REFERENCE
GUIDE

TAP·it ®

Touch Accessible Platform
Interactive Technology

Table of Contents

Section 1: Condition Descriptions

Table of Contents

SECTION 1
CONDITION DESCRIPTIONS

Aphasia

✓ **F A C T**

Aphasia is a communication disorder that affects a person's ability to express and understand both verbal and written language. It typically occurs suddenly after a stroke or head injury. However, it can occur gradually due to a degenerative disease. The disorder's severity is dependent upon the location and level of damage to the brain.

Some typical signs of aphasia include:

- Speaking in short or incomplete sentences
- Speaking unrecognizable words
- Speaking or writing sentences that do not make sense
- Engaging in non-comprehensible conversations

The different types of aphasia are:

Nonfluent *(also known as Broca aphasia)*	It is caused by damage to the language network near the left frontal area of the brain. It is characterized by: • Struggling to get words out; • Speaking in very short sentences and leaving words out; • Comprehending most of what other people say; • Aware of their difficulty in communicating; • Possible right-sided paralysis or weakness.
Fluent *(also known as Wernicke aphasia)*	It is caused by damage to the language network in the middle left side of the brain. It is characterized by: • Speaking fluently but in long, complex sentences that don't make sense; • Using unrecognizable, incorrect, or unnecessary words; • Difficulty comprehending spoken language well; • Often does not realize that other people cannot understand what they are saying.
Global	It is caused by widespread damage to the brain's language networks, triggering severe expressive and comprehension disabilities.

Therapy

Aphasia therapy suggestions include:

- Speech therapy for relearning and practicing language skills
- Use of alternative communication methods to compensate for language impairment, such as:
    › Gestures
    › Drawings
    › Picture books/boards
- Group therapy to practice communication skills in a safe environment:
    › Initiate conversations
    › Take turns
    › Clarify misunderstandings
- Reenact real-life situations to practice specific communication skills (i.e., restaurant, store)
- Use of computer software to relearn words and sounds

Application

Individuals with aphasia can use the TAP·it® platform in multiple ways to:

Improve fine motor and gross motor skills	Users can utilize the TAP·it platform's 42" touch screen to improve fine and gross motor skills.
Improve coordination	Use fingers to interact with the unit to improve hand-eye coordination.
Increase balance	The platform's intended touch offers users the ability to lean on it, if necessary.
Improve communication	Auditory models are available for users when using software programs with auditory feedback (i.e., Boardmaker).

Apraxia

Therapy

The following are treatment/therapy suggestions for individuals with verbal apraxia:

- Multisensory and multimodal therapy
- Incorporating pictures of meaningful people, toys, and objects in the person's life
- Use of sign language to assist with expression and can enhance vocal output, as well as, reduce frustration
- Use of augmentative communication
- Incorporating play and musical therapy

The following therapy suggestions can be used for individuals with motor apraxia:

- Therapy to work on fine motor skills
- Repetition as a way to train the brain to perform motor skills

Application

Individuals with apraxia can use the TAP·it platform in multiple ways to:

Improve fine motor and gross motor skills	Users can utilize the TAP·it platform's 42" touch screen to improve fine and gross motor skills.
Improve coordination	Use fingers to interact with the platform to improve hand-eye coordination.
Increase balance	The platform's intended touch offers users the ability to lean on it, if necessary.
Improve communication	Auditory models are available to individuals when using software programs with auditory feedback (i.e., Boardmaker).

Ataxia

✓ F A C T

Ataxia is a disorder where a person lacks muscle coordination while performing voluntary movements due to damage to the cerebellum. It is characterized by poor coordination, muscle weakness—especially in the trunk area—balance impairment, and/or decreased endurance, as well as difficulty with fine motor tasks. Common conditions that may cause ataxia include cerebral palsy, stroke, and multiple sclerosis.

Therapy

The use of assistive technology, including mobility aids (i.e., walkers or canes), modified eating utensils, and communication aids can help individuals with ataxia complete daily tasks. Physical therapists can work with these individuals to build strength and mobility, while occupational therapists can help them learn to complete daily living tasks. In addition, a Speech Language Pathologist can work with these individuals to improve speech and swallowing.

A person with ataxia works with therapists to improve coordinating muscle movements and fine motor control, as well as, motor learning for gait, coordination, and balance training.

Application

Individuals with ataxia can use the TAP·it platform in multiple ways to:

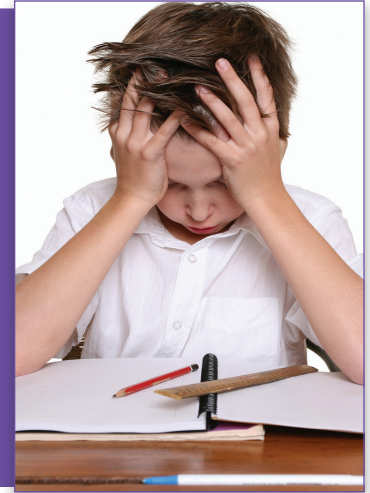|	
Improve fine motor and muscle coordination	Users can utilize the TAP·it platform's 42" touch screen to improve fine and gross motor skills.
Improve coordination	Users can use their fingers to interact with the platform and improve hand-eye coordination.
Increase balance	The platform's intended touch offers the ability for users to lean on it for added stability.

