inspiration; Mindmeister; Mindomo; MindNode, Mindmup.com; Lucidcharts.com; hmhco pdf templates; Google Drawing Graphic organizers; Google apps; Google docs

Completing Worksheets or Inaccessible PDFs
What: Many students cannot read from or write on the papers they are handed. Worksheets, labs, quizzes, and tests they are given.

When: Worksheets, labs, quizzes, and tests they are given.

Why: Students need to gain access, interact with, *and* derive meaning from grade-level or above text. They also need to be able to show understanding, which should not be limited by reading and/or writing challenges.

Tool options: Snap&Read; Kami; OrbitNote; ClaroPro PDF; xodo PDF viewer; Adobe

Considerations When Choosing AT Tools

- Platform(s) the student uses
- Task-demands: How well does the tool compensate for the difficult task-demands?
- Context: Which tool fits the learning environment best?
- Skills & preferences: Which tool matches the student's skills best? Which tool would the student choose to use?

Students need to be taught the following on how to use AT tools:

1. Operational skills: How to operate or use the tool
2. Functional skills: How to use the tool to do the task
3. Strategic skills: When to use the tool and when not to use it
4. Social skills: How to use the tool in the social context (e.g., in front of peers) and self-advocate for use of the tool in the classroom

(adapted by Oregon Technology Access Program from Binger & Light, 1998)

Additional AT Resources
https://www.understood.org/en/school-learning/assistive-technology
https://atinternetmodules.org/
https://qiat.org
https://www.closingthegap.com/
https://www.atia.org/
AT Process in Schools

Miscellaneous tools for learners with dyslexia:
Android apps for learners with dyslexia
Chrome apps/extensions for students with dyslexia
iPad apps for learners with dyslexia

References
Wisconsin Council of Administrators of Special Services (WCASS)(2021). *WCASS guide: How to provide students with IEPs access to their grade- level curriculum through text to speech.* Retrieved from https://wcass.memberclicks.net/assets/docs/Misc/WCASS%20Guide%20Final.pdf

How I Use Text-To-Speech in the Classroom: Assessment, Access, and Independence

Article by Elizabeth Brunner
Special Education Teacher, Hortonville School District, Hortonville, Wisconsin

Assessing the Student

I assess students in two ways. The first way I assess students is by using the exact textbook. I have the students read a section and answer questions. Then they listen to a section and answer questions. This helps to clarify what they can do without text-to-speech (TTS) and with TTS. Another way I assess students is by having them use leveled readers for informational text and answer questions. At each level, the student does a reading and a listening of a text. This way I determine at what level they are able to read and comprehend best and the level at which they can listen and comprehend best.

TTS Option Available in School

The majority of all textbooks now have an online component. At Hilbert, the English-language arts (ELA), science, and social studies curriculum books all have TTS options. *Snap&Read* is an app, purchased by my school, available to all students in the district. This tool is one that my students greatly like. It is able to read any website and pdf. Students like to use Snap&Read in the online textbooks as the voice is more personalized. I really like how Snap&Read has the ability to remove distractions from websites. This helps my students to focus on just what they need. *Sora* is a website linked to our library in which all students can access reading books with text-to-speech.

How do you provide access to pdf files or individual instructional sheets?

Snap&Read is able to read PDF files. When individual sheets are given to students, a teacher, paraprofessional, or me, simply scan the sheet in the copy machine and send it through email to a student (or upload it to Google Classroom) as a pdf. One nice thing about this is students can then use the pdf reader to fill in the worksheet right there.

How do you teach your students to become independent users of TTS?
When I teach my students, I also teach some of the classroom teachers, English Learner (EL) paraprofessionals, and regular education students. Since Snap&Read is available district-wide, any student can use the tool, which also normalizes it for special education students. When teaching it to students, I make a lesson similar to one in which the student might want to use the tool. I show them a few features that are important when using a website and a PDF (main reading tool, remove distractions, simplify vocabulary, and screenshot reader). After I show these tools, I show how to download the tool and have them download it. I show them the settings and what they can change (giving them ample time to play with the voices before they settle on their favorite). Students then practice with the settings and using the different tools on the similar lesson I set up.

Your recommendations on the best ways to introduce TTS into the daily classroom instructions
All of Hilbert's regular-education teachers were trained on Snap&Read since it is available district wide. The regular-education teachers will remind students of the tool. When I am team teaching in a classroom, I frequently remind students of their choices to read or listen to the text. The ELA teachers model how and when it is appropriate to use.

Advice for Novice Teachers
When I first thought about students accessing grade-level curriculum, my immediate reaction was to think about how hard it would be for students to understand. As I have researched and discovered what is out there, I have provided students with grade-level curriculum. My students have proven to me that they needed this opportunity to show what they can do. I have had students who read at a second-grade level describing the theme with text evidence of a sixth-grade text. All the student needed was having the story read to demonstrate this skill. With just working with second-grade level stories, I would never have known that the students were capable of this.

Providing tools, which our students can use to access grade- level materials, opens up opportunities for them to learn beyond what we may think is possible. Another advantage of using tools to access grade-level material is that it presents opportunities for the students to gain independence and become self-advocates. As they start to use the tools, the students can work more independently and rely less on a teacher or aide to read for them. This can create more independence. It also is a natural way to help them self-advocate.

Leveraging TTS for Pupils with the Most Complex Needs

Heather Pauly, PhD CCC-SLP
Concordia University, WI

The general message of this entire document is to use text-to-speech (TTS) to provide access to grade- level materials to all students; the message of this contribution is to encourage its use for students with the most significant cognitive disabilities. This population should be using TTS to access content that advances understanding of and exposure to access the same content as all students. In other words, these pupils need to use TTS to access material that is higher than their reading or perceived listening comprehension level. This is particularly important because our ability to assess this population's cognition accurately is limited; therefore, using TTS to access progressively difficult content is one way to safeguard against limiting student opportunities. For students with the most severe intellectual and physical disabilities the use of TTS is appropriate and should be used widely. In Wisconsin, for students identified as having the most significant cognitive disabilities, individualized education program (IEP) teams base academic achievement and assessment on Dynamic Learning Maps (DLM) Essential Elements (EEs)™, which is our state's version of alternate academic achievement standards.

Alternate Standards

In general, alternate academic achievement standards are aligned to state standards to make sure that our pupils with the most significant cognitive disabilities have access to the same curriculum as their same age/grade peers with the appropriated modifications and supports. This means that pupils with the most significant cognitive disabilities are required to access and progress through listening, speaking, reading, writing, math, and other standards with increasing skills. Directly relevant to the use of Text to Speech (TTS), for example, this population of pupils needs to access materials at levels of increasing difficulty, though often at an adjusted pace, which is similar to expecting progress of their same age/grade peers.

Rights and Needs

Pupils with the most significant cognitive disabilities often also have complex communication needs (CCN), which means that their disability causes them to have difficulties using their voice or be non-speaking. School staff can reference the National Joint Committee for the Communication Needs of Persons With Severe Disabilities (NJC) Communication Bill of Rights (Brady et al, 2016) for full guidance regarding communication. Directly relevant to this WCASS document are the following two rights for this population [from the 2nd edition]:

11. The right to have access to functioning AAC (augmentative and alternative communication) and other AT (assistive technology) services and devices at all times.

12. The right to access environmental contexts, interactions, and opportunities that promote participation as full communication partners with other people, including peers.

Given the above rights, pupils with CCNs must have all of the tools available to them to be able to access the content (AT) and communicate about the content (AAC).

AT and AAC Defined

Assistive technology is a support or device that helps a user in some way. Text-to-speech software is an example; it takes material that may not be able to be read visually by a pupil and creates auditory input to access content supporting the user. AT is the support pupils use to access the content. Augmentative and alternative communication (AAC) is a specific type of assistive technology (AT), that is dedicated to supporting communication for a person who cannot speak with their mouth or use their vocal cords, whether permanently or temporarily. AAC is the tool pupils use to communicate about the content. For many pupils, their AAC device is "locked," meaning it can only be used as their voice. For other pupils, their AAC device may be "unlocked," meaning that it is possible to navigate away from the communication system to access other functions such as email or videos.

A key idea to remember, as educators, is that pupils with CCN who use AAC must have access to both AT and AAC on different devices or pieces of technology, whether their AAC device is locked or unlocked. It is imperative that a pupil's AAC system is available to them at all times in order to communicate about the content made available through AT (or TTS). An AAC system is a pupil's voice and must always be accessible; any navigation away from that communication system takes away their voice.

Examples of Application in the Classroom

Jason, a 16-year-old who is multiply-severely impaired, learns social studies content by participating in shared reading with his teacher through TTS on an iPad, while commenting, sequencing events, and asking questions using his dedicated AAC device that is mounted on his wheelchair.

Sally, a 13-year-old who is severely cognitively impaired, uses her AAC device to speak utterances longer than one word, to repair communication breakdowns, and to clarify messages. She participates in literacy time by listening to the text using TTS on an iPad, identifying characters and character feelings through her mouth words and her AAC device, which is a dedicated (i.e., locked) iPad.

The advantage of using TTS or alternative text presentations is that it allows us, as educators, to present information in a way that can be easily repeated (replayed) consistently, and adjusted for strengths and needs, particularly with our pupils who are severely and multiply impaired, while at the same time using their AAC systems to communicate about their learning.

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How I Use Text-To-Speech in the Classroom: Building Confidence and Improving Results

by Ann Johnson
Special Education teacher
Mesquite Trails Elementary School, Oak Hills, CA

When assessing the needs of my students, I begin by assessing and evaluating their independent ability levels. Then I provide them with support such as technology tools (text-to-speech, speech-to-text, predictive text, extra time, etc.). In providing the student access through technology for the assessments, they are able to demonstrate accurate academic ability levels. After the assessments, I review the data to calculate the student's instructional levels and determine the student's needs. The data from the students' assessments demonstrate higher ability levels with access to digital tools. The data lets me know if text-to-speech (TTS) and other technology tools are needed for the student. I like to utilize assessments that differ from the general education teacher's assessments, in order to provide triangulated data to support the student's ability levels and needs in the areas of academics. I use EasyCBM for Reading / Comprehension (Nationally Normed, Research Based), Teacher Criterion Reference (Response to Literature), and Guided Reading/Running records.

TTS options that are available for our students are: Co-Writer, Snap and Read, and ClickerWriter for all students. I also use Bookshare for students on an individualized education program (IEP). Our school also uses websites with text-to-speech, such as: Google speech to text, Readworks.org, RAZ-kids.com, EPIC at getepic.com. These technology supports are available for all students to use across all settings. Every student at our elementary school has access to a Chromebook, where these tools are available for them. I use Snap&Read with my students, not only for text-to-speech, but also for its multiple tools that allow students the ability

to access materials. This program allows a student to click a word they may not understand, and Snap&Read is able to simplify the word(s), as well as simplifying the readability level on websites. Snap&Read includes tools such as masking. The students enjoy having the ability to control the rate, speed and pitch of the text being read. When my students are reading an article on the internet, Snap&Read has the ability to get rid of distractions, which aids the student's focus. I also use CoWriter for my students. CoWriter has text-to-speech, speech-to-text, and predictive text. When using speech-to-text, the students are able to say their thoughts for writing and their speech is put into text. Then, CoWriter can read the spoken text back to the student, allowing that student to hear what they said. This assists the student to hear the words they said and determine if they were able to express their thinking. With using the predictive text in CoWriter, the students begin to visually see vocabulary words that would belong in their writing.

