

# Virginia Assistive Technology Resource Guide

The following information is provided to assist educational teams in considering assistive technology in the development, review, and/or revision of a student's Individualized Education Program. This document provides a framework for identifying relevant tasks within instructional areas as well as appropriate accommodations, modifications, and technology solutions.

**This is not an exhaustive list.**

Additional tasks and solutions will need to be added to address individual student needs. This information can also be used to identify possible solutions in the area of transition. Modifications and accommodations are for instructional areas and are not to be considered accommodations for SOL testing.

For Additional information: <http://ttaonline.org/atmdp>

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<p><b>Writing:</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Write name</li> <li>• Copy letters/words/numbers for skills practice</li> <li>• Write words from memory</li> <li>• Copy print from book or worksheet</li> <li>• Copy notes from board or overhead</li> <li>• Complete written worksheets with single word responses (fill-in-the blank)</li> <li>• Complete written worksheets with phrase or sentence response</li> <li>• Complete written test with multiple choice response</li> <li>• Complete written test and forms with fill-in-the-blank response</li> <li>• Complete written test with matching response</li> <li>• Complete written test with short answer (phrase/sentence)</li> <li>• Complete written test with essay response (multi-paragraph)</li> <li>• Record notes from teacher dictation/lecture with teacher recording notes on board or overhead</li> <li>• Record notes from teacher dictation/lecture without teacher notes</li> <li>• Generate creative/spontaneous writing samples</li> <li>• Copy numbers</li> <li>• Enter number in correct location within calculation problems</li> <li>• Copy math calculation problems with correct alignment</li> <li>• Record dictated math calculation problems with correct alignment</li> <li>• Copy diagrams and graphs create and plot linear and quadratic equations on graph</li> </ul>	<ul style="list-style-type: none"> <li>• Crayon/Marker</li> <li>• Pencil</li> <li>• Pen</li> <li>• Letter and number strip</li> <li>• Clipboard</li> <li>• Computer, tablet, or iPad with word processing application plus grammar and spellchecker</li> <li>• Instructional applications to remediate and enhance specific writing skills</li> </ul> <p><b>NOTE:</b> Adaptive input or output to be used as needed for all computer based writing solutions.</p> <p><b>Adaptive input</b> is for anyone who cannot successfully use a standard keyboard (keyguard, keyboard utilities, enlarged keyboard, alternate keyboard, touchscreen, on-screen keyboard, trackball, switch access, voice recognition software, Braille input).</p> <p><b>Adaptive output</b> is for anyone who cannot gain meaning from the display on a standard monitor (large monitor, screen enlargement software, text or screen reading software, Braille).</p>	<ul style="list-style-type: none"> <li>• Increased time for completing assignments</li> <li>• Decreased length of assignment/number of responses</li> <li>• Oral dictation as an alternative to writing</li> <li>• Peer note taker</li> <li>• Format of assignment changed to meet need of student - multiple choice, matching word banks, fill-in-the-blank, short answer</li> <li>• Word banks, sentence starters, and cloze format writing activities for supports</li> <li>• Provide typed outline or typed copy of lecture notes to student prior to delivery for student to use to follow lecture</li> <li>• Student highlights key points on printed copy of notes rather than copying/recording lecture notes</li> <li>• Webbing-concept mapping strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Pencil grip or other adapted writing aids</li> <li>• Adapted paper (bold line, raised line, different spacing, secured to desk, paper stabilizers)</li> <li>• Slant board</li> <li>• Personal dry erase board</li> <li>• Non-slip writing surface (Dycem)</li> <li>• Recording device for dictated responses and notetaking</li> <li>• Portable word processor (Fusion, Neo)</li> <li>• Notetaking device (Braille, recording device, Smartboard, Notetaker)</li> <li>• Computer, tablet, iPad, or mobile device with writing application</li> <li>• Digital device for mind mapping, outlining, and templates.</li> <li>• Digital device with speech-to-text-and text-to-speech</li> <li>• Digital device with prediction software</li> <li>• Digital device with form filling application to create electronic worksheets</li> </ul>