Attention Deficit Hyperactivity Disorder (ADHD)

✓ F A C T

Attention deficit hyperactivity disorder (ADHD) is broken down into three types:

- ADHD – Combined Type: this is the most common form. These individuals experience issues with attention, concentration, hyperactivity, and impulsivity.
- ADHD – Inattentive Type: this type is characterized by problems with attention and concentration.
- ADHD – Hyperactive-Impulsive: this type is characterized by behaviors that are impulsive and hyperactive.

Below are common symptoms for each of the ADHD problem areas:

Inattention	• Difficulty paying attention to detail • Easily distracted by external stimuli • Inability to sustain attention to tasks • Moves from one unfinished project to another • Disorganized
Hyperactive	• Difficulty sitting still • Excessive moving, such as running and climbing when inappropriate • Talks excessively • Difficulty playing quietly
Impulsive	• Acts before thinking • Speaks before thinking, blurting out inappropriate or rude comments, or shouting the answer before raising a hand

In 2010, the CDC approximated that 8.4% of, or 5 million, children between the ages of three and seventeen have been diagnosed with ADHD. Boys are twice as likely to have ADHD.

Strengths

Individuals with ADHD have many strengths. Below are a few to consider:

Intelligence	Typically above average or high IQ levels.
Creative	Strengths in drawing, painting, creative writing, and drama.
Intuitive	Ability to see others' difficulties and always willing to help others.
Multitasker	Ability to work on multiple projects at once.
Energetic	High energy level.

Application

Individuals with ADHD can use the TAP·it platform in multiple ways to:

Increase motion	Learn while sitting, standing, or leaning; ability to use an exercise ball during instruction.
Increase attention span	Provide novel, stimulating activities that are sought out by individuals with ADHD.
Improve social skills	Collaboration in small groups, taking turns.
Increase motivation	Ability to play educational games.
Increase learning capacity	Learn through computer-aided instruction, rather than through the use of worksheets; implement visual instructions, in addition to verbal.
Improve working memory	Use of multimodal learning styles to increase retention, (i.e., Tool Factory Memory Skills).

Autism Spectrum Disorder (ASD)

There are five main types of Autism:

Autistic disorder	This is the most common type and is characterized by developmental issues, including cognitive, language, behavioral, and social.
Asperger's syndrome	Children develop a normal IQ and language skills, but experience some autistic traits, such as a lack of social skills, issues with sensory integration, and a need for rigid routines.
Childhood disintegrative disorder (CDD)	Children typically develop normally until around the age of two and then begin to deteriorate in the areas of intellectual, social, and language skills.
Rett syndrome	It is a genetic syndrome in girls that starts between the ages of six and eighteen months.
PDD-NOS (pervasive developmental disorder—not otherwise specified)	Children show atypical or mild autism symptoms, but do not meet the criteria for any specific ASD.

For children with ASD, the main disorders include language development and social impairment. Language development can range from a delay in language acquisition to nonverbal manners (the inability to talk). Social impairments range from lack of eye contact to disinterest in peer relationships.

Two very common areas of impairment include:

Restrictive pattern of behaviors, interests, or activities	
Behavior	Repeated stimulation ("stim") such as spinning, rocking, finger flapping, and echolalia.
Interests	Fixating on one particular topic, and showing disinterest in learning about anything else.
Activities	Watching the same video clip repeatedly, spinning objects, etc.

Sensory integration, showing an increase or decrease in sensitivity to:	
Auditory	Like or dislike loud sounds.
Tactile	Like or dislike being touched, specific textures, etc.
Visual	Like or dislike bright lights, specific colors, etc.

According to the Centers for Disease Control and Prevention (CDC), approximately one in every 88 children, with one in 50 boys, were diagnosed with a form of autism in 2012.

Strengths

The following are areas of strength for a person with autism:

- Drawing, art, and computer programming
- Visual thinking, where individuals prefer written/visual instructions, pictures, graphical organizers, etc.
- Tactile learning, making it easier to learn through feeling/touching, especially for older nonverbal children/adults

Application

Individuals with autism can use the TAP·it platform in multiple ways to:

Improve fine motor control	Use a finger or stylus to work on handwriting, direct selection of objects, etc.
Improve gross motor control	Reach across activities, increase range of motion.
Improve visual motor skills	Solve puzzles, connect the dots, use of on-screen keyboard.
Improve visual attention	Incorporate motivating computer programs.
Develop social skills	Working together, taking turns.
Increase interactions	Interest in activities increase.
Reduce visual distractions	No projector or shadow, less flicker on the flat panel than on a computer monitor.
Increase learning capacity	Implement visual methods for teaching by using SMART Notebook™ software or interactive websites, especially important for number concepts (i.e., use SMART Notebook or VizZle® to create interactive visual flash cards).
Improve sequencing skills	Use software such as Tool Factory Sequences and ReacTickles 2.

Cerebral Palsy (CP)

✓ **F A C T**

Cerebral palsy (CP) is a nonprogressive motor disorder that is caused by damage to the brain's motor control center and thus, impairs a person's motor skills (i.e., walking, writing, balancing, coordinating movements, etc.), communication and/or senses, as well as intellectual and learning abilities.