The school I work at also uses ClickerWriter. ClickerWriter is an intervention support designed for K-3rd grade students. This writing program supports English language learners, special education students, and struggling writers. This program is teacher and student friendly. The program is a Universal Design for Learning tool. The program has pictures, text-to-speech, and speech-to-text with a variety of learning grids.

To provide students access to pdfs, I will scan an article or text, download it, upload it into a pdf file, and then share it out to my students. I also have shared a link to an article on the web that they will be reading. When my students open a PDF, they will also open Snap&Read to use the TTS.

To teach my students to become independent users of TTS or any of the technology supports that aids in the student accessing the information as well as allowing them to demonstrate their understanding of the material read, I begin with their instructional levels and their IEP goals in mind. With each program that is installed on the student's Chromebooks, I have installed it on my MAC laptop and my PC. I am able to project my screen on the whiteboard to demonstrate for the students how to go to their assignment, open the assignment, and open the text-to-speech or any tool they will be utilizing. We go step by step, with teacher modeling, as a whole group. They acquire the necessary skills involved with using the technology very quickly.

Once the majority of the students understand how to use the tools, there may still be students who need more individualized instruction. For those students, I will work with them in a smaller group to practice going over the necessary steps. Another way to provide support to the student who might struggle with text-to-speech or other technology tools is to create a short "how to" video that they can refer to.

I believe the best way to introduce TTS in classroom instruction is to begin by modeling how the students will use TTS. Text-to-speech supports level the playing field for all students in the classroom. TTS allows students access to the curriculum for IEP students, struggling students, and English learners. TTS also aids in closing the learning gap because with TTS teachers, parents, administrators, districts, and the students are able to get a more accurate understanding of a student's true ability and academic growth. Students begin to feel confident in their understanding of text read as well as in their writing. Student behaviors have improved as a result of reducing the frustrations they previously experienced in reading and writing. The higher achieving students are able to use the TTS, as well, when they have higher levels of reading comprehension, which also aids in their exposure to higher vocabulary. Access to curriculum allows students to be in the least restrictive environment with their peers. The students begin to demonstrate academic progress, comprehension, and confidence in all academic areas.

In 2017, the IEP students demonstrated an increase in ELA of 8.5 points. The math scores for students with disabilities increased 15.5 points. English Language Learners demonstrated growth as well. In 2018, students with disabilities increased their ELA scores on the SBAC state assessment by 19.9 points. Their math scores for 2018 increased by 7.2 points. In 2019 Mesquite Trails Elementary students with disabilities increased their ELA scores by 18.3 points. Their math scores increased by 6 points.

2017 Mesquite Trails Elementary CA Dashboard
2018 Mesquite Trails Elementary CA Dashboard
2019 Mesquite Trails Elementary CA Dashboard
EasyCBM Student Sample Assessment Results
Student Final Writing Sample

Resources
Co Writer
Snap&Read
ClickerWriter

Text-To-Speech Supports and Implementation Tips

Article by Lynn Boughton
Assistive Technology Support
Green Bay Area Public Schools

We've all heard that as students advance through subsequent grade levels, they progress from "learning to read" to "reading to learn." However, for students with disabilities, reading fluency, decoding, and comprehension skills are often below grade level. This presents a definite challenge for students but also for their teachers. To ensure equitable access to the curriculum and heightened student growth, the Green Bay Area Public Schools (GBAPS) has found much success in utilizing various text-to-speech (TTS) supports.

Universal Design for Learning (UDL)

Recognizing that ALL students can benefit from Universal Design for Learning (UDL) support, our district has made great strides in increasing curriculum accessibility for all learners. Our Teaching & Learning and Technology Departments have collectively advocated for accessible electronic resources. After a strict vetting process to ensure resources meet statewide data privacy agreements, GBAPS students have access to a multitude of research databases on the district's technology homepage or "Launchpad." Applications such as PebbleGo, Newsela, the GALE Research apps, SIRS, CultureGrams, WorldBook Online, World Almanac for Kids, etc., already have text-to-speech (TTS) embedded within their applications. Teachers readily encourage students to start their research within these databases (rather than a Google search), as TTS is always available to them with a simple click of a button. Additionally, GBAPS subscribes to digital reading platforms and e-book libraries such as BookFlix, Tumblebooks/Teen BookCloud, and EPIC. These applications provide built-in TTS, so students can better access educational and leisure reading materials more easily.

* *Implementation Tip:* Check with your Library Media Specialist (LMS) to see which applications your staff and students can access. Some are free; however, most are paid subscriptions. If your district doesn't have such options, preview their features and advocate!

Curriculum Considerations

In addition, GBAPS' Teaching & Learning and Technology Departments are highly mindful of accessibility considerations when reviewing and adopting curricular resources. In addition to the bound textbooks, the electronic versions are also purchased and utilized. Depending on their learning needs and preferences, students can access curriculum via the traditional paper format or the electronic

version. TTS is often among the built-in features of electronic textbooks, providing a great benefit for our students with disabilities. If TTS is not a standard feature within the online version, various add-on or external TTS tools can be utilized (see examples below). Exploration of different educational publishers is ongoing, including StudySync, whose online platform provides a multitude of accessibility supports such as TTS, translation support, and leveled text.

* *Implementation Tip:* You can get an electronic version of most textbooks directly from the publisher, but your curriculum department most likely already has access to the electronic file (likely a PDF). You can download this and share it out with your students, who can then use a TTS tool to have the entire textbook read aloud. At best, the publisher may have a specific website/app to access the textbook, typically containing a variety of other UDL supports (i.e., annotation, dictionary tools, etc.). If your district has a technology integrator, seek them out as a helpful resource for implementation ideas and technology troubleshooting.

Assistive Technology Supports
Chromebook Tools

In addition to the aforementioned universal supports, GBAPS utilizes other student-specific assistive technology supports for those with an individualized education program (IEP) or 504 plan. In collaboration with the district's assistive technology team, TTS recommendations are made on a case-by-case basis for students with a demonstrated need. GBAPS is a Google district where all students are 1:1 with a Chromebook; thus, these TTS supports are compatible within this platform. For students who don't require extensive TTS support, the "select to speak" feature is often explored. This is a standard, off the shelf feature, within each Chromebook device, enabled within the "Accessibility" settings of the device. When activated, "select to speak" allows students to click/drag their mouse to capture a section of text to be read out loud.

* *Implementation Tip*: Before additional programs are loaded or purchased, this is a quick and easy "first look" at TTS, in order to gauge student responsiveness to text being read out loud. "Select to speak" has some customizable settings, but it is typically not the most efficient tool for students requiring a high volume of text read out loud. However, if the student's main TTS tool is not working (they can sometimes be "glitchy"), this is a viable back-up plan!

Chrome Extensions

For students who need more robust literacy support, GBAPS utilizes two popular Chrome extensions: Read&Write for Google Chrome (by TextHelp) and Snap&Read Universal (by Don Johnston). These extensions present as an additional toolbar that layers on top of a user's applications. With a click of the speaker icon, these extensions will highlight and read text within Google applications (i.e., Docs, Slides, Classroom, Gmail, Forms), as well as content from

webpages. Both Read&Write for Google and Snap&Read offer many customizable features to best meet the users' learning preferences. A few of these preferences are changing the voice, reading speed, and colors of the dual color highlighting. These tools are helpful to have content read out loud, but also to auditorily present directions and test questions. Teachers report heightened engagement and stamina, as reluctant readers are less overwhelmed with high volumes of text when they know it can be read out loud.

* *Implementation Tips:*

- TTS can be a beneficial writing tool as well. Having students play back their composed writing has been an invaluable editing tool for spelling, grammar, and making sure ideas are accurately reflected.
- As a teacher, install the extension on your own computer to model access and application for your students. This modeling has been shown to greatly increase student "buy-in."
- There are other free TTS extensions that can be accessed via the Chrome Web Store's website. However, Read&Write and Snap&Read are among the most widely used in education. Free trials are available for students, and these applications are free for teachers. Start at the companies' webpages for registration and installation information.
- For students who could benefit from additional literacy support, these extensions can be a "one-stop shop," also offering text and picture dictionaries, text simplification/vocabulary support, translation, highlighting, screen masking, outlining, and annotation capabilities.

PDF Documents

Given their picture formatting, PDFs typically aren't as accessible to most TTS readers. However, both Read&Write and Snap&Read Chrome extensions have PDF-reading capabilities. Such support is built directly into Snap&Read; whereas Read&Write uses a companion extension called OrbitNote.This feature is crucial for the accessibility of supplemental materials/articles and paper copy materials. Bonus: these PDF applications also have many annotation capabilities.

* *Implementation Tip*: Utilize the school's high-tech copy machines to scan paper materials/worksheets and save them as a PDF. These PDFs can then be shared out with students. This is a great way to get paper copies into an electronic format to be paired with TTS tools.

Leisure and Supplemental Reading Materials

GBAPS utilizes a program called Bookshare. This website offers a free, online library that can be accessed by anyone found to have a print disability. Eligible students are granted access to over 1.1 million digital titles including popular and classic titles, textbooks, children's books, and non-fiction resources. Bookshare has

built-in TTS capabilities, and it also pairs nicely with other TTS applications. At the secondary levels, Bookshare is often used to obtain an electronic copy of English-language arts (ELA) novels for book studies and leisure reading materials. Teachers report that it has been a social "game changer" for students in allowing them to read the same popular, high interest text as their peers. During independent reading time, our Bookshare users log into their website account, open their book files, and can listen/read along with the highlighted and spoken text.

* *Implementation Tip*: When setting up a Bookshare account, you can create an organizational membership or an individual membership. GBAPS maintains both. An individual membership is often preferred by students/families who are seeking more autonomy to download books themselves, versus relying on a school staff member to load books to their personal library.

Reading Pens

Although many TTS tools are wi-fi or computer-dependent, there are other mid-tech options to have paper materials read out loud. When electronic/digital text is not an option, students can use a reader pen, such as C-Pen Reader. This is a hand-held device that reads text as it is scanned across, much like using a highlighter. It also offers word definitions, language options, and voice recording. It can even store text to be scanned to a computer.

* *Implementation Tip*: A fair degree of motor control is needed to neatly scan lines of text, so practice is often needed. The portability of the device makes it a great choice for reading paper materials such as research articles, worksheets, and test questions.

