Maryland Assistive Technology Program

MARYLAND DEPARTMENT OF DISABILITIES

ABOUT US

Maryland TAP provides statewide access to assistive technology (AT) through equipment demonstrations, loans, reuse, financing, and training.

www.mdtap.org

We're a free, statewide service through the Maryland Department of Disabilities.

WHAT IS ASSISTIVE TECHNOLOGY?

Assistive technology (AT) **is any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities.**

Assistive technology helps people who have difficulty speaking, typing, writing, remembering, pointing, seeing, hearing, learning, walking, and many other things.

One size does NOT fit all! Different disabilities require different assistive technologies.

WhAT We Do

AT demonstrations and consultations with AT Clinicians – In-person and virtually!

Issue short-term device loans, up to 4 weeks at a time to try before buying & 3D Printing of AT!

Provide low-interest financial loans and run the High-Tech AT Reuse Center

Host in-depth AT sessions exploring a variety of AT topics - In-person and virtually!

3D Printing – AT Fabrication Program. 3D printed low tech AT devices provided free-of-charge.

Host statewide AT events such as Accessible Gaming Days, Financial Resiliency Webinar Series, and more!

AT for Learning Disabilities

Goals & Objectives

➢ Define "Learning Disability"

➢ Understand the process for including AT in the IEP for students with learning disabilities

➢ Identify tips for supporting students with learning disabilities

➢ Develop a clear understanding of "types of AT" that can support those with specific learning disabilities

What is a Learning Disability?

A Specific Learning Disability (SLD) is a brain-based disorder that affects an individual's ability to read, write, and do math (e.g., dyslexia, dysgraphia, and dyscalculia).

Students identified with SLD receive special education services under the Individuals with Disabilities Education Act (IDEA), a law that provides free and appropriate public education to children with disabilities.

National Center for Learning Disabilities

LD Statistics

- *2.28 million school-age students* in the U.S. identifies as having an SLD

- More than *90% of fourth and eighth-grade students* with SLDs are not proficient in reading or math

- *94% of students* with SLDs received accommodations in K-12 education, but only 17% received them in postsecondary education

National Center for Learning Disabilities

TYPES OF LEARNING DISABILITIES

LDA
Learning Disabilities
Association *of America*

DYSLEXIA

- Dyslexia is characterized by deficits in accurate and fluent word recognition.

- Individuals with dyslexia struggle with word recognition, decoding, and spelling.

- Reading comprehension is sometimes impaired due to very poor word reading skills.

DYSGRAPHIA

- Dysgraphia is a learning disability which involves impaired ability to produce legible and automatic letter writing and often numeral writing, the latter of which may interfere with math.

- Dysgraphia is rooted in difficulty with storing and automatically retrieving letters and numerals.

NONVERBAL LEARNING DISABILITIES

- Research indicates that nonverbal learning disabilities are associated with impairment in three broad areas, including motoric skills, visual-spatial organizational memory, and social abilities.

- Individuals with this type of learning disability have a well-developed vocabulary, as well as strong reading recognition ability and rote language skills.

DYSCALCULIA

- Individuals with dyscalculia demonstrate impaired math calculation skills and difficulty understanding numbers and math facts.

- Dyscalculia is associated with weaknesses in fundamental number representation and processing, quantifying sets without counting, using nonverbal processes to complete simple numerical operations, and estimating relative magnitudes of sets.

ORAL & WRITTEN LANGUAGE DISORDER

- Individuals with this disorder struggle with understanding and/or expressing language often in both oral and written forms.

- These individuals often exhibit Specific Language Impairment related to deficits in semantic processing and syntactic processing.

Key Definitions

Decoding - translating print into speech by matching a letter or combination of letters to their sounds and recognizing the patterns that make syllables and words.

Word Recognition -ability of a reader to recognize written words correctly and virtually effortlessly.

Motoric Skills – a function that involves one or all of the following: sitting, standing, walking, running, and jumping.

Visual Spatial Recognition -the ability to tell where objects are in space.

Rote language skills - involves the memorization of vocabulary and grammar rules through repetition and rehearsal.

Semantic Processing – understanding the relationship between similar words and the varying shades of meaning i.e. the meaning between last-stop and destination.

Syntactic Processing -analyzing the grammatical structure of a sentence to understand its meaning. This involves identifying the different parts of speech in a sentence.

Related Disabilities

ADHD/ADD

A disorder that includes difficulty staying focused and paying attention, controlling behavior and hyperactivity. ADHD is usually classified under the heading "other health impairment" (OHI) on an IEP.

Executive Functioning

Affects, planning, organization, strategizing, attention to details and managing time and space.

Learning Disabilities Association of America

AT and the IEP

Assistive Technology Personalizes Learning Environment

What sorts of AT?