There are five different types of cerebral palsy:

Spastic	Most common form of CP; makes up seventy to eighty percent of all cases. • Three main types: › *Hemiplegia: one side of the body is affected; person is ambulatory* › *Diplegia: most common of the three types; lower extremities are affected, but a person is typically ambulatory; cognition/intelligence is unaffected* › *Quadriplegia: all limbs are affected; typically not ambulatory and tremors are often present*
Ataxic	Damage to the cerebellum, which affects motor skills, vision, and auditory processing.
Athetoid/ Dyskinetic	One-fourth of all individuals with CP fall in this category. • Mixed muscle tone • Difficulty sitting or walking upright • Involuntary movements
Hypotonic	• Little or no muscle tone • Appear limp • Slight or no movement
Mixed	A combination of the above four types.

Strengths

- Access to regular classroom/curriculum when appropriate
- Social interaction with peers

Application

The TAP·it platform can benefit individuals with CP through the following features:

Adjustability	The platform's height and degree of tilt can be adjusted for wheelchairs, crutches, etc.
Intended touch	Individuals with weak muscle control can lean on the platform and still interact.
Touch screen	Individual can use gross motor movements to interact, improving fine motor skills.
Mobility	TAP·it can move from room to room for continued access to curriculum.

Developmental Disabilities

✓ FACT

A developmental disability is characterized by lifelong mental and/or physical impairments that are present before the age of eighteen. A person with a developmental disability will be affected in three or more daily living areas: independent living, economic independence, learning, mobility, receptive and expressive language, self-care, and self-direction. Individuals will be classified as mild, moderate, severe, or profound, based on the level of support they need.

The following disorders fall into the developmental disability category:

- Intellectual disabilities
- Cerebral palsy
- Autism spectrum disorders
- Down syndrome (and other genetic and chromosomal disorders)

Therapy

Different types of therapy that may be necessary for a person with a developmental delay include: speech therapy; augmentative communication; occupational therapy; physical therapy; music, play, and recreational therapy; and social skills therapy.

Application

Individuals with developmental disabilities can use the TAP·it platform in multiple ways to:

- Learn life skills
- Improve fine and gross motor skills with multisensory input and feedback (visual, auditory, and tactile)
- Improve social and collaboration skills
- Increase engagement and interaction
- Decrease distraction due to the unit's lack of any shadow

Down Syndrome

Individuals with Down syndrome often have the following common physical characteristics:

- Small chin
- Upper slanting/almond-shaped eyes
- Flattened nose
- Enlarged tongue
- Wide, short hands with short fingers
- Short stature due to slow physical growth
- Poor muscle tone (especially present at birth)

In addition, the following developmental delays may be present:

- Mild to moderate intellectual disabilities (majority of individuals)
- Delayed language skill acquisition
- Delayed motor skill acquisition
- Impulsive behavior
- Poor judgment
- Short attention span

Strengths

Individuals with Down syndrome have many strengths. Below are a few to consider:

- Good short-term memory
- Learn well when tasks are broken down into smaller steps
- Strong vocabulary and social interactive language skills
- Strong use of gestures and facial expressions for effective communication with others
- High receptive language skills

Application

Individuals with Down syndrome can use the TAP·it platform in multiple ways to:

Increase task completion with a multimodal approach	Use software such as SMART Notebook or VizZle to break tasks into smaller steps and provide instructions for each step.
Minimize distractions	No shadows; large working space.
Improve communication	Provide speech therapy and communication opportunities (expressive, formal/informal social exchanges, articulation, and fluency) with software such as Boardmaker or Tool Factory programs, such as Sound Stories and Sound Beginnings - Making Sounds.
Improve fine motor skills	Use fingers to interact.
Increase attention span	Use of any software on 42" touch screen increases engagement and interaction.
Improve long-term memory	Use of visual, auditory, and tactile components to increase retention.

Emotional Behavioral Disability (EBD)

> ✓ **F A C T**
>
> Students with emotional behavioral disabilities (EBD) will demonstrate the following:
>
> - Social, emotional, or behavioral characteristics that are not age appropriate or culturally/ethnically acceptable and affect the following areas:
>   › academic progress
>   › social relationships
>   › personal and classroom adjustments
>   › self-care
>   › vocational skills
> - Severe, chronic, and frequent negative behaviors that occur at school and at least one other environmental setting

Strengths

Individuals with EBD benefit from the following types of intervention:

- Modeling of appropriate behavior
- Social skill development
- Positive behavior reinforcement
- Positive comments, relationships
- Art therapy

Application

Positive interaction with educational topics and incorporating the TAP·it platform motivating software programs, such as Tool Factory Strumbie Island, or use of art programs, such as ArtRage, benefit students with EBD.

Eye Tracking

✓ **F A C T**

Eye tracking is the ability to fixate on a stationary target or follow a moving target, and then smoothly look from one object to another. Occupational therapists and developmental optometrists are trained to implement strategies to improve eye tracking skills.

Therapy

Eye tracking skills can be improved by practicing the following:

- Using fingers or hands to work on hand-eye coordination
- Touching objects while looking at them
- Performing hand movements up, down, left, right, and diagonally
- Completing mazes, word finds, or hidden picture activities
- Catching objects

Application

The TAP·it platform can help individuals improve eye tracking skills through the following features:

Software programs	Fun eye-tracking software programs, such as Tool Factory Eye Track.
Touch screen	Individuals can use their fingers or a stylus to interact through the unit's 42" touch screen, which will help improve hand-eye coordination.

Fine Motor Skills

✓ FACT

Fine motor skills involve the use of fingers or small muscles that make tasks such as writing, grasping, and fastening possible. Weakness in fine motor skills can affect a person's ability to eat, write, turn pages in a book, get dressed, brush their teeth, or use a computer.