The TTS success stories are numerous in our district. Aside from the increased accessibility for academic tasks, students and staff report numerous social benefits as well. TTS has afforded increased engagement and motivation, heightened attention, and greater stamina and persistence. For the Green Bay Area Public Schools, text-to-speech has been integral to ensure that our students are college, career, and/or community ready.

How I use Text-To-Speech in the Classroom: Using Snap&Read

by Annie Sims
Program Support Teacher - Technology
Marathon County Special Education

Assessing the student

The student will benefit from using test-to-speech (TTS) after using the Protocol for Accommodations in Reading. I find that the student can comprehend what they are reading, at grade level, with a TTS accommodation. If the student scores in the top 25% (top quartile), it indicates they can comprehend independently at that level with the accommodation on the initial testing situation. Initially, the student's comprehension may be greater with an adult reader rather than TTS. In my experience, with practice, they will have increased success with TTS and may not need to regularly rely on an adult reader.

What TTS options are available in your school?

I work with six rural school districts in Wisconsin. All have access to Snap&Read. Additionally, all of the schools utilize Chromebooks and have access to the Snap&Read Chrome extension. Some of the districts utilize iPads, but do not generally use Snap&Read on an iPad.

How do you provide access to pdf files or individual instructional sheets?

PDFs can be accessed through Google Drive on a mobile phone, iPad, Chromebook, or computer. A document can be scanned and saved to Google Drive. The Screenshot Reader autospeak can be turned on in the Snap&Read settings and can be utilized in the Google Chrome browser by installing a simple Chrome extension. The autospeak option enables a .pdf to be converted so that the TTS option can be utilized.

How do you teach your students to become independent users of TTS?

I present Snap&Read to a group of students or in a one-on-one setting. I typically use a presentation with slides to share information about Snap&Read. I begin with a video on how Snap&Read works. Next, I explain all of the features available within the Snap&Read Chrome extension and ask the students if they have any questions. I then ask the students to go into the Snap&Read settings to customize their Snap&Read extension to fit their needs. Once we have customized the settings, I show the Snap&Read features individually and ask the students to practice using the features, one at a time. While students are practicing using the feature, I walk around to see if they are having any difficulties using the Snap&Read extension. Upon completion of the training, I ask the students how they can use the extension at school and home, aiding in comprehension and retention.

Your recommendations on the best ways to introduce TTS into the daily classroom instruction

I think daily practice and testing situations are appropriate times to remind students of the TTS option and reinforce that they are using the features appropriately. In any situation where a student is asked to read, I would encourage the use of Snap&Read, reminding them it is there to help and support their reading. It is important to closely interact with the students to ensure the program is accurately being used. Daily practice and testing situations are excellent times to remind students of the TTS option, reinforcing that it's being used appropriately.

Any other information that a novice teacher to TTS will need?

If you are having difficulties getting Snap&Read to work properly, make sure your browser is up to date and restart it. The technical support has also been very helpful if I run into any issues.

Resources

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How I Create Expert Learners in My Classroom

by Brandon Bean
Special Education Teacher and Kansas Infinitec Cadre
Derby School District, Derby, KS

The goal of this article is not to overwhelm you but rather to give you action steps to start on a journey of developing expert learners. I work with students for three years, but often I will gain students later in a year or even starting in 5th grade. This process is the same, and often once the classroom culture is established, new students tend to come along much more quickly when seeing peers goal set, graph data, and perform self-assessments or reflections.

Once a student begins to see the purpose within a classroom, understand that "you," their teacher, are interested in their learning and goals, the introduction of learning tools becomes much easier. With the rising identification of students with dyslexia, learning opportunity loss due to Covid-19, and students whose independent reading abilities are two grade levels below their current grade level

(maybe on an IEP/504), it has become more important that “we” the teachers, administrators, and parents recognize the growing need for text-to-speech tools within the school setting.

Three years ago (fall of 2019), I was invited to participate in a pilot program titled “Access for All” in collaboration with Kansas Infinitec and Kansas Technical Assistance Support Network (TASN). As part of this pilot, we sought the opportunity to explore the benefits assistive technology might have on increasing student access to grade- level materials within the general education setting. Via co-teaching, the general education teacher and I worked with students to collect data using the Universal Protocol for Accommodations in Reading (uPAR) assessment to see whether a student would benefit from a read aloud accommodation. The uPAR assessment first assesses a student’s independent silent reading level, then will assess each student's instructional level with the use of text-to-speech in both human audio and electronic audio.

The data collected from the uPAR was so valuable. It helped motivate students; they were able to see themselves as learners because the data showed them that they could comprehend difficult text with the help of text-to-speech technology. In addition to student excitement, the data was great to share with parents and explain that their child might benefit from having audiobooks or e-reader texts at home. This really helped with parental buy-in to using technology supports, which is often the most challenging factor in being able to get students to apply learning experiences in other settings, especially at home.

In January 2020, students in two general education 5th grade classrooms were provided with Snap&Read and initially taught how to use the text readers. Then two months later, Covid-19 shut down the United States, but this is where individual student success started to flourish. During the shutdown and only a few Zoom meetings with students, one of my students went above and beyond and used Snap&Read to access nearly 26,000 words between March and May. Not only did this student use the text-to-speech tool to access learning materials but also advocated for the tools upon transitioning the next school year to middle school. In the first year of middle school and spending most of the year hybrid (half day at school, half day home learning), this student used Snap&Read to access over 600,000 words. This student was able to grow into an expert learner! She recognized her reading challenges but also had developed the self-knowledge to know that auditory learning via text reader was a strength of hers. She became motivated, resourceful, and strategic about her learning. My co-teaching partner and I nominated this student for the Kansas Infinitec Outstanding Student Technology Award, and she was one of five students from across the State of Kansas to be awarded this title.

As a participant in the Access for All Program, I continued to work on developing my students into expert learners and using technology tools to help eliminate barriers. The results have been, and will hopefully continue to be, increased student independence, self-confidence, achievement, inclusion, and self-advocacy skills. Through a year of hybrid and then a year of in person instruction, I was amazed at the reading success achieved by the students using Snap&Read on a regular basis, both at school and at home. Students began to advocate for more access to learning materials in electronic form (audiobooks, e-text, etc.). This is where EPIC, Bookshare, Audible, Libby, and other audio options came into play.

"It may take 100 tries for our students to become self-directed, motivated, knowledgeable, resourceful learners, but we owe it to them to facilitate that journey. You may work hard all year and take students from 1 to 30, and it may feel like you failed, but you did not. You have made things that much easier for the next teacher, and the one after that. Eventually, there will be a teacher who gets to see the 100th try-the moment when learning clicks-and maybe that teacher will get all the credit. But that student will always know that you were an integral part of that success" (Novak, 2016).

Why should this matter to you? Our goal as educators is to provide a safe and inclusive learning environment for all of our students. So often, students who struggle in reading are not intentionally left out from being able to independently access grade- level reading materials. It is our job to recognize barriers such as this, to provide the necessary skills and tools to develop Expert Learners. Over the years of providing text-to-speech and other learning tools, it is truly the development as expert learners within my students that has been the most rewarding.

My advice for a novice teacher or someone who might be new to text-to-speech and other tools is to understand that implementing anything new is a process. Not every student or even every teacher will develop into that expert learner. Enjoy the journey, collaborate with peers, learn right alongside students, and celebrate each other's successes. Just as much as "you," the educator, want the students to succeed, they, the students, also want you to succeed.

Resources

Don Johnston Resources:

- Snap&Read
- uPAR

Kansas Infinitec Cadre

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How I use Text-To-Speech in the Classroom: Teachable Moments

by Sara Zwiefelhofer
Special Education Teacher,
Chippewa Falls High School

Assessing Students

I do not use any formal testing to assess students for text-to-speech (TTS) usage. I typically look at results from past and current evaluations to learn about reading fluency and comprehension, along with having discussions with the students and families at IEP meetings. Working with older students, typically they have had some experience using text-to-speech.

What TTS Options are available in your school?

Working in a variety of schools, the one constant option we had/have is the Google extension tools. Most students have their own Chromebooks, so those tools work the best. The main go-to tools that I encourage students to use are the free version of Read & Write, Kami, Bookshare, and using YouTube videos of people reading the books aloud. In the past, I have used iPads, as well, and have tried to use text-to-speech tools and apps that are used in the local technical schools and colleges in our area.

How do you provide access to pdf files or individual instruction sheets?

The free extension, Kami, is typically able to read most pdf files. It has an OCR (optical character recognition) reader built into it, so once you open the file with Kami, the built-in text-to-speech software can typically read it. For other materials, I have had to retype it if it is short; otherwise, I may have to search for an online version of it for students to use their tools with.

How do you teach your students to become independent users of TTS?

I wish I had the time to do formal training with them, but I typically do not. When we are working on a task that they need read aloud, I work with them in the moment to use the tools. Sometimes I will access it on my computer and have it read aloud to them; other times I will get it set up on their computer for them to listen to the text on their own. As the year goes on, I fade away my reading aloud to them and continue to prompt and encourage them to use the tools that they have.

Your Recommendation on the best way to introduce TTS into the daily classroom instructions?

I have spent most of my time working with students in general education classrooms. Over the past few years, a few of my co-teachers and I have been working on teaching the tools to all students in the classroom, not just those who have it as an accommodation. With the wide variety of access to technology and the universal design for learning approach, it really is a tool that can benefit all students. When giving students time to read independently, we remind the whole class that they can listen to the material using the text-to-speech as they follow along with the text. Instead of reading to the class aloud ourselves, we also have used audiobooks or YouTube versions for the whole class to listen to. In our English class, we talked a lot with students about how they learn best and have tried to help everyone in the room learn what tools are available to them to help them be successful. The goal is for students with accommodations to not feel like they are using different resources than their classmates.

Any other information that a novice teacher to TTS will need?

Besides using the text-to-speech to read text aloud, I encourage students to use the tools when writing. So often student have spelling deficits as well, so being able to listen to what they have written will help them hear if they have the words down that they want to have down. I have created an editing checklist that includes the step of listening to their document to check for proper word usage. It has really made a significant difference in their writing.

When it comes to using text-to-speech with students, make sure you stay consistent and take the time to talk about the benefits of using it. I continually tell students that I am not going with them to college or on their jobs to read materials aloud to them. I do not force the usage of one tool type and encourage them to use what they like. Having access to YouTube to read materials aloud has helped with the reading of novels; however, when it comes to documents and tests, they still need to get used to using the computer versions. There are voice options on most programs along with speed controls, so take the time to have students learn how to access and explore those.

The younger a student is when they start to use the tools, the more likely they are going to access them in middle and high school. It is hard to get students to learn to use the tools when they are older, as they do not want to look different than their peers. However, with ear buds and teachers allowing students to listen to music during work time, students to feel more comfortable putting in their ear buds and listening to their text in the general education classrooms.