Low-tech Devices that are readily available, inexpensive, and typically do not require batteries or electricity:
• Specialized pencil grip
• Page holder
• Modified scissors

Mid-tech Devices that are usually digital and may require batteries or another power source:
• Calculator
• Audio book
• Digital recorder

High-tech Devices that are typically computer-based, likely to have sophisticated features, and can be tailored to the specific needs of an individual student:
• Tablet
• Screen reader
• Voice recognition software

THE SETT FRAMEWORK

S	E	T	T
Is for **student**'s strengths, weaknesses, and current performance in:	Is for learning **environment**	Is **tasks** for learning	Is for **tools** being used to help your child and other tools that may help
• Reading • Math • Writing • Communication • Learning and studying • Vison, hearing, and mobility • Activities of daily living	• How is the classroom physically arranged? • What materials and equipment are used? • How is instruction given (small groups, whole class)?	• What is the class expected to be able to do? • Which tasks are essential for your child to be successful?	The IEP team considers the assistive technology range: **Low/No Tech** **Mid-Level Tech** **High Tech**

Including AT in the IEP

- The IEP demonstrates that assistive technology supports the educational goals AND describes how it will contribute to achieving those measurable goals.

- AT can be documented in virtually every section of the IEP if it is relevant to that section.

- It's best practice to write features needed in the IEP rather than device names.

Common AT Myths

- An AT Evaluation MUST be conducted prior to including AT in the IEP.

- AT devices are only for use in the academic classroom at the school.

- AT noted in the IEP should only be the high-tech options.

- An AT device and/or service that works for one child will work for all.

- The use of AT lowers a child's motivation because it does the work for them.

US Department of Education, Office of Special Education Programs, Myths and Facts Surrounding Assistive Technology Devices and Services, 2024

Tips for Classroom Support

(LD & ADD/HD in and out of the IEP)

- Don't make my child read aloud, if he struggles—or if he must read aloud, give him advance notice so that he can be prepared.

- Don't call on my child unless she raises her hand. This goes a long way toward easing her fear of humiliation in class.

- Set up a way my child can signal when he needs a break, then give him a classroom task or errand allowing him to move around before refocusing on schoolwork.

- Seat my child near the front of the room and find a discreet way to recall her attention if she appears distracted (e.g., resting your hand briefly on her desk).

Smart Kids with Learning Disabilities - https://www.smartkidswithld.org/

Tips, contd.

- Be flexible about giving my child the extra time he's allowed for tests —maybe 10 or 15 minutes during another class period, in the resource room or library.

- Believe my child when she says, "I can't," and figure out an alternative way for her to approach a task or modify the assignment.

- Teach my child to monitor and recheck his work—preferably at a later time—to help minimize the mistakes he's likely to make because of his limited attention resources.

- Don't increase my child's frustration by assigning a task she can't handle like repeating a handwriting exercise when she only writes upside down and backward.
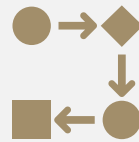
Smart Kids with Learning Disabilities - https://www.smartkidswithld.org/

Not an Exhaustive List!

We'll explore TYPES of AT that can support the needs of learners with learning disabilities.

This is not an exhaustive list of AT, but rather an exploration of options.

Let's Go!

AT for Reading & Writing

Low Tech – Mid Tech

- Pencil Grips
- Raised line paper
- Graph paper
- Slant Boards
- Highlighter strips

Apps for Reading

MyDys - an app made for those with dyslexia, this allows the user to snap a picture of text, select your chosen features and then read easily.

Teen & Adult Phonics Library - App library offers a collection of sequential, decodable digital novels with edgy, engaging themes designed to appeal to teenagers and adults. Geared toward older emergent readers.

Word Prediction & Word Processing

Word Prediction: Word-prediction software can be used for word suggestions as they type. The aim is to improve spelling, grammar, and word choices.

- ◦ Read & Write by TextHelp
- ◦ Co:Writer

Word Processor: A portable word processor makes it possible for a learner to edit and correct their work more efficiently than if they had to do it by hand.

- ◦ The AlphaSmart
- ◦ Clicker docs (A suite of apps)
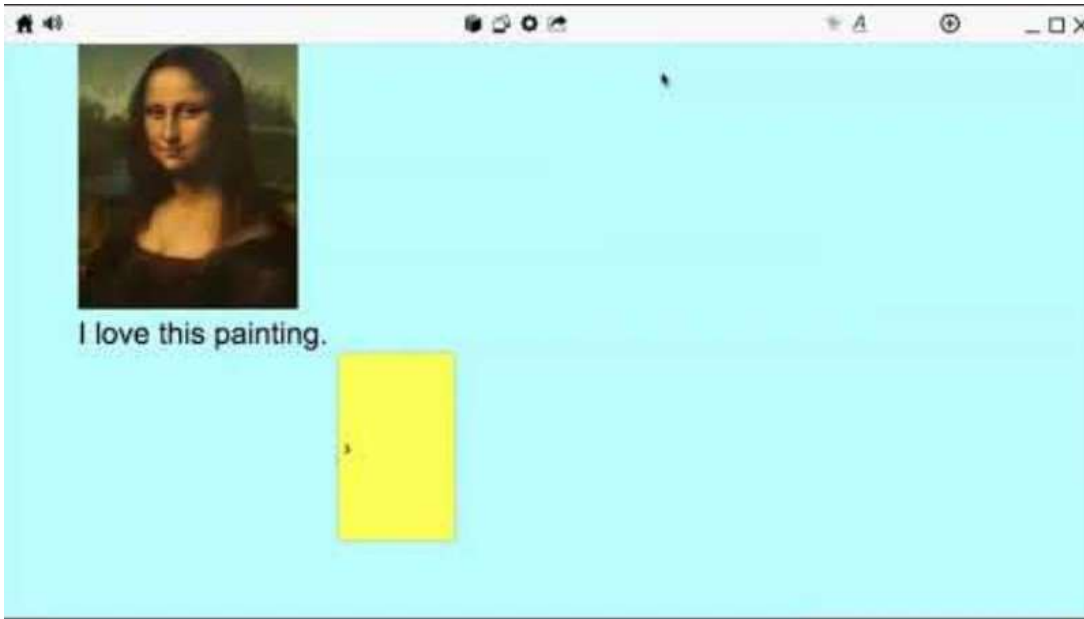
Word Prediction example: Co:Writer