Therapy

Fine motor skills can be improved through scribbling, drawing, and coloring. Individuals can work with their occupational therapists on various fine motor activities such as: tying, lacing, writing, and other finger/hand exercises.

Application

Because individuals interact with the TAP·it platform using their fingers, all activities on the platform help to improve fine motor skills. Below are a few example activities:

- Writing
- Drawing
- Playing games

Gross Motor Skills

✓ FACT

Gross motor skills involve the use of large muscle groups for walking, balancing, jumping, kicking, lifting, reaching, or throwing. Students with gross motor issues also can experience problems with fine motor skills, such as writing at a desk or standing at the board, because they have difficulty maintaining the proper upper body support to complete these tasks.

Therapy

Physical and/or occupational therapists work with these individuals to improve gross motor skills. Recreational activities, such as dancing, riding a bike/scooter, marching, jogging, skipping, talking and walking at the same time, swimming, and large-scale art projects, can all be used to help gross motor development.

Application

The TAP·it platform also can assist in gross motor development through the following features:

Adjustability	The platform's height and degree of tilt can be adjusted to allow students to work in varying positions to strengthen upper body support.
Intended touch	Individuals with weak muscle control can lean on the platform and still interact to improve balance.
Software programs	Use fun software on the TAP·it platform to work on crossing midline.
Hand-eye coordination	Individuals can use their fingers to interact through the platform's 42" screen, which will help improve hand-eye coordination.

Hearing Impaired

✓ FACT

Hearing impairment is caused by damage to one or more parts of the ear.

The three types of hearing loss are:

Conductive Hearing Loss	Sensorineural Hearing Loss	Mixed Hearing Loss
• Caused by problems with the outer or middle ear, which includes the ear canal and eardrum • Typically can be corrected with medications or surgery	• Caused by damage to the inner ear (cochlea) or the auditory nerve • Trouble with understanding speech and interpreting various sounds • Permanent condition, but can be treated with hearing aids and, in some severe cases, with cochlear implants	Where both conductive and sensorineural hearing losses occur together.

Benefit

Individuals with a hearing impairment benefit from: use of hypermedia techniques, tactile input, audio captioning, visual media, turning off equipment that creates background noise (such as projectors), and amplification systems.

Application

The TAP·it platform increases engagement for individuals with hearing impairments through the following features:

- Use of tactile input
- Ability to use sign language while accessing curriculum

Intellectual Disability (ID)

✓ FACT

Intellectual Disability (ID), a form of developmental disability, is the modern term for Mental Retardation (MR). Individuals diagnosed with ID fall into one of four levels: mild, moderate, severe, or profound. The majority of individuals with ID fall into the mild range and have an IQ between fifty and seventy. A person with ID will show a decreased ability to learn, exhibit infant-like behaviors into adulthood, fail to meet intellectual development markers and educational demands, and often lack curiosity. These issues lead to complications related to self-care, appropriate social interactions, and adaptive behavior.

Strengths

The following methods are highly successful in teaching and training individuals with ID:

- Individuals with ID can be very successful in both academics and functional areas (i.e., independent living) when the curricula and instructions are modified.

- Learning life skills is most effective in the environment (settings or activities) in which it will take place. Examples include: money and time concepts, self-care and hygiene, leisure activities, and vocational training.

- Using a student's specific interests and abilities is very effective for teaching early literacy skills.

- Break tasks into small step-by-step projects so each skill can be mastered over time.

Application

Individuals with ID can use TAP·it in multiple ways to:	
Increase attention/motivation	Use of TAP-it with any software program provides novel, stimulating activities.
Gain life skills	Use with any software to make it easier to work on different types of life skills.
Increase independence	Easy to use.
Increase communication	Use of software programs with auditory feedback (i.e., Boardmaker).

Learning Disability (LD)

> ✓ **F A C T**
>
> Learning disabilities (LD) encompass a group of neurological disorders that make it difficult to learn in a typical manner. A person with a learning disability has the same or higher IQ than their peers and manages their disability with support and intervention techniques. The most common areas of difficulty for a person with a learning disability are: reading, writing, spelling, reasoning, and recalling and/or organizing information.

The most common learning disabilities include the following:

Dyscalculia

Dyscalculia is a specific learning disability that impairs a person's ability to learn and comprehend mathematics. Difficulties with math can vary from person to person, affecting them differently in school and daily life.

Some of the most common areas of difficulty associated with dyscalculia include:	
• Remembering specific math facts	• Following sequential directions
• Recalling math formulas for calculations	• Easily becoming disoriented (i.e., knowing right from left)
• Mastering math facts through traditional methods	• Learning abstract concepts of time and direction
• Telling and keeping track of time	• Acquiring spatial orientation
• Learning musical concepts	• Understanding the exchange of money

Accommodations

Incorporating methods, such as small group work for solving problems, using verbal reasoning instead of memorizing math facts, and computer-aided instruction, can help individuals develop math skills.

Application

The TAP·it platform can benefit individuals with dyscalculia through the following features:

- Multisensory input and feedback
- Tool Factory software programs: 123-CD, Fizzy's Number Skills, and Bucket & Spade

Dyslexia

Dyslexia is a language-based learning disability that impairs a person's ability to learn and comprehend written words. It is the most common learning disability: 80% of all individuals with a learning disability have dyslexia.