Lastly, it must be a team approach for the tools to be used consistently. If they can be modeled and given as an option for all students, that helps reduce the stigma. It is also important that special education staff are on the same page with the usage

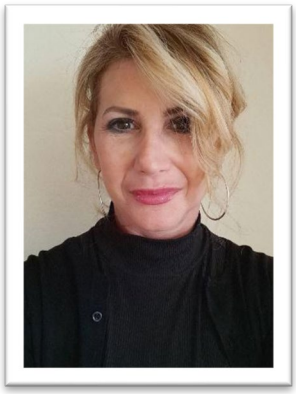
of text-to-speech tools. Students will gravitate towards people who are willing to read text aloud, as they are more comfortable with that (and some teachers emphasize words, which then may inadvertently give students answers for test questions). Text-to-speech allows students to work at their own pace and be independent and responsible for their own coursework. The ultimate goal is for students to show their own skills and be independent in their learning.

Resources

- Read&Write for Google Chrome
- Kami—There is a manual that you can download to help learn how to use Kami. Kami works well with assigning tasks on google classroom.

How I use Text-To-Speech in the Classroom: Teaching Tools and Improving Usage

by Angela Rinaldi
CEO Techknowledgy Rocks LLC
Assistive Technology Specialist, Norwalk Public School, Norwalk, CT



Assessing the student

We currently utilize several testing tools such as Aimsweb Plus and NWEA Testing as well. Text-to-speech (TTS) is a tool most utilized if a student is having difficulty in reading, vocabulary, reading fluency and comprehension.

What TTS options are available in your school?

In the past we utilized Read&Write, but currently we are utilizing Snap&Read. Our district has purchased it as part of the Universal Design Program so that all students have the option available to them. We also have the program available as an app for iPads, but more so it is used as an extension with Google Chrome. Most of the students in our district utilize a Chromebook, so the Snap & Read extension is right at their fingertips. Many times, we teach the entire class how to use it so that they know where to find it and how to use it.

What other TTS options would you like to have?

I would like to have a text-to-speech tool that automatically turns written text into dyslexic- friendly fonts and then utilize the text-to-speech to read the passage. There is an extension that will change the font, and then we utilize Snap&Read as the text-to-speech option which works out very well. It would be fantastic if this feature was offered in Snap&Read.

How do you provide access to pdf files or individual instructional sheets?
We have made it so that PDF files can be loaded into Snap&Read PDF annotator and the PDF reader. Then the TTS tool on Snap & Read can read the PDF document as well as being able to write on it. Then the student can listen to what has been written as well (for example, using phone or iPad to take pic and convert it to TTS).

How do you teach your students to become independent users of TTS?
In my years of training students to use text-to-speech I've noticed that when we teach the entire class to utilize the tool and it is utilized regularly with lessons, or is available to students in their current lessons, the student tends to feel more comfortable utilizing it, and it becomes a resource and a tool as opposed to being an accommodation.

Recommendations to introduce TTS into the daily classroom instructions
Don Johnston provides a daily schedule of learning different tools from Snap&Read. The student learns one tool a day as opposed to all of them at once. I also feel that it is important to utilize these tools regularly so that the student feels comfortable and confident. They should almost feel as if it is second nature to them. In addition, teaching the entire class is extremely beneficial, as well, because TTS ends up being a universal tool available to all. The last way I like to introduce text-to-speech is to upload a document into the PDF reader. A document can be uploaded from Google Classroom, which is already in PDF format, with Snap&Read connected.

Any other information that a novice teacher to TTS will need?
Having the text-to-speech extension located in a bar on the computer to be able to access quickly is another way of improving the amount of usage. Sometimes when a student has to look for the extension, they tend to not use it as much. However, if it's in a specific location, such as one of the first extensions, they know exactly where to go. Also, it is helpful when putting a lesson together, to have text-to-speech available as a tool to utilize while completing that lesson and is a great way for kids to get used to using it.

Success Story
I was recently working with a student twice a week on reading fluency and helping to improve her phonemic awareness. After working with her for several months, she took a reading progress indicator without using the text-to-speech resource. This student is currently in the 6th grade. She scored without using the text-to-speech tool at a 4.5 GE reading level. A week later, I gave her the same test (RPI-Reading Progress Indicator), and she scored at a 7.5 GE reading level. This was with the utilization of the text-to-speech tool. The student was very well versed with this tool because we used it on a regular basis with various books and passages. We also used it when reading comprehension questions and math word problems.

Resources

Video Tutorials of Apps and Extensions by AT Specialist Angela Rinaldi

- Literacy Tools by Don Johnston
- Removing Distraction and Improving Vocabulary
- Using Snap&Read for PDF Annotations and Text-To-Speech
- Using Snap and Read, Co:Writer and Wordbank Universal Together
- Taking Notes and Using the TTS Tool with Snap&Read

An amazing collection of assistive technology resources developed by Angela Rinaldi, one of the contributors to this publication. **Click on the picture below to access the website or click to go to the Techknowledgy Rocks webpage.**

Interactive Lesson Plan: Penguins—Diet and Habitats

Subject: **SCIENCE**	Topic: **Penguins: Their Diet and Habitats**

Vocabulary:
Prey, primarily, fasting, species, habitat, distribution, species

Learning Objectives: After this lesson, students will be able to:

- Identify what penguins eat, their habitat and distribution.
- Discuss where and how penguins live and be able to answer various comprehension questions.
- How to use the TTS tool for reading, processing, and comprehension

Materials Needed:

- Computer/Chromebook
- Snap&Read (TTS software/extension)
- Headphones with a microphone if needed

Structure / Activity

FIRST:

Student will click on this link and watch a video about penguins:
SeaWorld "All About Penguins"

NEXT:

Students will be provided with a website about penguin diets and habits:
SeaWorld Penguin Diet and Eating Habits

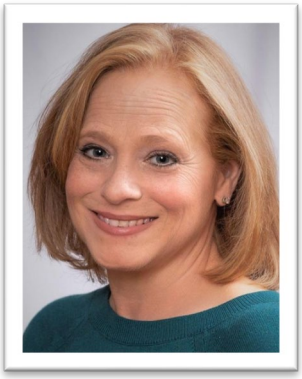
1. The students will click on the website and then remove the distractions by using the REMOVE DISTRACTIONS tool located in the Snap&Read Icon.
2. The student will then turn on the Snap&Read tool and click on the speaker tool in the Snap&Read tool bar.
3. The student will use this tool to listen to the website. They will then click on this website address for more information about penguins and repeat steps 1 and 2. SeaWorld Penguin Habitat and Distribution
4. Based on the information they have read or listened to, they will be given a Google Doc with various questions pertaining to the information from the website. The student can use the Snap&Read TTS tool with this document as well, in order to have the questions read to them. Once completed the student can share the document back to the teacher. (Teacher: Please make a copy for each student).

Comprehension Questions:
https://docs.google.com/document/d/1RHZszz3_DnxnHCCs6QriSzdlMYXm1pfxUGV0i2jDjpk/edit?usp=sharing

BONUS FUN!
San Diego Zoo Penguin Cam
Here the students will get to watch penguins LIVE at the San Diego Zoo!

Text-To-Speech as a Universally Designed for Learning Tier One Support for Elementary School Students:
A School-wide Approach

by Beth Poss
Speech and Language Pathologist, Author, Consultant and Inclusive Technology Advocate, Dickerson, Maryland



In my former role as Assistant Principal at Sequoyah Elementary School, in Derwood, Maryland (Montgomery County Public Schools), I took a Tier 1 approach in providing text-to-speech (TTS) to learners in grades 3-5. While there were learners receiving special education services with TTS as a supplemental aide and as an accommodation on their individualized education program (IEP), our school chose to go beyond this in making TTS tools available so that all learners could utilize the features of TTS tools.

It is not only learners who struggle with decoding text who benefit from TTS. In fact, I am hard pressed to identify any learner who might not have a reason to use it for some purpose: multilingual learners who may understand spoken English better than written English, learners who want to tackle above grade- level/above reading- level text that is of high interest to them, student writers editing their own work who may not see an error but may hear that error when text is read aloud, and more. These are all instances in which learners who do not require TTS can use it to support their own learning.

At Sequoyah, we have a school-wide license for Snap&Read, provided by the district. Students have access to Chromebooks throughout their day. Much of the curriculum is delivered via an online platform with PDF texts and a combination of online PDF worksheets and paper-based student workbooks. MCPS is also a Google for Education school district, and all learners have access to Google school accounts. Read&Write for Google Chrome was another option that we could have chosen; however, Snap&Read was preferred for these young learners because of the simplicity of its toolbar.

When beginning the implementation of broad access to Snap&Read, we took the approach of empowering learners by training them directly on the use of the tool and its most powerful and most useful features. In conjunction with trainers from our High Incidence Accessible Technology team (HIAT), we designed explicit student lessons on how to activate Snap&Read and access the tools, including TTS, translation, and screenshot reader, simplify vocabulary and the color overlay. Learners got to play with and choose the voice that they liked best and make choices for color of text highlighting, speed of reading and more. The trainers modeled and explained the different ways that students could use Snap&Read,

depending on the task and their own needs and preferences. As a simple reminder to use Snap&Read, we put a big Snap&Read sticker on the inside of the Chromebook alongside the trackpad. Classroom teachers were also encouraged to regularly model the use of Snap&Read features during lessons on their interactive white boards.

Based on informal conversations with students over time, I found many enjoyed using TTS as a learning support. Our multilingual learners found it very helpful to figure out how to pronounce an unknown word, and they often used the translation feature built into Snap&Read. Students reflected that it was really helpful to hear their written work read back to them and that it helped them catch not just spelling errors but also to evaluate the quality of their writing. However, the most powerful feedback came from a 5th grader, who told us that because other peers were using it for "fun," she did not feel different using Snap&Read as a much-needed accommodation. She further told us that she finally felt confident as a reader and was ready for middle school because she had a tool that supported her.

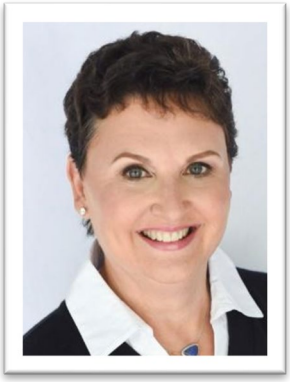
When we can make tools needed as accommodations for some a part of every student's learning toolbox, we empower learners to find the technology and strategies that best meet their learning needs. Providing resources to all learners provides students with agency to use technology without fear of looking different or being less than their peers.

My best piece of advice to novice educators is to view TTS and other resources through the Tier 1 lens. Ask yourself, "What strategies and tools can I put into every learner's hands so that they have the tools to support their own learning?" Invite learners to see the ways that they can use available tools to make learning easier, more engaging, and more relevant. Model the ways you use your own toolbox of resources to overcome learning challenges and to remove barriers that you encounter as a life-long learner.