Text-to-Speech & Speech-to-Text

Text to Speech: A tool that reads digital text aloud, allowing student to see & hear text when reading.

- Kurzweil
- ReadSpeaker
- Narrator – screen reader built in Windows OS

Speech to Text: A tool that recognizes and translates spoken language into text.

- Dragon Dictation/Dragon Naturally Speaking
- CoWriter
- Read & Write
- Built-in OS dictation

Text-to-Speech in Education

Scanning & Typing

OCR (scanning): OCR allows a student to scan printed material, which can then be read out loud by a screen reader.

Adapted Keyboards: Adapted keyboards can group keys according to color, reduce input choices, modify font, etc.

OCR Apps:
- SeeingAI
- Onestep Reader
- Lookout (by Google)

Reading Pens – OCR scanning pen with taking dictionary, translation, and text-to-speech. Portable with streamlined appearance and with earbuds.
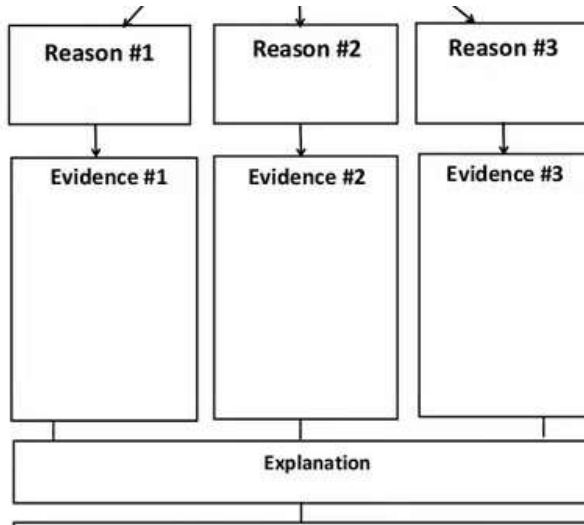
- C-Pen Reader

Dyslexia Keyboard

Graphic Organizers & Notetaking

Graphic organizers - a visual display between facts, concepts or ideas. Helps students to classify ideas and examine relationships.
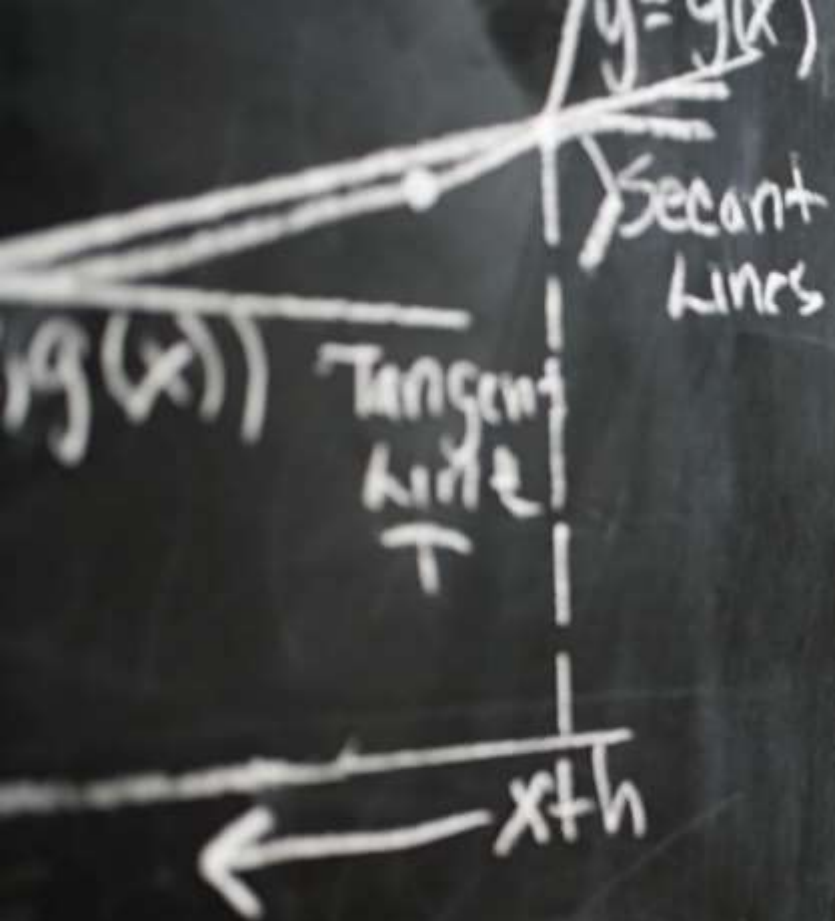
Notetaking
- Inspiration – Visually organize & outline ideas
- OneNote – Microsoft digital notetaking

Smart Pens – A high-tech writing tool that records spoken words and synchronizes them with notes written on special paper.
- Livescribe Smartpen

AT for Mathematics

Low Tech to High(er) Tech

Talking Calculators reads out numbers, symbols, and answers to math problems.