The following are the most common areas of difficulty associated with dyslexia:	
• Learning to speak	• Reading quickly enough to comprehend
• Deciphering letters and their sounds	• Spelling
• Organizing written and spoken language	• Accurately completing math operations
• Memorizing number facts	

Accommodations

The following methods are commonly used as academic supports for an individual with dyslexia:

- Changing the background/text colors
- Highlighting words
- Use of word processors, audio books, or text-to-speech devices
- Incorporating tactile/touch methods
- Using multisensory methods
- Repeating skills/concepts
- Incorporating phonic skill work

Application

The TAP·it platform can benefit individuals with dyslexia through the following features:

- Multisensory input and feedback
- Tool Factory software programs: Letter Olympics, Think About! 1, A Busy Day, On the Ball Spelling, Eye Track, and Phonics
- ClaroRead for text-to-speech
- ClaroView to change screen hue

Dysgraphia

Dysgraphia is a processing disorder that affects a person's ability to write.

The following are the most common areas of difficulty associated with dysgraphia:

- Spelling
- Fine motor skills
- Writing (i.e., poor handwriting)
- Transferring words/thoughts to paper, which causes problems when using writing as a communication tool
- Forming letters (i.e., irregular letter shapes and sizes), mixing of upper and lower-case letters, or writing print and cursive letters
- Writing causes fatigue
- Discrepancy between verbal and written communication of the same idea

Accommodations

The following methods can assist individuals with dysgraphia develop writing skills despite their learning disability:

- Incorporating big arm movements to improve motor memory
- Practicing letters/numbers with finger motions
- Using multisensory techniques, graphical organizers, and voice recognition

Application

The TAP·it platform can benefit individuals with dysgraphia through the following features:

- Multisensory input and feedback
- Tool Factory software programs: A Busy Day
- ClaroRead
- OSKA Word Banks

Medically Fragile

✓ F A C T

A medically fragile child is dependent on life-sustaining medications, treatments, and equipment, and requires assistance with daily living activities due to an accident, illness, congenital disorder, abuse, or neglect. They may have chronic health-care conditions (diabetes, traumatic brain injury, cerebral palsy), require health-care support (tube feedings, oxygen therapy, ventilator), and have limited mobility.

Benefit

Children who are medically fragile benefit from access to modified curriculum and therapy (speech, OT, PT).

Application

The TAP·it platform increases engagement and curriculum access in the classroom through the following features:

Adjustability	The platform's height and degree of tilt can be adjusted to improve access for all individuals.
Intended touch	Individuals can lean on the platform and still interact with it.
Multisensory	The platform offers multisensory input and feedback.

Multihandicapped (MH)

✓ FACT

Multihandicapped (MH), or multiple exceptionalities, is characterized by an individual who has more than one cognitive or physical disability. These individuals will exhibit a combination of disabilities, including: speech, physical mobility, learning, intellectual, visual, hearing, etc. In addition, a multihandicapped person may exhibit sensory loss, and behavior and/or social problems. The characteristics of an individual's impairments and their severity will vary.

Children who are diagnosed with multiple disabilities are typically placed in a multihandicapped classroom. Many of these students have physical mobility needs, as well as weaknesses in auditory processing, speech limitations, retention, and transferring skills.

Therapy

Individuals with multiple exceptionalities benefit from:

- Early intervention
- Working with all appropriate therapists
- A classroom with a physical arrangement that best accommodates each individual's needs
- Use of assistive technology
- Social development opportunities with peers

Application

Individuals with multiple disabilities can use the TAP·it platform in multiple ways to:

- Gain accessibility to curriculum
- Achieve increased independence
- Increase attention and motivation
- Work on academic, life skills, and therapeutic goals

Multiple Sclerosis (MS)

✓ **F A C T**

Multiple Sclerosis (MS) is an autoimmune disease that typically develops in individuals between the ages of twenty and forty, and affects the brain and spinal cord. Individuals with MS experience attacks that can vary in location and severity, along with periods of remission (no symptoms). MS also can continue to get worse without remission periods as patients age.

Attacks or episodes can last days, weeks, or even months, and will affect many different parts of the body, including:

Muscles	Brain/nerves	Eyes	Mouth/tongue
• Loss of balance • Muscle spasms • Numbness • Problems walking, or moving arms or legs • Tremors • Muscle weakness	• Decreased attention span • Poor judgment • Memory loss • Hearing loss • Difficulty reasoning/ solving problems	• Double vision • Discomfort • Rapid eye movements • Vision loss (one eye at a time)	• Slurred speech • Trouble chewing/ swallowing

Therapy

Early treatment is necessary to reduce cognitive impairment, such as memory loss and decreased attention span. Different medications and steroids are used to slow progression, decrease severity of attacks, and control symptoms.

In addition, assistive technology, occupational, physical, and speech therapy all are used to reduce impairment.

Application

The TAP·it platform can benefit individuals with MS through the following features:

Adjustability	The platform's height and degree of tilt can be adjusted to accommodate various motor issues due to an attack.
Intended touch	Individuals with weak muscle control can lean on the platform for added stability.
Multimodal access	Because of the frequent threats for relapse and attacks, individuals can use a finger, stylus, or the on-screen keyboard, as well as keyboards, mice, voice recognition, etc., for easy input.
Large screen	The 42-inch viewing area enables individuals with visual impairments to easily see items on the screen.