Ultimately, the way to successfully introduce TTS daily into classrooms, and to facilitate independent student use of TTS, is to ensure that these learners see the tool and the strategies as important, relevant, and empowering to them. For learners receiving special education services and a TTS accommodation, this likely means that they see TTS as not just for them as learners with a disability, but for them as learners, period.

Using Text-To-Speech Tools Boosts Access and Engagement for Students with Reading Disabilities, Leading to Improved Academic Outcomes.

by Kirsten M. Kohlmeyer
Director of Assistive Technology,
Redwood Day School, Chicago, IL



I'll never forget the wide-eyed look and broad smile on a fourth-grader's face when I asked him if he was willing to read in a different way. He had a reading disability, and I had just taken him to the school library and told him to choose any chapter books that he was interested in reading, not just the "baby books"—his words—that he could independently decode. His picks were available and downloaded within minutes from Bookshare, an Office of Special Education Programs-funded organization that provides a vast library of free accessible eBooks for students with print disabilities who qualify.

This intersection of choice, self-determination, and technology was powerful—it started an entire new chapter of self-confidence and independence for this student.

Students with reading disabilities can interact with texts in a variety of ways. They can decode, they can listen to an in-person read-aloud, or they can listen to human audio text or digital text, which are called text-to-speech (TTS). Using TTS allows for equity and access. If struggling readers are limited to text they can decode, how can they enjoy the richness of written language, participate in class discussions, learn academic content, and develop a love for reading? Text-to-speech opens new worlds for them.

Research demonstrates that using text-to-speech tools increases access and engagement and allows students to access grade-level content and material, as well as websites and books of interest (Young, 2012). Interaction with curricular content can help students improve their vocabulary, comprehension, reading accuracy, and fluency. Perhaps most importantly, the use of TTS improves students' positive feelings about reading and school (Schock and Lee, 2016).

Assistive Technology Tools and Digital Text Build Capacity

Students and teachers need a variety of tools in their toolboxes. Bookshare delivers with its extensive repository, reading tools, and ability to provide textbooks and honor text requests, giving students vast digital resources for both personal and academic use.

Learning Ally, a fee-based organization that sometimes takes requests, provides books with human audio, which is sometimes preferred for pleasure reading.

Human audio text may or may not have simultaneous text highlighting to support tracking and does not have a mechanism to interact directly with text.

Many factors affect tool choice and use. A student reading a novel might use an assistive technology (AT) tool that can highlight and annotate digital text, instead of relying on a phone app that reads a menu or email, for example.

Settings where students learn and work, such as large classrooms, small groups, or the kitchen table, also impact tool choice and use. Staff, family, and student buy-in, as well as access and ability to use AT tools, remain key factors in effective implementation. Keep in mind that students, environments, tasks, and technology change. Ideally, exploring AT tools and services should be an ongoing, problem-solving process throughout students' academic careers.

To assist students, teachers need to ask, "What is the goal of the activity? And is the student learning to read, or reading to learn?" Remediation and accommodation can coexist, and they can be balanced and beneficial in educational settings. Remediation assists the student in overcoming academic challenges and developing mastery, while accommodations such as AT include alterations of the environment, curriculum format, or equipment that empower an individual with a disability to gain access to content and/or complete assigned tasks. Using AT is not cheating; rather, assistive technology can change the academic trajectory of students with reading and writing challenges.

Teacher, Parent, and Student Teamwork Is Key

It's not enough to know what AT tools can do. We need to teach students how to use the tools, how they can improve their work, how to advocate for tool access, and how to choose the right tool for the task and environment. We need to make time for students to explore the tools in-depth and collect data on how the tools aid engagement and performance.

Furthermore, teachers need support in learning the tools, integrating the tools, and troubleshooting problems in real-time. "Show and tell" alone doesn't cut it—ongoing student and teacher coaching with clear expectations for tool use, understanding of how and when to access support, and outcome measures are key. And when teachers collaborate and communicate across content areas to ensure tools are successfully embedded across the curriculum, students succeed.

Parent education is also critical. Parents need to know when their child will be better served decoding text, reading digital text, or listening to audio text. They need to understand AT use and how to support their children at home and across educational settings so they can meaningfully participate and advocate within educational teams.

In many districts and households, lack of knowledge and limited budgets can negatively impact access to and provision of quality AT services. The individual and societal costs of illiteracy are immense. Bottom line: The literature supports the premise that students with learning differences who use AT transition more successfully to high school, show improved quality of work, gain positive perceptions of themselves as learners, and experience positive post-school outcomes (Ellis, 2017). Such intersection of choice, self-determination, and technology can be powerful. How can we afford not to provide a valuable resource like assistive technology tools?

References

Ellis, A. L. (Ed.) (2017) *Transitioning Children with Disabilities*. Brill.

Schock, R.E., and Lee, E.A. (2016). *Children's Voices: Perspectives on Using Assistive Technology*, 26(1). https://doi.org/10.5206/eei.v26i1.7736

Young, Gabrielle D., *Examining Assistive Technology Use, Self-concept, and Motivation, as Students with Learning Disabilities Transition from a Demonstration School into Inclusive Classrooms* (2012). Electronic Thesis and Dissertation Repository. 1054. https://ir.lib.uwo.ca/etd/1054

How I Use Text-To-Speech in the Classroom: Building Strong Foundations for Success

by Marisa Kluth
Elementary Classroom Teacher
Monroe Elementary School, Manitowoc, WI

Assessing the student

Text-to-speech (TTS) is something that has to be launched and practiced with all students to start with, so that it becomes a universal tool for all to use when they feel they need it, if they feel they need it. As students learn and grow, they start to learn which tools, such as TTS, work well in their own learning. Launch helps build a foundation of understanding and purpose.

Students are able to utilize text-to-speech when they need to do so. It is available to all students and is preloaded onto their school-issued devices. It is especially useful when the reading is above grade level (both the story, the directions and questions that may follow) or for math so students know what the question is asking them to show. Paper copies may also be available if students prefer both. Students oftentimes will utilize Google Read and Write, whether it is for one word, a sentence, or a whole paragraph. I have also designed ways for students to access anchor charts, spelling tests, and various lesson activities where they can click the

Mote or VRSpot (which is different from Google Read and Write) in order to be able to have it read out loud. Sometimes hearing my voice and inflections is more helpful. These tools can be used in tandem. When students are reading a PDF, for example, they are able to use a PDF reader such as Read Aloud or Orbinote.

What TTS options are available in your school?
Students use Google Read and Write software, which is available on their 1:1 Chromebooks. Teachers also create their own videos that explain or show students how to complete an activity, such as a math problem. With this, a video using VRSpot or a download to YouTube is made; the link to that is then provided. This provides text being read aloud and also a visual on what is being read or completed.

Teachers also provide daily slides (for the week) that are linked in Canvas and then archived for later use. Students can use TTS to look ahead at what is coming up for the week, which helps students feel better knowing what is coming up, but also so they can go back if they need review or help. Students utilize Raz Kids that allows both reading and comprehension. Students can choose to have the story, words, or phrases read aloud.

What other TTS options would you like to have?
Mote (free trial has expired): Although this is more of a speech-to-text option, it is very convenient; it is quick and easy to use and easy to insert into slides; you do not need to go into your device to find the recording.

How do you provide access to pdf files or individual instructional sheets?
PDF files are linked into our daily slides or directly into Canvas; they have them read aloud using Read Aloud or Orbinote, which are both extensions that can be added through Google Chrome (again, this is part of the launch process). If the PDF reader is not cooperating, pasting it into a Google Doc will work just as well; then they can utilize Google Read and Write.

How do you teach your students to become independent users of TTS?
At the start of the school year, we spend a lot of time launching TTS, starting with the basics. We practice using a gradual release model: I show them using examples they have access to via Canvas, we practice together (many times), and then they can utilize it as they feel it is needed or wanted. Even after launch is complete, they are reminded of tools to assist in being independent and successful. Sometimes launch must be repeated, and that is okay. The “how to” video is always available to them through Canvas, if they need to refer back.

Your recommendations on the best ways to introduce TTS into the daily classroom instructions?
Know how to use it yourself before introducing it. Use it when it is appropriate and as often as it could be appropriate (in a variety of ways). Making it part of the

classroom norm and creating an environment that makes the use of this means of support allows students access to universal learning experiences.

Any other information that a novice teacher to TTS will need?

- Accessibility and Predictability is SO important: if you have something on paper, it is helpful to have it available virtually as well, so they can listen and see and refer back to it.
- TTS can often lead into speech-to-text: for some students, this is a game changer for student engagement, especially with writing, so it is important to build the foundation of all students have access to all learning tools.
- Make any and all learning tools available and part of the culture: all tools for all kids.
- TTS requires headphones when it is being used in a classroom.

Resources

Mote (easy to record and instantly able to insert): free trial, then around $40 a year (unsure of school license)

Student Success

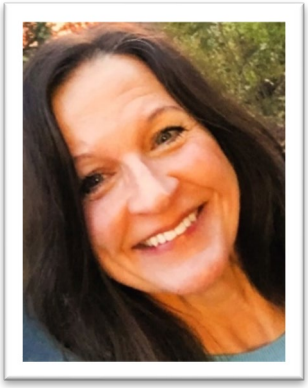
This is seen in both small groups and large groups. Student confidence increases, and the way they perceive themselves in the classroom improves. This builds academic confidence but also social confidence. If materials for growth are not made available, teachers cannot see student potential. Any and all accessibility options lead to an environment rich in supportive learning. Utilizing these resources is a norm, and students see themselves as "equals" and not "less than." Success looks like:

- Increased engagement: everyone has a voice and an option to share it;
- Increased participation and sharing of ideas;
- Students helping students;
- Increased work/products toward grade- level standards;
- Having their own work read back (when also utilizing speech-to-text);
- Increases self-monitoring when utilize STT and TTS in tandem;
- Increased willingness to share because they have had the opportunity to listen to it themselves, make corrections, and it is not in their voice (which can make students self-conscious);
- Less 1:1 support and more student driven (support is shared and no one stands out);

- Increase in comprehension (When listening to a story we are removing the barrier of decoding.);
- Increase in reading books for enjoyment (Often times books that they may be interested in are above their reading level and this allows them to experience that text and love of reading and learning.); and
- Positive relationship with learning and recognizing that we all learn differently.

TTS In Student Extra Curricular Experiences

by Janelle Bailey



I had the great privilege of helping to edit Nissan Bar-Lev's *WCASS Guide: How to Provide Students with IEPs Access to Their Grade Level Curriculum Through Text to Speech* in 2021-22, and in doing so, I read the document several times. While completing that project with Nissan, two very significant results developed: I came to know Nissan Bar-Lev far better than I had in the previous four years of us working for the same employer, and I came to completely value and understand the tremendous importance of his text-to-speech initiatives, among other things. I also came to understand, and fully, how he'd become the "father of special education."