[Graphic organizers for Math](#) – see sample slide

iPad (tablet) with apps! - [iSolveIt](#) project from CAST: tablet-based algebraic-reasoning puzzles that have been designed using the principles of Universal Design for Learning (UDL); [Montessori Numbers](#)

[Digital Graphing tools](#) - apps, games, and websites that merge mathematical modeling with digital creation and gaming.

Math Notation Tools - lets you write or type out the special symbols and numbers used for math equations. Below are Math extensions for Windows and Google:

- MathType
- Equatio
- MathwhiteBoard

Graphic Organization for Math

Word Problem: Millie must fly from New York to Minneapolis. The distance is 1,227 miles and takes her 2 hours and 37 minutes. How fast was she flying?

Graphic Organizer:

- **What do we need to know? -** Speed
- **How do we notate speed?** - Miles per hour
- **Do we have miles and time information**? – Yes but time is in minutes and hours
- **How can we make time all one type**? 60 minutes =1 hour so 2 hours and 37 minutes is

60 + 60+37= 157 minutes

- **How can we make a math sentence for this? -** Speed equals miles per hour (one hour equals 60 minutes per hour)
- **Can you write this using math notation?** Speed = 1227miles/157 minutes x

60 minutes/1 hour = 468.9 miles per hour!

Fraction Circles

Montessori Math App

Manipulatives
(physical and digital)

Equation Solving

Digital Tools to help students solve equations

Examples:

- ❑ WolframAlpha
- ❑ QuickMath
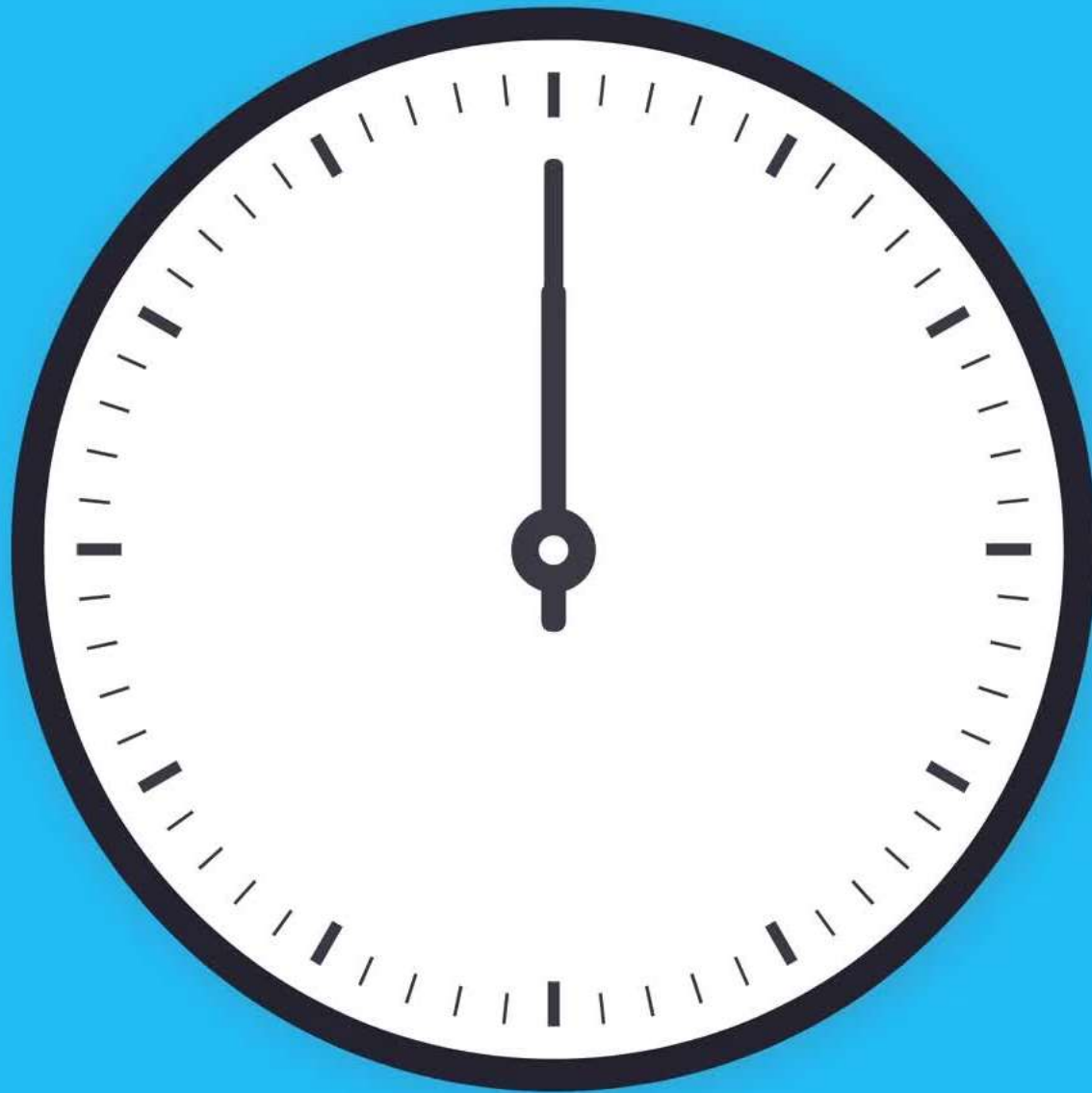- ❑ MathPapa