Muscular Dystrophy (MD)

> ✓ **FACT**
>
> Muscular Dystrophy (MD) is a group of genetic disorders that encompasses muscle weakness and a loss of muscle tissue with these symptoms accelerating over time. There are several different types where some are fatal, while others cause very little disability. Though symptoms can appear in adulthood, the most severe forms tend to occur in early childhood.

The general symptoms of MD include:

- Muscle weakness, which slowly gets worse
- Difficulty using one or more muscle groups
- Drooping eyelids
- Poor vision
- Difficulty walking
- Intellectual disabilities
- Impaired speech

Therapy

Physical therapy and specific exercises can help keep muscles from stiffening around joints. Braces are sometimes used to keep joints and tendons flexible.

In addition, the use of assistive technology with a long-term plan to stay ahead of muscle weakness progression can help an individual's quality of life.

Application

Individuals with MD can use the TAP·it platform in multiple ways to:

Increase accessibility	Individuals with wheelchairs, crutches, etc., can still interact with the platform.
Increase mobility	The TAP·it platform can be used in multiple locations, such as in an office building or at home.
Therapeutic benefits	The large screen allows individuals the ability to work on both physical and occupational therapy exercises: fine motor, range of motion, midline, gross motor, balance, etc.
Increase balance	The platform's intended touch enables individuals to lean on it for added stability.
Improve speech/ communication	Individuals can use communication software such as Boardmaker as a communication tool, while still accessing other computer programs.

Sensory Processing Disorder (SPD)

> ✓ **F A C T**
>
> Sensory processing disorder (SPD), or sensory integration dysfunction, is a neurological disorder that affects the processing of information from one or more of the five senses (sight, hearing, touch, smell, and taste).

A person with SPD is able to receive information from his or her senses, but is unable to properly process, or understand, the information. The individual will typically be either hyposensitive or hypersensitive. Many people with autism also have SPD, but a person can have SPD without having autism. It is important to remember that although autism and SPD are often seen together, they are different disorders.

SPD affects how information is interpreted by the brain and not the senses themselves—the senses are not impaired or hindered.

The following are sensory areas that may be affected:

Vision	
Common hyposensitive signs	**Common hypersensitive signs**
• Difficulty controlling eye movements and tracking • Confuses similar letters • Focuses on small details of a picture, while missing the whole picture • Easily loses place while reading	• Irritated by bright lights • Easily distracted by visual stimuli • Avoids eye contact • May become over stimulated in brightly colored rooms

Hearing (Auditory)	
Common hyposensitive signs	**Common hypersensitive signs**
• May not respond to verbal cues • Loves loud music and making noise • Confused by where a sound is coming from • Asks "what?" frequently	• Covers ears and is startled by loud noises • Distracted by sounds not otherwise noticed by others • Fearful of loud objects (i.e., toilets, vacuums) • Avoids loud public places

Touch (Tactile)	
Common hyposensitive signs	Common hypersensitive signs
• Does not realize hands and face are dirty • Touches everything constantly • Does not appear to feel pain • Plays roughly with peers	• Refuses messy play • Resists cuddling and light touches • Dislikes rough clothing, tags, seams in socks, etc. • Resists baths and showers

Smell (Olfactory)	
Common hyposensitive signs	Common hypersensitive signs
• Does not notice unpleasant or noxious odors • Smells it first when introduced to something new • May be unable to identify smells	• Bothered/nauseated by cooking, bathroom, and perfume smells • Refuses to go to certain places because of the way they smell • Chooses foods based on scent

Taste	
Common hyposensitive signs	Common hypersensitive signs
• Licks, tastes, or chews inedible objects • Prefers intense flavors (excessively spicy, sweet, sour) • Constantly puts objects in mouth	• Picky eater with extreme food preferences • Avoids seasoned foods; prefers bland foods • May only eat soft or pureed foods

Therapy

Occupational therapists will work with individuals diagnosed with SPD using a "sensory diet." A sensory diet is a way to minimize negative emotional/behavioral responses. It uses specific activities to produce calming responses, while developing new sensory skills.

Application

The TAP·it platform can be useful for sensory diets in the following ways:

- The platform incorporates a touch screen instead of a mouse for visual input needs.

- Individuals can interact with more visuals, pictures, and words (SMART Notebook, VizZle) for auditory input needs.

- The platform's height/tilt angle can be adjusted to enable individuals to sit in bean bag chairs for tactile input needs.

- The TAP·it platform offers software programs with repetitive alternating/rhythmic movement, such as Tool Factory ReacTickles 2, and Eye Track.

Traumatic Brain Injury (TBI)

✓ FACT

Traumatic brain injury, or TBI, is caused by a sudden trauma to a person's brain. Symptoms of TBI can be mild, moderate, or severe, depending on the damage. With a mild TBI, a person may remain conscious or experience a very short loss of consciousness. Symptoms will include headache, confusion, dizziness, blurred vision, trouble with memory and attention, and/or behavioral or mood changes. A person that has sustained a moderate or severe TBI can have some of the same symptoms as a mild TBI, but they also may experience a headache that continues to get worse, vomiting, nausea, seizures, slurred speech, loss of coordination, increased confusion, restlessness, or agitation.

Treatment for a TBI should be immediate in order to stabilize the individual and prevent any further injury. Individuals with moderate to severe injuries will receive rehabilitation and treatment in the areas of physical, occupational, and speech/language therapy, psychology, and social support. The prognosis for each person will depend on the level of severity, the location of the injury, and the age and general health of the individual.