Nissan and I both worked at CESA 7. While we were often in attendance at the same meetings, each of us CESA 7 directors, we managed very different programs and fulfilled different roles. Because our work was so different—he, the CESA 7 Director of Special Education, and I, the state director of a high school extracurricular academic program—our paths did not often cross. I did not know who Nissan was or how truly important—the man and/or his work—until he asked me to help edit the original guide. We then seized the opportunity to work together and share our passion for reading.

Nearly immediately after reading the pieces of the project that became Nissan Bar-Lev's *WCASS Guide*, I knew that I was also a member of the audience for whom the guide was intended. The WCASS Guide was not just another document; it was a living and breathing work of and toward change. The more times that I read it, the more I felt in both my gut my heart that it was going to change the opportunities to support students with reading disabilities, as well as change for the better the minds and hearts of the teachers supporting and working with those students, assisting them to better understand all that they could—should—do to move their students toward successful and grade-level reading.

Previously, I had very much been the regular education teacher referenced in the guide, the one who worried that using things like text-to-speech was a crutch of some kind, an enabling escape for special education students. Reading the guide prompted me to do a 180-degree turn in my thinking, moving to completely understand how critically important this kind of support is, not only to Students with Disabilities but to make available this type of assistance and support for anyone who needs it.

Once the guide was published, I indicated to Nissan my willingness to either be temporarily reassigned or to take on additional work; I volunteered to go on a state-wide tour of school districts to promote the *WCASS Guide*. I truly felt that it was that revolutionary and that well-written, wisely contributed (to) by experts in the field. I truly believed that it should be required reading for every licensed teacher in the state.

Instead of going on that tour—Nissan humbly giggling and possibly not believing my suggestion that this is true rocket science toward reading progress, to accompany text with audiobooks, for instance—I found in my own inbox a query from a coach in my program who wished to put on his school's roster the next season a young woman with selective mutism. Like many others erred in their thinking, I first saw "selective" to mean "by choice." Only in doing further and extensive research did I learn how rare this diagnosis and how paralyzing the condition, as well as the fact that this is absolutely a 504 plan-prompting disability.

Because I had just completed many thorough readings of Nissan's guide, I knew that I was being presented this opportunity to support a student with a disability—in her case, the inability to speak, either privately or publicly—through a ten-event competition which includes Speech and Interview events at the Regional level and beyond (State and National Competitions, as well, if qualifying at Regional Competition)…for the grand and particular opportunity to put into immediate practice all that I had recently learned. And if I hadn't just read Nissan's guide—and over and over—I am not certain I would have been so quick to see this opportunity. I may, instead, have quickly indicated that there was no way this student could compete in speaking events if she, herself, did not speak.

Instead, I immediately contacted Nissan, and he connected me to a special education specialist who had previously worked with students with selective mutism. Together, then, she and I outlined a plan for how this competing student could both complete and compete in our Speech and Interview events within adjusted parameters. She could do the oral presentation work in written form, instead of speaking; she could have her computer or communication board turn her own text into speech. And with appropriately adjusted parameters for timing, as well an omission of only the "voice" component on our scoring form, she would be accommodated and competitive. We walked through our plan thoroughly, next

offering it to the student's coach for consideration by both the student and him. With approval from the student and her agreement that the plan provided accommodation appropriately, as well as made the opportunity to compete fully accessible to her, we then presented it to the national program managers for approval. They all swiftly approved of our plan, such that we could document, for any future needs, a fair and accessible means of competition in those events—Speech and Interview—should ever another with a documented, qualified speech disability wish to compete.

Fast forward into that 2022 extracurricular season. The young woman of our previous discussion not only competed, but also: her team did go on to Regional and then also State Competition. And she not only successfully competed in each event; she was one of the highest scoring students—one of the top three in her GPA category—state-wide. She did not just "get to compete," but she was truly competitive, and no standards were compromised for her to do so. She was truly, and for the first time in possibly many years of her life, included in a way that allowed her to fully use her voice. It was a remarkable reality for all of us.

And for Nissan and me there was the promise of his next—this that you are reading right now—follow-up publication to that *WCASS Guide*. We, in fact, last met—virtually—on a Monday morning, August 1, 2022. He called me just before the meeting's start to ask if we could delay our start time just slightly: his family had all been home for a lovely weekend together, and he wished to send them off slowly rather than abruptly or even miss it to instead make the start of our meeting. I was totally able and happy to accommodate that adjustment. And when we met that day, we finalized our plan for the remaining work to be done: the last pieces were to all be delivered to him within a couple of weeks, and we agreed that I should write, for us to include, this testimonial of an extracurricular accommodation for a qualifying student.

From there, things would be arranged, and the final edits ensue. As you likely know, Nissan passed away suddenly the very next day, August 2, 2022. His funeral service, which I attended virtually that Friday, was itself so beautiful, that I took notes and photos during the event. All of Nissan's work provides access to, instruction toward, and support for the development of all the most critical skills—reading, writing, thinking…and speaking—and for all. I am so very grateful, and eternally, for the time I got to spend learning from him.

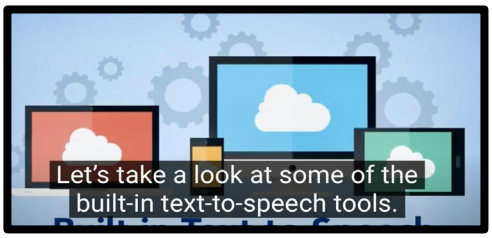
TOOLS, RESOURCES, AND ASSESSMENT CONSIDERATIONS

Videos on the Use of Text-To-Speech Applications

This section includes a wide range of text-to-speech videos either training on the use of text-to-speech or simply demonstrating its use in the classroom.

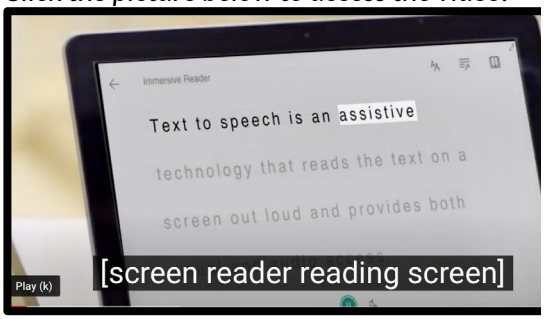
General

Using Text-to-Speech Assistive Technologies to Support Students
Click the picture below to access the video.



Text-To-Speech in the Classroom
Click the picture below to access the video.

Using Text-to-Speech Assistive Technologies to Support Students
Click the picture below to access the video.

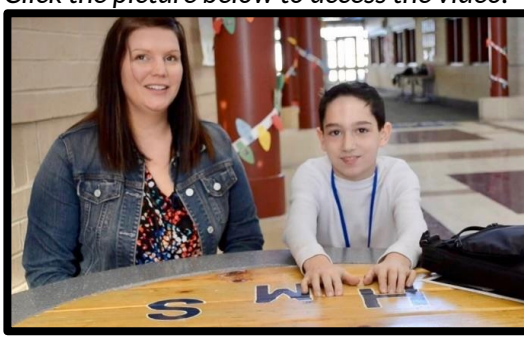


Speech Recognition in the Classroom
Click the picture below to access the video.

Student Stories

The Story of Gavin

Click the picture below to access the video.



The Story of a Ptahra Jeppe

Click the picture below to access the video.

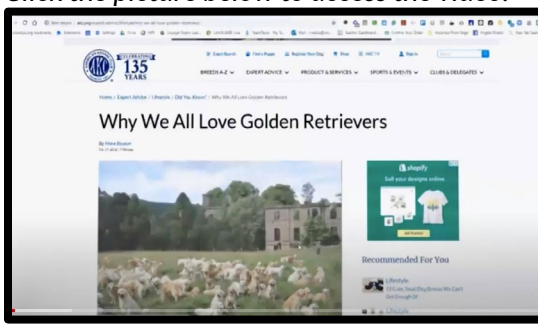
Snap&Read

Using Snap&Read on Chromebook in the Classroom

Click the picture below to access the video.

Removing Distractions and Improving Vocabulary Skills with Snap and Read

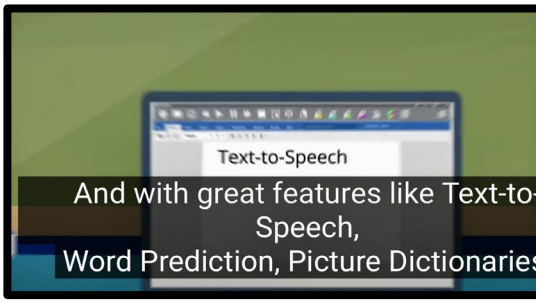
Click the picture below to access the video.



Read&Write

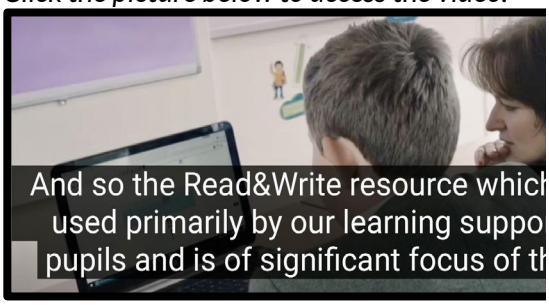
Read&Write for Education

Click the picture below to access the video.



Developing Literacy Strategies with Read&Write at Oswestry School

Click the picture below to access the video.



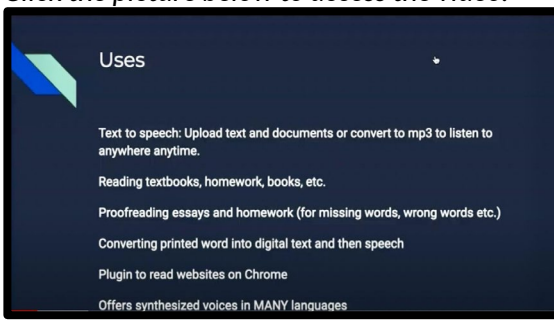
All Students at Waringstown Primary School Use Read&Write

Clic the picture below to access the video.

Natural Reader

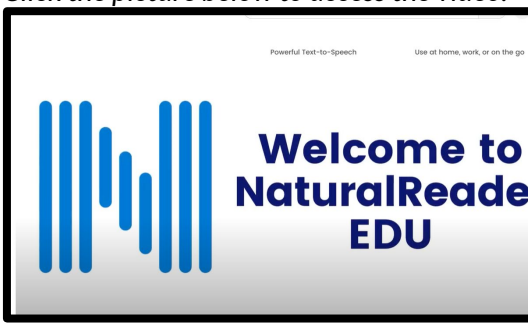
Review of the Natural Reader Software

Click the picture below to access the video.