- ❑ And ChatGPT (all the kids are using it)

Additional Math Programs

For students with dysgraphia or motor challenges

Vetted by AT Specialists in Education

- ❑ KiwiWrite Math
- ❑ Texthelp Equatio Mathspace
- ❑ Kami Math

AT for Time Management & Organization

Goal Setting & Timers

Goally – establish goals and include the steps for each task. This includes a dedicated device and a corresponding app!

Resetea Visual Timer – measure the time of any activity easily and visualize the passage of time. Select the related pictures symbolizing the task or activity, and let the accessible clock guide you.

TimeTimer Clock – Digital to physical, the Time Timer increases productivity by creating a sense of urgency and keeping everyone on track.
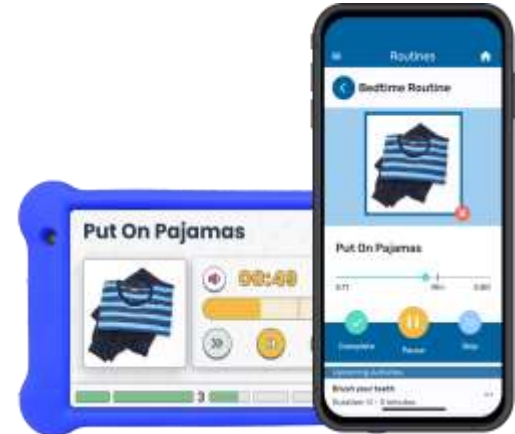
Calendars

Low-tech AT to Mid-tech AT

Paper-based appointment book or calendar
Dry erase board calendar

Calendar apps:
- Smart phones come with these plus there are others out there
- Google Calendar – what I personally use. Easy to integrate among laptop, smart phone etc. Can set up appointments (can make them repeat e.g. every 4th day of the month and so on), tasks, reminders, out of office, events. (Free)

- Apple Calendar – as far as calendar functionality, Apple offers all of the features you'd expect, but they have a strong integration with Siri that allows you to add events with just a few words. (Free)(iOS Software)

Task Sequencing & Organization: Apps & Software

Task sequencing can provide written, auditory, and visual cues to support a learner in completing tasks, from making a sandwich to appropriately filing folders in the workplace.

Task sequencing provides step-by-step customizable guides that can be used as often as needed.

A few examples:

- First Then Visual Schedule
- Visual Daily Schedule
- Special Stories
- Sequence It

AT & ADD/ADHD

FM Listening System: This device will transmit a speaker's voice directly to the user, helping cut out any background noise and distractions. Also helpful with dyslexia as the direct voice improves the neuroprocessing of speech, subsequently improving reading.

Noise-blocking headphones/Noise reduction earplugs: Minimizes distracting external noises that interfere with attention and focus. Also helpful for people with noise sensitivity.

Audio Books – A resource that helps accommodate when focus or understanding may be a challenge.

Apps & Sites for ADD/ADHD

Habit Hub (free; iOS) Habit Hub aids students by reminding them to perform tasks and visually track their progress. It builds a motivating "chain" (A feature my students love!) of each day's completed tasks. As the chain gets longer, it serves as motivation to keep at the project.

Brainly (free to join) A knowledge-sharing community where students and experts work together to crack the toughest homework questions. Brainly is geared toward middle- and high-school students.

SimpleMind (free basic platform) Many students love mind mapping, a more natural form of note-taking used to brainstorm, plan, and make connections between ideas. SimpleMind can organize your child's thoughts by creating a mind map, which can then be synchronized across multiple platforms and shared with others. The app allows users to add photos, videos, and even voice recordings.

https://www.smartkidswithld.org/blog/study-apps-for-kids-with-learning-differences-adhd/

Browser Extensions for ADD/ADHD

StayFocused (free)

This extension for Google Chrome allows users to block distracting apps and websites according to defined conditions. Your child can block out a specific schedule, set a daily usage limit, or even set a goal-based limit. In other words, it allows users to take a break from their phones and focus on homework without relying solely on self-control.

Noisli (free)

Create customized mixes of soothing background sounds.

Mercury Reader (free)

When you want to read an article, just push the icon and Mercury Reader will create a pop-up that digests your current page into an easy-to-read format free of distractions.

https://www.smartkidswithld.org/blog/study-apps-for-kids-with-learning-differences-adhd/

Virtual Reality & Skill Building

From sensory processing disorders to physical disabilities, VR/AR technology has the potential to provide a more immersive and engaging learning environment that can help students & employees with disabilities overcome barriers and achieve their full potential.