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<p><b>Reading:</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Identify letters in isolation and in sequence</li> <li>• Recognize written name</li> <li>• Read basic/primer sight words</li> <li>• Read functional words (community, emergency, grocery)</li> <li>• Read target/selected words within a sentence</li> <li>• Comprehend age/grade reading materials</li> <li>• Read print materials from textbooks and supplemental materials with comprehension</li> <li>• Read material from worksheet with comprehension</li> <li>• Read material from board and overhead with comprehension</li> <li>• Read material from digital display with comprehension</li> <li>• Read longer reading samples with comprehension and without fatigue</li> <li>• Answer literal questions regarding materials</li> <li>• Answer questions regarding main idea of materials read</li> <li>• Answer inferential questions regarding materials</li> </ul>	<ul style="list-style-type: none"> <li>• Textbooks</li> <li>• Worksheets</li> <li>• Printed information on board &amp; overhead</li> <li>• Printed test materials</li> <li>• Instructional applications to remediate basic reading and/or reading comprehension skills</li> </ul>	<ul style="list-style-type: none"> <li>• Reading assistance</li> <li>• High interest, low reading level materials</li> <li>• Increased time for completing reading materials</li> <li>• Decreased length of assignment</li> <li>• Simplify complexity of text</li> <li>• Color coding and highlighting to emphasize key points</li> <li>• Custom vocabulary list</li> <li>• Increase print size of materials</li> </ul>	<ul style="list-style-type: none"> <li>• Page fluffers</li> <li>• Slant boards and book holders for positioning books</li> <li>• Color overlays</li> <li>• Tracking strategies (reading window, bar magnifier)</li> <li>• Speaking spellchecker or dictionary as a word recognition aid (Franklin Talking Dictionary)</li> <li>• Reading Pen (Personal Reading Assistant, Quicktionary II)</li> <li>• Digital books and materials (Recordings for the Blind and Dyslexic, Bookshare, AIMVA, Learning Ally, teacher-made)</li> <li>• Digital device with text enlargement software (ZoomText)</li> <li>• Solutions for converting text into accessible format (scanner with OCR software, Braille embosser, refreshable Braille displays, and tactile graphic production systems)</li> <li>• Digital devices (Chromebook, tablet, iPad, mobile) with text-to-speech applications</li> </ul>