Natural Reader EDU Overview

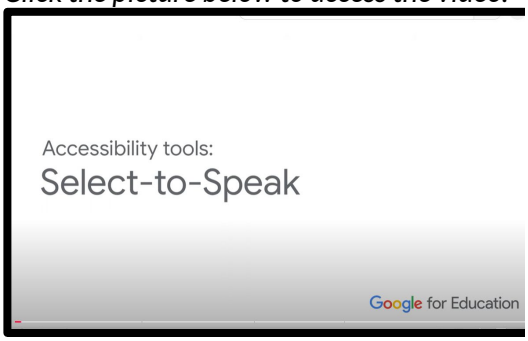
Click the picture below to access the video.



Google Chrome and Chromebook Features

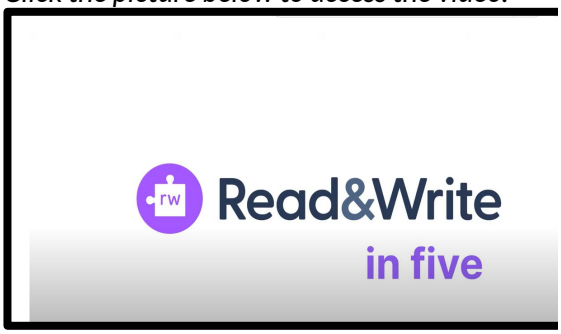
Select to Speak Feature on the Chromebook

Click the picture below to access the video.



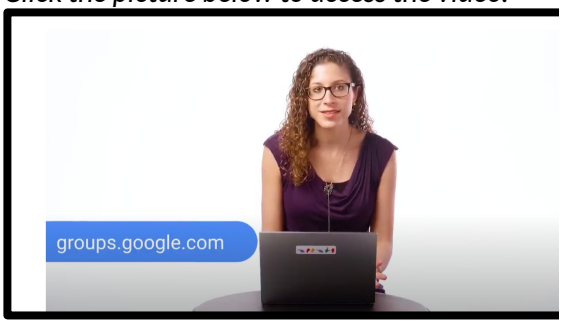
Intro to Read and Write for Google Chrome

Click the picture below to access the video.



How to Use ChromeVox on Chromebook

Click the picture below to access the video.



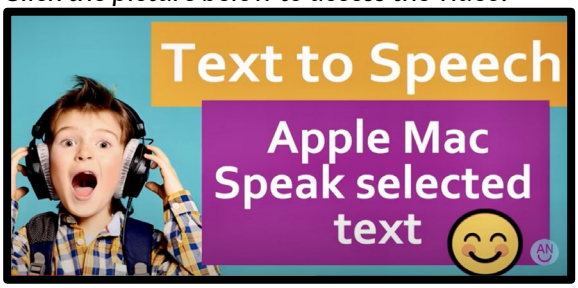
TTS Mac Operating System

Tutorial: Free Text-to-Speech Using the Default Mac OS App

Click the picture below to access the video.

Speak Selected Text on a Mac: Text-to-Speech

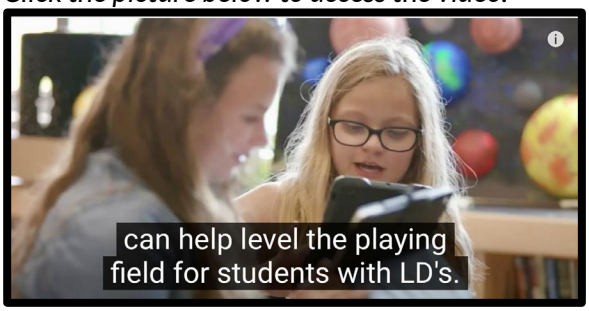
Click the picture below to access the video.



Accessible Educational Materials

Accessible Educational Materials
Click the picture below to access the video.

Accessible Texts in the Classroom: Tools and Resources
Click the picture below to access the video.

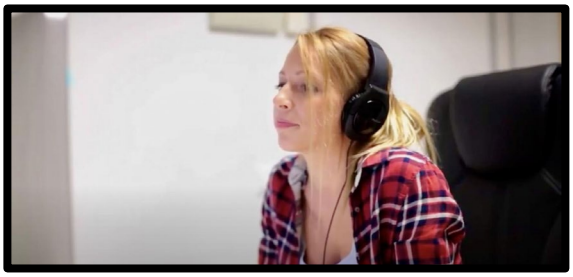


Creating Adaptable Classrooms for All Students
Click the picture below to access the video.

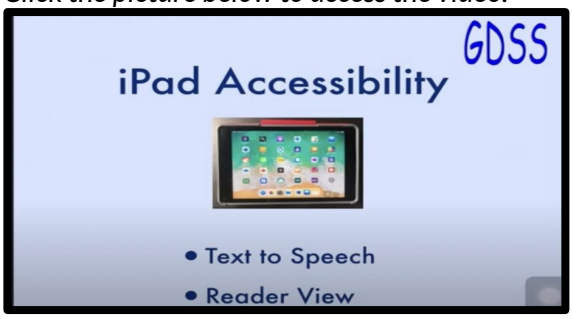
Accessible Texts in the Classroom
Clithe picture below to access the video.

Other Text-to-Speech Tools

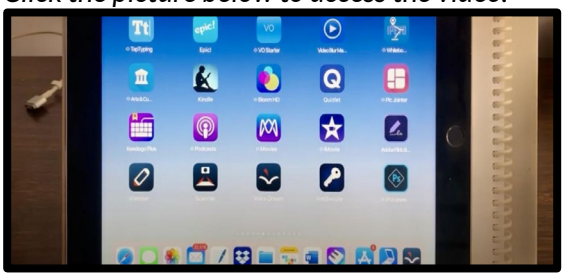
ReadSpeaker: The Use of Text-To- Speech
Click the picture below to access the video.



Text-to-Speech on the iPad for Dyslexic Learners
Click the picture below to access the video.



How to Use Voice Dream Reader Scanner OCR Text- to- Speech
Click the picture below to access the video.



How to Set up Speak Selection on Mac
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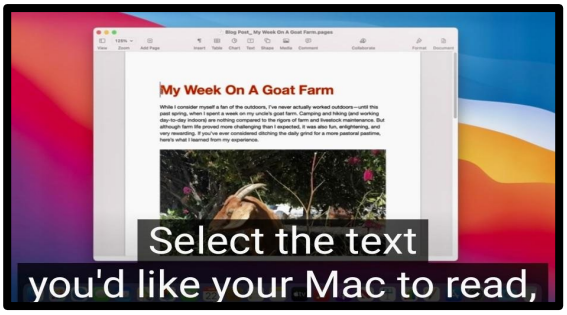
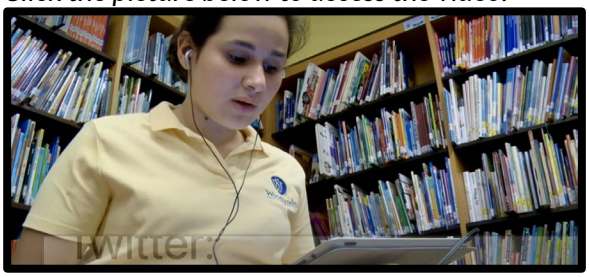


Learning Ally

Learning Ally Audiobooks in the Classroom: Helping Students Learn and Succeed
Click the picture below to access the video.

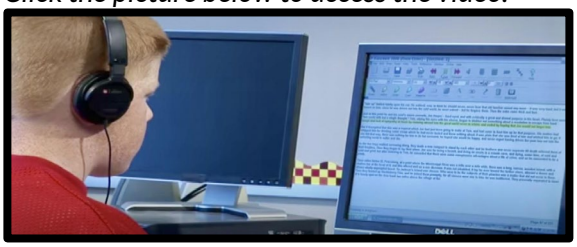
Learning Ally Reading Community for Dyslexic Students
Click the picture below to access the video.



Bookshare

How to Read with Bookshare Web Reader
Click the picture below to access the video.

The Use of Bookshare from a Student Perspective
Click the picture below to access the video.



Read Bookshare Books with Voice Dream Reader
Click the picture below to access the video.

Story Online

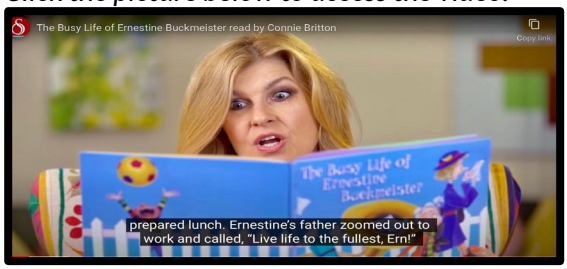
This section includes examples of the huge selection of children's stories read by professional actors in the [Storyline Online website](#).

The Hula-Hoopin' Queen

Click the picture below to access the video.

The Busy Life of Ernestine Buckmeister

Click the picture below to access the video.

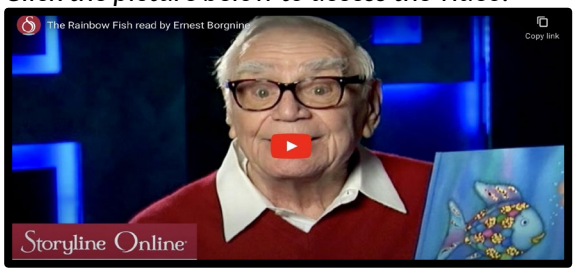


Never Play Music Right Next to the Zoo

Click the picture below to access the video.

The Rainbow Fish

Click the picture below to access the video.



The Tale of Two Beasts

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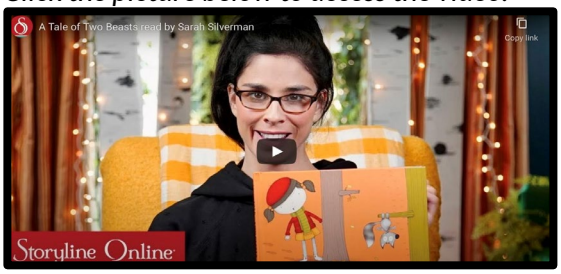

When a Dragon Moves in

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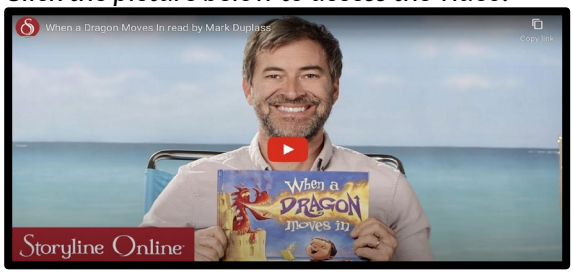


Using PAR / uPAR When Students Can't Read Grade-Level Text

Ben Johnston
Director of Marketing
Don Johnston Inc.

It's a nagging and all-too-common feeling—that there must be some way to help, but not knowing how, or what to do. Kristi Stamatis had this feeling when a student named Gavin entered her class. Here was a social, bright, and articulate student with deep curiosity. But he was reading well below grade level. Fortunately, Gavin was identified while in elementary school, and his teachers quickly were able to get him back on track. But for many who teach in the upper grades, the nagging feeling can be more troubling. *How did this student (who can't read) get to this point without being identified?*

Question: does the student have access to grade-level text?
A new requirement rolling out in Wisconsin attempts to mitigate this. Starting in the 2022-23 school year, teachers will be required to verify if their students can access grade-level text.