Some common disabilities that may result from a TBI include:

Cognition	Thinking, memory, reasoning
Sensory processing	Vision, hearing, touch, taste, smell
Communication	Expression and understanding
Behavior or mental health	Depression, anxiety, personality changes, aggression
Unresponsive	Coma or vegetative state

Therapy

Individuals with a TBI benefit from immediate and, in some cases, long-term programs in occupational therapy, physical therapy, and speech language pathology, as well as cognitive and psychological support.

Application

The TAP·it platform increases engagement and student access in the classroom through the following features:

Accessibility and adjustability	The platform's height and degree of tilt can be adjusted to improve multisensory access for all individuals.
Intended touch	Individuals can lean on the platform and still interact with it.

In addition, interaction with the TAP·it platform helps students relearn life skills, improve fine and gross motor skills, as well as cognitive skills (memory, sequencing, attention).

Visually Impaired (VI)

✓ **F A C T**

A visual impairment is caused by damage or disease to one or more parts of the eye, or the part of the brain that processes images, where vision cannot be fully restored through surgery, medical treatment, or glasses or contacts.

The term visual impairment describes any kind of vision loss, ranging from a person who has partial loss to a person who cannot see at all. The AFB (American Foundation for the Blind) has estimated that there are 10 million people in the United States that are visually impaired.

There is a difference between people that are completely blind and those that are legally blind. Someone who is diagnosed with legal blindness has not lost their sight completely, but they have lost enough of their vision that they have to, for example, stand 20 feet from an object to see it (compared to a person with perfect vision who can see it from 200 feet away).

Visual impairments are caused by injury, genetics, or disease. For example, a baby can be born with congenital blindness due to an infection transmitted from the mother or because of a genetic condition. In addition, other causes can occur after birth, including: cataracts, diabetic retinopathy, glaucoma, macular degeneration, trachoma, or injury to the eye or head.

Benefit

Children and adults who are visually impaired benefit from increased text/graphic size, high-contrast color schemes, text-to-speech programs, and decreased glare.

Application

The following TAP·it platform features benefit students with visual impairments:

- The backlit screen requires no projector and creates no shadows
- A 42" screen
- Use of additional screen magnification
- The screen supports high contrast backgrounds and provides clear, crisp images

SECTION 2
ASSISTIVE TECHNOLOGY

Assistive Technology (AT) includes a very broad range of devices, services, strategies, and practices to assist persons with disabilities in the challenges of everyday life. According to the Tech Act Law (PL 100-401), an AT device is, "any item, piece of equipment or product system whether acquired commercially off the shelf, modified, or customized that is used to increase or improve functional capabilities of individuals with disabilities."

There are many different assistive technology device categories, such as: environmental controls, mobility, ergonomic equipment, recreation and leisure, vision and reading aids, hearing and listening aids, etc. The TAP•it platform is considered an assistive technology device and can be included in several different AT categories. The TAP•it platform falls into the following principal AT categories: computer access, augmentative/alternative communication, and daily living aids.

Augmentative and Alternative Communication (AAC)

✓ F A C T

Augmentative and Alternative Communication, or AAC, is a term that describes accommodations or devices used to facilitate communication. AAC devices are used to compensate—either temporarily or permanently—for individuals with severe expressive communication disorders (speech, language, and writing).

Alternative communication devices are used to replace speech for individuals who are unable to communicate verbally, while augmentative devices are used to enhance residual speech, including vocalizations, gestures, signs, and aided communication (i.e., use of symbols).

Some examples of AAC include: eyegaze or picture communication boards, sign language, digitized speech devices (recorded speech), and synthesized speech devices (computerized speech).

Benefit

Individuals with the following diagnoses can benefit from using AAC:

- Traumatic brain injury
- Developmental delay
- Cerebral palsy
- Autism
- Stroke
- Aphasia
- Verbal ataxia

An augmentative communication system can facilitate communication of thoughts and needs, improve speech and language development, encourage social interaction, and expand educational and vocational opportunities, as well as increase independence in the home, school, and community.

Application

Individuals with severe expressive communication disorders can use the TAP·it platform in multiple ways to:

Increase verbalizations	Auditory models are available for users when using software programs with auditory feedback.
Improve communication	It can support the software of AAC programs, such as Boardmaker.

Computer Access

Below are different types of **input** methods:	Below are different types of **output** methods:
• **Alternative keyboards:** large keys, compact or mini, on-screen, ergonomic	• **Screen Reader:** software that reads the text on the computer using a synthesized voice
• **Alternative mice:** touch screen, trackball, joystick, trackpad	• **Text-to-Speech:** software that speaks letters, words, and paragraphs in a word processing environment
• **Optical Character Recognition (OCR):** software that converts a scanned image of text to actual text, which can then be edited and used with text-to-speech programs	• **Screen Magnifiers:** software that increases the size of text and icons through magnification, some up to 16 times
• **Scanning:** method of input for a computer (or a communication device) that uses one or more switches; provides a group of choices that can be activated by a switch	• **Embosser:** special printer that prints in Braille for the visually impaired
• **Voice Recognition:** software that allows the use of spoken commands to control, rather than the keyboard	

Benefit

Computer access gives individuals with disabilities the same opportunities to use a computer for work, play, therapy, or education.

Application

The TAP·it platform is a form of computer access and can be used with any of the above input or output options.