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<p><b>Spelling:</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Identify correctly spelled word from printed list</li> <li>• Write spelling words from dictation</li> <li>• Spell words orally</li> <li>• Take a written spelling test</li> <li>• Use spelling words appropriately in a sentence</li> <li>• Locate correctly spelled words in an online dictionary</li> <li>• Complete writing tasks with correct spelling</li> <li>• Identify incorrectly spelled words in writing sample</li> </ul>	<ul style="list-style-type: none"> <li>• Flashcards</li> <li>• Alphabet strip</li> <li>• Digital device with word processing application and a built-in spellchecker</li> <li>• Instructional software to remediate and enhance basic phonics and spelling skills</li> </ul>	<ul style="list-style-type: none"> <li>• Peer/adult assistance for difficult to spell words</li> <li>• Personal or custom dictionary</li> <li>• Problem word list</li> <li>• Reduce number of spelling words</li> <li>• Increased time for completing assignments</li> </ul>	<ul style="list-style-type: none"> <li>• Personal dry erase board for practice</li> <li>• Digital recorder with difficult to spell words recorded</li> <li>• Hand-held spellchecker with or without auditory output (Franklin)</li> <li>• Portable word processor with built-in spellchecker (Neo, Forte)</li> <li>• Digital device with word processing application, spellcheck feature, and preferences with personal dictionary</li> <li>• Digital device with text-to-speech and a speaking spellchecker</li> <li>• Digital device with word prediction application</li> </ul>
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<p><b>Math:</b></p> <p style="text-align: center;"><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Identify numbers in isolation and sequence</li> <li>• Comprehend basic math concepts</li> <li>• Complete basic calculations (addition, subtraction, multiplication, and division)</li> <li>• Complete complex math calculations</li> <li>• Complete math word problems</li> <li>• Tell time to the hour, half-hour, using an analog and digital clock</li> <li>• Calculate passage of time</li> <li>• Identify coins and bills</li> <li>• Demonstrate understanding of coin and bill value</li> <li>• Utilize money to purchase items</li> <li>• Utilize coins and bills to make change</li> <li>• Maintain and balance a checkbook</li> </ul>	<ul style="list-style-type: none"> <li>• Manipulatives</li> <li>• Abacus</li> <li>• Number line</li> <li>• Math fact sheets</li> <li>• Calculator</li> <li>• Instructional application to remediate and enhance specific math skills</li> </ul>	<ul style="list-style-type: none"> <li>• Change format of assignment (write answers only)</li> <li>• Peer/adult reading of problem and recording of answer</li> <li>• Reduce number of problems</li> <li>• Provide additional spacing between problems</li> <li>• Provide additional time to complete tasks</li> <li>• Increase size of print</li> <li>• Change complexity of material (separate problems by operations required)</li> <li>• Teacher/peer support for reading and assistance</li> </ul>	<ul style="list-style-type: none"> <li>• Modified paper (bold line, enlarged, raised line, graph paper)</li> <li>• Calculator with speech output</li> <li>• Calculator with large display</li> <li>• Calculator with large keypad</li> <li>• Calculator with embossed output (Braille N Speak)</li> <li>• Digital device with on-screen calculator</li> <li>• Electronic math worksheet software with adaptive input and output as needed (MathPad, MathPad by Voice, Study Works)</li> <li>• Graphing calculator software (accessible graphing calculator)</li> <li>• Virtual Math Manipulatives</li> <li>• Online math activities (<a href="http://illuminations.nctm.org">http://illuminations.nctm.org</a>)</li> <li>• Adapted measuring devices (devices with speech output, large print display, or tactile output)</li> </ul>
<p><b>Study Organizational Skills:</b></p> <p style="text-align: center;"><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Copy assignments from board</li> <li>• Record assignments from teacher dictation</li> <li>• Complete assigned task within designated timelines</li> <li>• Locate correct pages in text</li> <li>• Request assistance when needed</li> <li>• Locate appropriate materials/supplies for class activities</li> <li>• Stay focused on task</li> </ul>	<ul style="list-style-type: none"> <li>• Instructional materials, to remediate deficit areas, and teach compensation strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment sheet provided</li> <li>• Outlines of key points</li> <li>• Student schedule or checklist</li> <li>• Student self monitoring sheets</li> <li>• Positioning student strategically within classroom environment</li> <li>• Timers</li> </ul>	<ul style="list-style-type: none"> <li>• Print or picture schedule</li> <li>• Organizational aids (folders, color coding, appointment book)</li> <li>• Digital recorder, voice message recorder</li> <li>• Electronic organizer (StepPAD, mobile device)</li> <li>• Digital device with organization applications</li> <li>• Speech prompting device</li> <li>• Specialized timers (Time Timer, WatchMinder)</li> </ul>

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<p><b>Listening :</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Follow verbal directions</li> <li>• Listen to stories, books, and answer comprehension questions</li> <li>• Listen to classroom discussion and apply information (answer questions, record notes)</li> <li>• Listen to teacher lecture and apply information (answer questions, record notes)</li> <li>• Listen to verbally presented information and retell with correct sequencing and facts</li> <li>• Listen to videos to gather information about current instructional topics</li> <li>• Respond to environmental stimuli (someone knocking on classroom door, bell ringing, fire alarm)</li> </ul>	<ul style="list-style-type: none"> <li>• Television</li> <li>• Video player</li> <li>• Digital device (tablet, iPad, or mobile device)</li> <li>• Headphones to reduce extraneous noise</li> <li>• Document camera to provide visual outline during note taking</li> <li>• Closed captioning access</li> </ul>	<ul style="list-style-type: none"> <li>• Preferential seating</li> <li>• Use teacher proximity</li> <li>• Elimination of extraneous noise (air conditioner)</li> <li>• Chunk directions into smaller steps/segments</li> <li>• Use verbal prompts</li> <li>• Use gestures</li> <li>• Pre-teach vocabulary and components of the lesson</li> <li>• Digitize verbally presented information for repeated presentation</li> <li>• Use visual aids to illustrate key points (picture symbols, diagrams, maps)</li> <li>• Provide a written outline of lecture</li> <li>• Use a peer to record notes in class</li> <li>• Provide print script of video</li> <li>• Provide sign language interpreter</li> </ul>	<ul style="list-style-type: none"> <li>• Personal amplification system</li> <li>• Classroom sound field system</li> <li>• Auditory trainer</li> <li>• Personal hearing aids</li> <li>• Digital recorder with indexing capability</li> <li>• Smart Board for transferring teacher written notes to student computer for viewing and printing</li> <li>• Environmental alert system</li> <li>• Speech-to-text application for converting teacher lecture to text</li> <li>• Closed captioning for instructional materials</li> <li>• Real time captioning of class lecture and discussion</li> </ul>
<p><b>Oral Communication:</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Gain attention of others in environment</li> <li>• Express basic wants/needs</li> <li>• Request assistance</li> <li>• Greet others</li> <li>• Participate in conversation with peers and teachers</li> <li>• Respond to teacher and peer questions and comments</li> <li>• Provide oral report in class on assigned topic</li> <li>• Inform others of events</li> <li>• Terminate conversation</li> </ul>	<ul style="list-style-type: none"> <li>• Organizing diagram for presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Interpreter</li> <li>• Verbal prompts</li> <li>• Modeling appropriate skills</li> <li>• Repetition of spoken answers</li> <li>• Additional response time</li> <li>• Accept shortened responses</li> </ul>	<ul style="list-style-type: none"> <li>• Speech enhancing devices (amplifiers)</li> <li>• Low tech augmentative communication solutions (picture communication boards, books, and wallets)</li> <li>• Simple speech generating devices with recorded messages (talking switches, single message devices, multiple message devices with one or more levels)</li> <li>• Sophisticated speech generating devices (dynamic display systems capable of generating complex sentences)</li> </ul>