The language reads:

> a. In addition to other needs that may require assistive technology, is the student able to access, use, and derive meaning from age or grade level standard printed text?
>
> ☐ **Yes** ☐ **No**
> *If no, document necessary accessible education materials (AEM) services or devices in the Program Summary.*

This simple question will be required for every student. It's a basic question but one that could catch many students much earlier than is often the case. Even if you're not in Wisconsin, the question is an important one to ask of each student.

The question carries two answers: yes and no. But "I don't know" also seems to be a legitimate response which would open the door to further investigation. For most students reading above grade level and those already using assistive tools like text-to-speech, the answer will most likely be "yes." But what about students reading below grade level? How will the question be answered? How will they access grade-level text and understand the content? Among this group of students, unless they're receiving supports to understand the text, the most likely answers are either "I don't know" or "no."

Houston, we have a problem.
Okay, so now there's a problem. A student gets identified as not having access to grade-level text, but what's to be done? This is where teachers are expected to take action, and most options fall under:

1. Intervention: teach the student to read
2. Accommodations: help provide access to grade-level text through accommodations (technology, eyeglasses, enlarged text, text-to-speech, etc.)

Of course, the intervention and accommodations aren't mutually exclusive. Students fall across a continuum of unique needs and reading levels. They struggle with reading for a variety of reasons, from print processing and decoding to comprehension.

Some students read 5+ grades below their grade level when a strong reading intervention can typically generate a one and a half grade level gain per year. Given this rate of gain, a student in 5th grade, reading at a 1st grade level, would be nearing grade-level reading *by their senior year of high school*. The intervening period could not only create a large amount of lost learning but could also be demoralizing. And to answer the original question, *would they have access to grade-level text*? Likely not. So, what do teachers need to answer this question for each student?

PAR/uPAR
There's a simple answer for 60% of students reading below grade level. For these students, simply listening to text read aloud gives them access to grade-level text. For these students, to access grade-level text is as simple as digital text and text-to-speech. And this can happen alongside reading remediation/intervention.

How do we identify the students who fall into this category—who can comprehend grade-level text through listening? Research shows that without a formal process, teachers are no better than chance at making the right decision about reading accommodations (Fuchs & Fuchs, 2001; Helwig & Tindal, 2003). That's what the diagnostic screener uPAR (Universal Protocol for Accommodations in Reading) gives you: an evidence-based, formal process for identifying the right reading accommodations for each student. It shows the text level each student can comprehend with text-to-speech.

This is not the type of prediction based on an average of student outcomes. It's a precise personal diagnostic by which students learn exactly the text levels they can comprehend with an accommodation. This is crucial to helping teachers understand whether their students can access grade-level text. It's often transformative for students whose struggle with reading affects their self-esteem.

Many discover they can comprehend grade-level content. Some students even find out that they can understand text well above grade level by listening to the text read aloud.

Despite Gavin reading at a first-grade level, through uPAR he learned that when he listened to passages read aloud, he could comprehend text at the same level as a sophomore in high school. It was exactly what he needed.

Gavin still received specialized reading instruction (remember, remediation and accommodation can and should be used together), but he discovered a way to "read" independently and handle grade-level text while his reading skills improved. For Gavin, the answer to the "access to grade-level text" question is now a resounding *Yes*. Gavin can access grade-level text independently, with confidence.

How uPAR Works

In a single class period, uPAR can be administered to groups of up to 30 students at a time. Preparation involves setting students up individually through a spreadsheet file, or ideally, by Google or Schoology rostering.

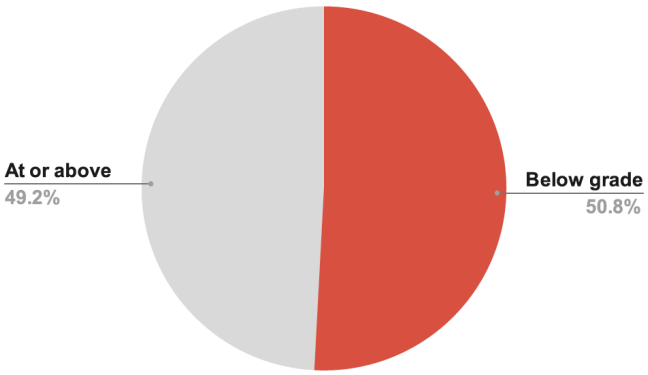
Once the protocol begins, students will use a device and headphones to read a passage silently within uPAR and then answer comprehension questions about the text. This establishes a baseline reading speed and comprehension level when students read independently.

For the second portion of uPAR, students listen to passages read aloud through text-to-speech and answer comprehension questions. Based on their responses, subsequent passages are presented at higher or lower levels to zone into each student's reading comprehension levels with accommodations.

Once uPAR is complete, individual data reports are generated for each student. These reports show reading comprehension levels with and without accommodations.

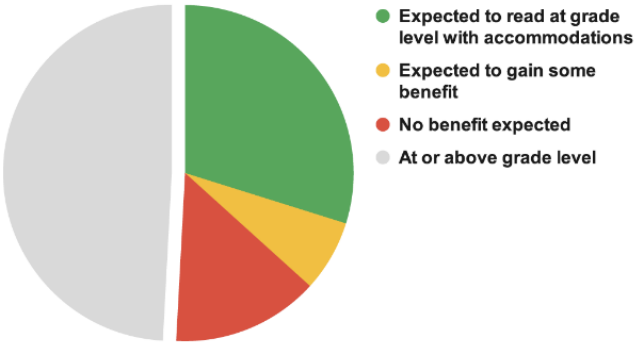
uPAR at Scale

Now that we have a basic understanding of how uPAR helps identify individual students who can gain access to grade-level text with text-to-speech, let's look at how this impacts entire school districts.

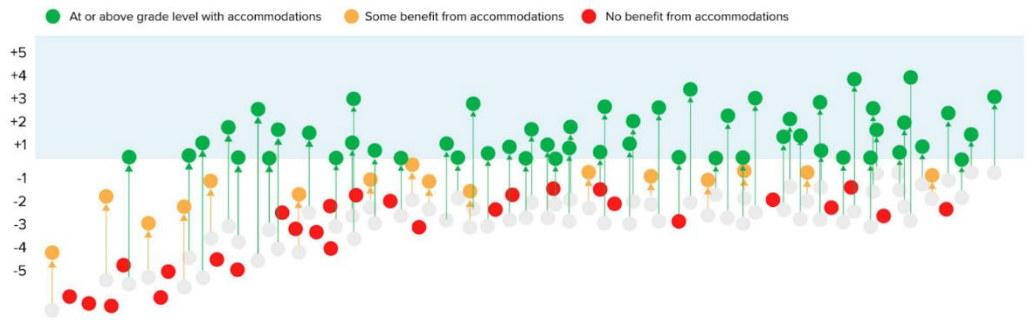


Starting with students in a district who read below grade level (50.8% in the chart below), we find approximately 60% of those students can comprehend grade-level text by listening to it read aloud. Many of these students have print disabilities like dyslexia. By identifying these students and providing text-to-speech accommodations, we can confidently check the box—these students have access to grade-level text!

Then there's another group of students (in orange) who can understand text better when listening to it than "eye" reading but not at grade level. The last group of students (in red) doesn't improve their understanding through listening. The path for these students typically would involve reading instruction and remediation. Not everyone benefits from text-to-speech in the same way, which is why it's so important to have reliable data showing the effects for each student.



For a typical group of 100 students reading below grade level, the distribution of independent reading levels (in gray) and listening comprehension levels (color-coded) would typically look like this.



The value of identifying ways students can participate and access grade-level text cannot be underestimated. There's universal interest in helping students learn, and with uPAR, we show a clear path to ensuring that can happen.

Next Steps

In a survey we conducted in 2021-2022 with over 3,000 education specialists, we asked "How much value would it have to be able to identify students who could comprehend text at grade level by listening to it (with text-to-speech/read-aloud accommodations)?" Over 99% said it would have value, and 82% said it either had a lot of value or maximal value. It certainly feels like this is an essential and valuable part of identifying what students need to learn. The movement in Wisconsin is likely to trigger a national movement, but the opportunity here is too valuable to wait for. Right now, we can give 60% of students reading below grade level access to grade-level text. Doing so will set a huge percentage of these students up for

success in school and in life. Please, do what you can in your school district and share the word with others who can effect change for students.

The Use of Text-To-Speech in Wisconsin Statewide Assessments

Accommodations and supports are practices and procedures that provide equitable access to age or grade level content. Accommodations are intended to reduce or eliminate the effects of a student's disability or level of language acquisition. Accommodations do not reduce learning expectations. The accommodations or supports provided to a student on a statewide assessment must be consistent with classroom instruction, classroom assessments, and district and state assessments.

The DPI Assessment in Wisconsin webpage includes accessibility guides for each specific statewide assessment. These guides, provided by the Office of Educational Accountability, contain information about every allowable designated support and accommodation for the accompanying assessment. They contain information to assist classroom teachers, English language development educators, special education teachers, and related services personnel as they assign and administer universal tools, designated supports, and accommodations for those students who need them. These guides should be used by school personnel and decision-making teams (e.g., individualized education program teams) as they prepare for and administer statewide assessments.

Text-to-speech (TTS) is an embedded universal tool on the Wisconsin Forward Exam and is available for all students. The TTS does not read aloud the reading comprehension passages in the Forward English Language Arts exam. Students who are visually impaired and receiving instruction in contracted braille but are not yet proficient may be able to receive a human read-aloud accommodation of the passages. The Forward Exam Accessibility Guide includes information and instructions for requesting this accommodation. The DLM is a teacher-delivered assessment, and test administrators may read aloud the test to students who need this support. For other Wisconsin statewide assessments, some Accessibility Guides include TTS under the list of Accommodations while others have TTS under the list of Designated Supports. The Accessibility Guides for all the statewide assessments should be reviewed annually for any updates. Educators should be aware of the Accessibility Guides for the statewide assessments and knowledgeable of the information provided within to ensure students a valid and reliable test administration.

Accommodation Request

If a student requires an accommodation or support not in The Accessibility Guide, the educator should contact DPI's Office of Educational Accountability for more information.

CONCLUSION

This resource was originally developed when Wisconsin added the question, "Does the student need assistive technology services or devices?" to the I-4 IEP form. It was conceived as a way to share examples of how to utilize text-to-speech to meet the individual needs of students with disabilities. The guidebook includes introductory material from educational researchers; testimonials from parents, educators, and attorneys; information about tools and resources for using TTS; and assessment considerations. With this guide as a reference, Wisconsin educators can confidently address the needs of students who require TTS to access, use, or derive meaning from age- or grade- level standard printed text.