Daily Living Activities and Aids

✓ FACT

Activities of daily living are performed on a day-to-day basis and include getting dressed, preparing and eating meals, and household chores. A person with a disability may need assistance in performing these daily tasks. Aids for daily living, or ADLs, can help these individuals complete their daily activities using assistive technology, which includes low and high-tech devices.

Modifying everyday living aids (i.e., utensils, brushes) allows individuals to be independent in self-care and daily activities. They also can work on cognitive skills, such as sequencing of tasks, to help them complete these essential tasks.

Application

Individuals can use the TAP·it platform in multiple ways to:

- Increase fine and gross motor skills
- Aquire life skills: the platform can be used with any software (SMART Notebook, Tool Factory Sequences) to work on sequencing of various daily living activities.

ASSISTIVE TECHNOLOGY SERVICE

AT service (PL 100-401) is defined as "Any service that directly assists an individual with a disability in the selection, acquisition or use of an assistive technology device." Examples of AT services include: evaluating needs and skills of AT; acquiring AT; selecting, designing, repairing, and fabricating AT systems; coordinating services with other therapies; and training for both the individual with a disability and those working with the individual.

Two important AT services as they relate to the use of TAP•it include therapy and academic services. The following section describes the three main therapies that can be targeted with TAP•it as well as a 21st Century inclusive educational model, called Universal Design for Learning.

Therapy

✓ **F A C T**

Though there are several different types of therapies available today in the medical field, the three main therapies that best benefit people with disabilities are occupational therapy (OT), speech therapy (SP), and physical therapy (PT).

Occupational Therapy

Occupational therapy assists individuals in developing daily activity skills, such as work, leisure, self-care, and cognitive tasks. The main goal of an occupational therapist is to promote health and well-being through occupation (i.e., work or education). They work on various skills, including fine motor, communication, crossing midline, memory, sequencing, and following directions.

Speech Therapy

Speech language pathology (SLP) assists individuals with speech (articulation, intonation, rate, etc.), language (phonology, morphology, syntax, etc.), receptive and expressive language, and non-verbal communication (facial expressions, gestures, etc.). Speech therapists work with children and adults not only to help them gain skills in the above areas, but also to gain social communication skills, including how to initiate and take turns during conversations.

Physical Therapy

Physical Therapy assists individuals in treating muscle movement and function that has been affected by age, injury, or disease. A physical therapist will work with individuals to strengthen large muscle groups such as legs, arms, and core.

Therapy

Therapy is necessary for many individuals with a disability in order to strengthen areas of weakness. By varying therapy activities, it keeps a patient's interest and motivation strong.

Application

The TAP·it platform can be used to help individuals achieve the following therapeutic goals:

- OT: fine motor, eye tracking, crossing midline, daily living skills
- PT: gross motor, balance, upper and lower body strength
- SLP: verbal modeling, augmentative communication, articulation, receptive language

Universal Design

Universal Design of Learning (UDL)

Universal Design of Learning (UDL) is "a set of principles for curriculum development that give all individuals equal opportunities to learn" (www.cast.org). It is a method of teaching/education that provides a flexible learning environment to accommodate individual learning differences/abilities.

There are three guiding principles:

Multiple means of representation—the "what" of learning
Perception: the way an individual perceives and comprehends information that is presented.
Make information equally perceptible to all learners by: • Providing the same information in different modalities (visual, auditory, tactile);   • Providing information in a format that allows for user adjustability (increase text size, amplify sounds).
Language, expressions, symbols - the ability for individuals to understand different forms of representation; vary the way a concept is explained: • Vocabulary;   • Symbols;   • Graphs;   • Pictures/images.
Comprehension - teach individuals how to transform accessible information into knowledge through "information processing skills":   • Selective attending;   • Integrate new information with prior knowledge;   • Strategic categorization;   • Active memorization.

Multiple means of action & expression—the "how" of learning
Physical action - providing multiple ways to access curriculum to allow all individuals with and without disabilities to navigate and interact with materials.
Expression and communication - providing alternative ways to express knowledge, ideas, and concepts (i.e., talking, writing, typing, story-telling, drawing, etc.).
Executive function - the UDL framework typically involves efforts to expand executive capacity in two ways: • Scaffolding lower-level skills so that they require less executive processing; • Scaffolding higher-level executive skills and strategies so that they are more effective and developed.

Multiple means of engagement—the "why" of learning
Recruiting interest - individuals interests differ and change over time: • Provide a lot of individual choice and autonomy; • Provide more relevance, value, and authenticity; • Reduce threats and distractions.
Sustaining effort and persistence - learning of skills and strategies require sustained attention and effort: • Increase relevance of goals and objectives; • Create varying demands and resources to optimize challenge; • Encourage collaboration and communication; • Offer feedback that guides an individual toward mastery and not performance/compliance.
Self-regulation - develop learners' intrinsic abilities to regulate their own emotions and motivations: • Promote expectations that encourage motivation; • Facilitate personal coping skills and strategies; • Develop self-assessment and reflection.

Application

The TAP·it platform offers individuals of all abilities multimodal, multi-sensory learning opportunities. TAP·it platform's unique features, including adjustability, intended touch, and the option to use computer hardware and software, provide access to curriculum for all individuals:

- A touch-screen computer allows interaction from all individuals.

- A 42" touch screen with external speakers and a wide variety of software programs offer the ability to use all senses to learn.

- Software programs are highly motivating and keep individuals interest.

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