Some examples include:

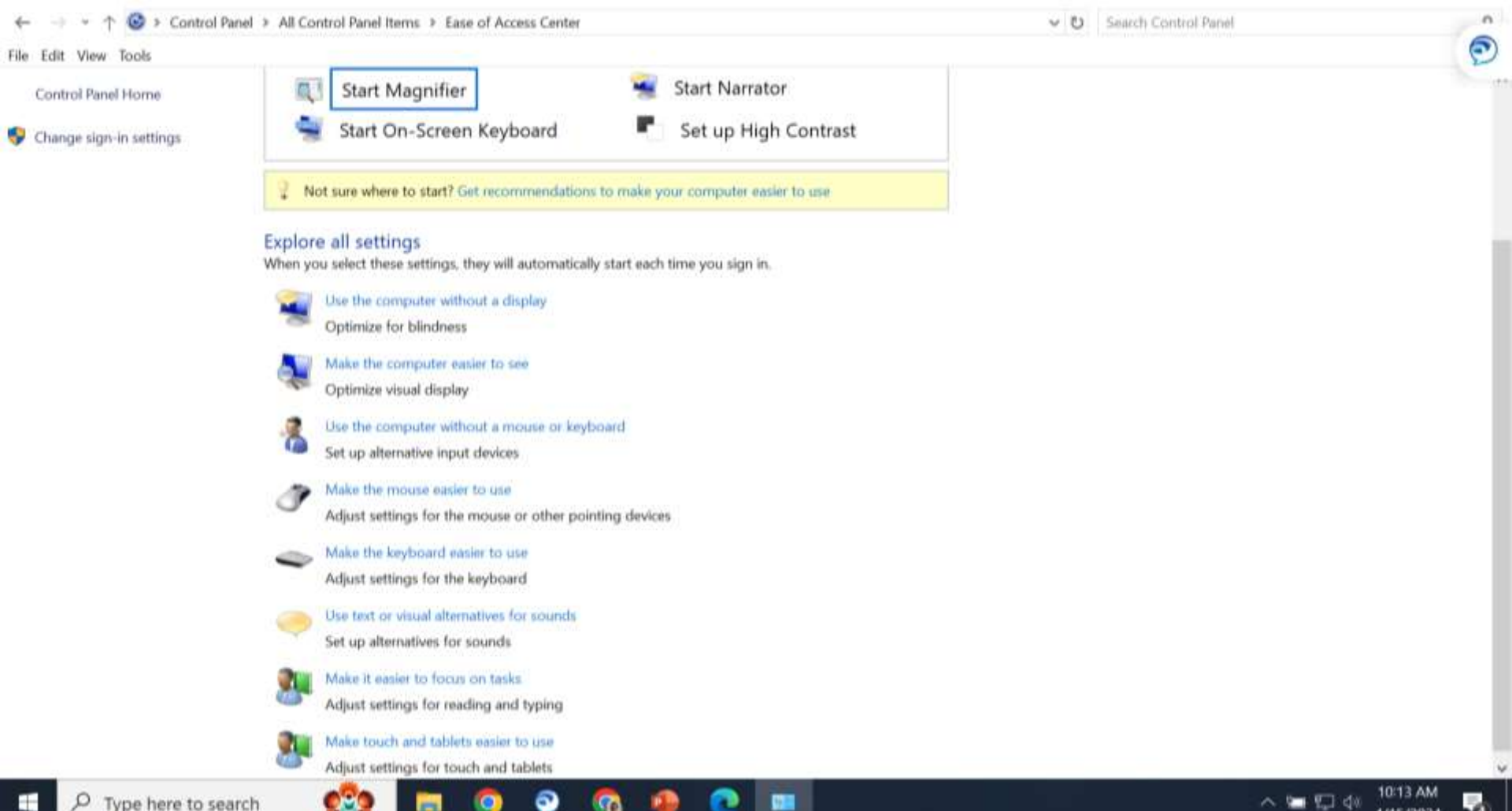Clusiv – Skill-building courses available to ensure readiness in the workforce.

LearningQ – Microlearning skills development tutorials focused on employment and independent living skills.

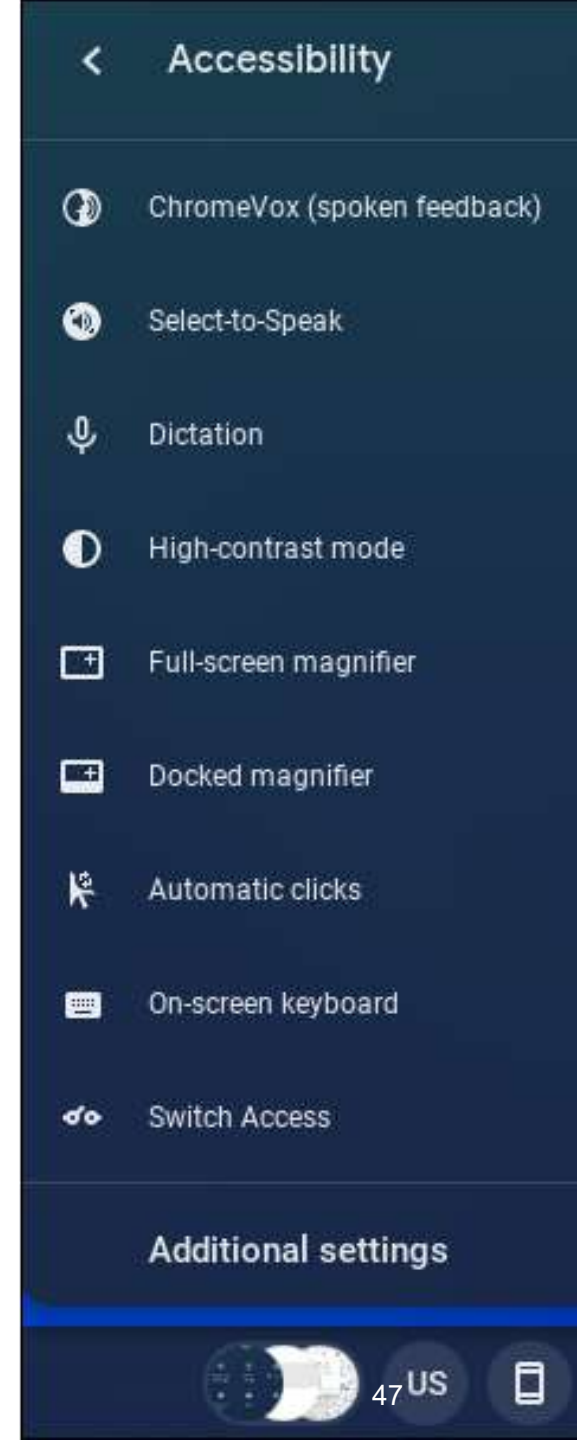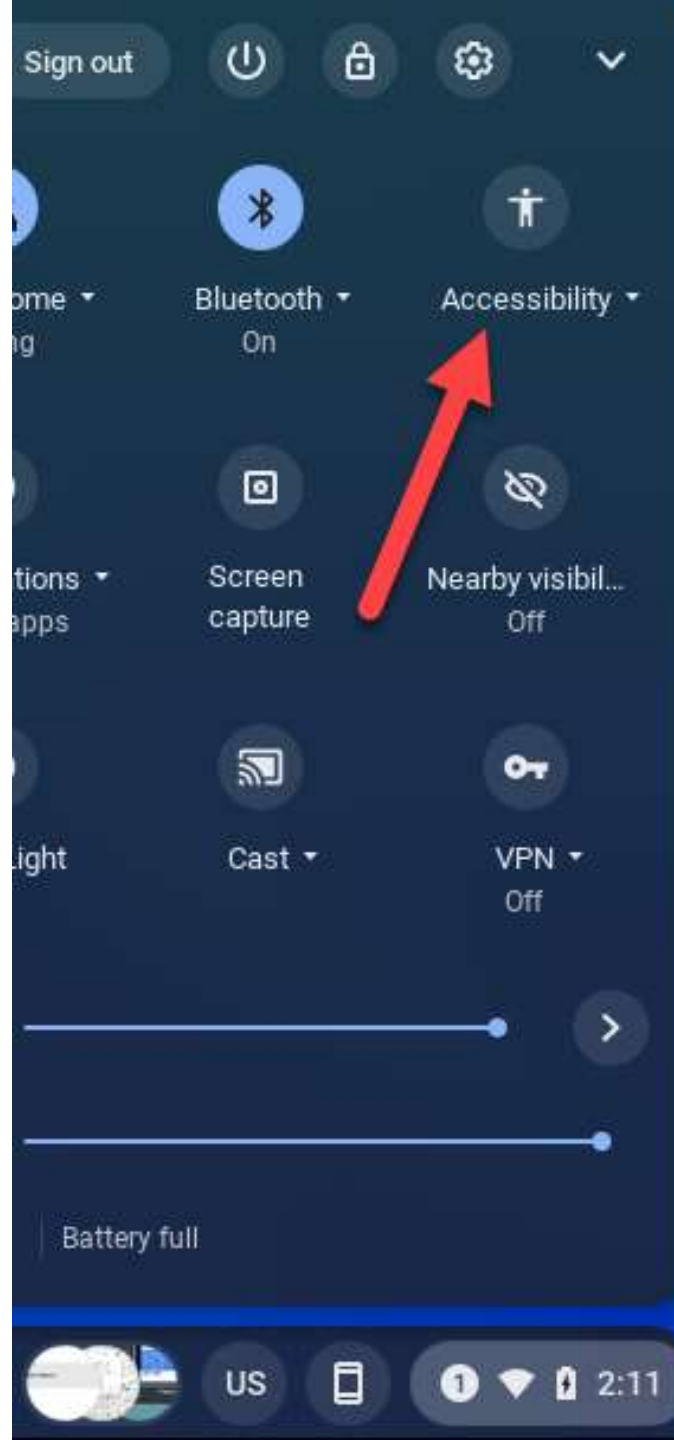Floreo – Therapeutic VR building real world skills for neurodiverse learners.

Built in OS Accessibility

(WINDOWS & CHROME)

Windows / Ease of Access

Chrome / Accessibility

Accessibility

- ChromeVox (spoken feedback)
- Select-to-Speak
- Dictation
- High-contrast mode
- Full-screen magnifier
- Docked magnifier
- Automatic clicks
- On-screen keyboard
- Switch Access

Additional settings

Access Tips in iOS & Android

- Customizing Focus Time (in Settings)

- Turning off Notifications

- Using Calendar with reminders (can add addresses, notes, phone #s, pictures with your alerts)

- Customizing labels in Alarms

- Using Siri to read aloud messages, conduct searches, etc.

Real-World Skills

INDEPENDENT LIVING (IL)

AT to Support IL Skills

[DIGITABILITY](#)

Students can learn financial skills for the real world with Bankability, a virtual banking system that supports positive behavior. Students earn virtual dollars for being on task, following directions, and more, while developing self-advocacy, self-regulation, and problem-solving skills in the workplace. Simultaneously, students develop financial literacy, while paying bills and maintaining a budget using the Digitability virtual currency and online banking system.
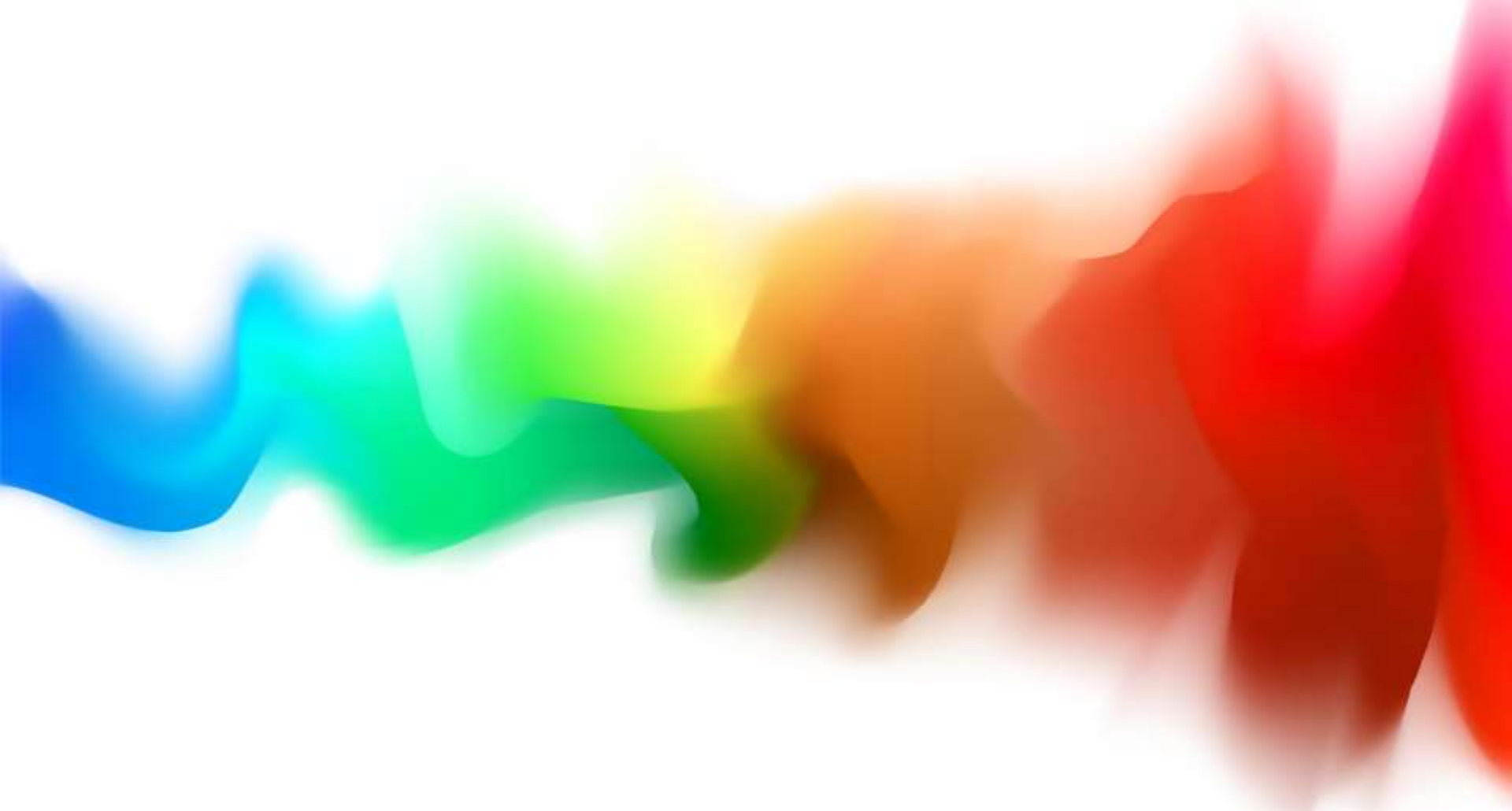
Polling! What more do you want to know?

Questions?

Additional LD Resources for Families & Educators

AT Toolbox for Learning Differences

Child Mind Institute

Understood

Smart Kids with Learning Disabilities

MSDE Parent Series Guides – Special Education Process, Understanding the IEP, Parent Rights, Secondary Transition

Center for Parent Information & Resource

You can reach us here

Where It's AT – Our award-winning AT Blog

Find us on Facebook –

Watch us on YouTube –

Maryland Assistive Technology Program
2301 Argonne Drive, T-42
Baltimore, MD 21218
(800) 832-4827 (voice)
MDTAP.General@maryland.gov (e-mail)
www.mdtap.org (web)