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<p><b>Activities of Daily Living</b>  <b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Feed and drink independently</li> <li>• Prepare simple snack</li> <li>• Prepare basic meal</li> <li>• Dress and undress independently</li> <li>• Complete personal hygiene and grooming tasks (brushing teeth, hair)</li> <li>• Toileting</li> <li>• Perform simple household chores</li> </ul>	<ul style="list-style-type: none"> <li>• Eating utensils</li> <li>• Personal hygiene tools (toothbrush, comb, brush)</li> <li>• Toileting supplies</li> <li>• Bathroom rails and adaptive faucet handles</li> <li>• Cleaning materials and appliances</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal prompts</li> <li>• Modeling appropriate skills</li> <li>• Picture cues and prompts</li> <li>• Additional time to complete tasks</li> <li>• Modification of task length and complexity</li> </ul>	<ul style="list-style-type: none"> <li>• Adapted eating aids (grips for standard eating utensils, adapted cups/glasses)</li> <li>• Adapted dressing aids (buttonholer, pulls for zippers, Velcro fasteners)</li> <li>• Adapted cooking and food preparation aids (blender attached to power control unit, adapted pouring handles)</li> <li>• Adapted household cleaning tools and appliances</li> <li>• See other sections of this document for leisure, vocational, mobility, and learning aids</li> </ul>
<p><b>Recreation, Leisure and Adaptive Play:</b>  <b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Participate in play activities</li> <li>• Participate in leisure activities (look at/read book or magazine, listen to music)</li> <li>• Manipulate and operate toys, tools, and electronic appliances required for participation in leisure activities</li> </ul>	<ul style="list-style-type: none"> <li>• Puzzles</li> <li>• Games</li> <li>• Toys</li> <li>• Music (mobile devices, MP3, CD-ROM)</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal prompts</li> <li>• Adult peer assistance</li> <li>• Modeling appropriate skills</li> <li>• Cooperative participation with game modification</li> </ul>	<ul style="list-style-type: none"> <li>• Knobs for puzzles</li> <li>• Adapted crayon holders</li> <li>• Adapted books</li> <li>• Adapted music</li> <li>• Raised line coloring sheets</li> <li>• Spinners for games</li> <li>• Switch accessible toys (switch interface)</li> <li>• Environmental control devices</li> <li>• Power control units and battery adapter devices</li> <li>• Adaptive sports equipment</li> <li>• Digital devices with adapted input devices and applications to address leisure skills</li> </ul>
<p><b>Positioning, Seating, and Mobility:</b>  <b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Move about the classroom, school, and community</li> <li>• Manipulate educational materials during assigned activities</li> <li>• Maintain seating/position for participation in activities</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom chairs, desks and tables</li> </ul>	<ul style="list-style-type: none"> <li>• Limit mobility requirements through careful scheduling of daily activities (order, location)</li> <li>• Peer and adult assistance</li> <li>• Modification of requirements based upon student's daily energy level and the task to be completed</li> </ul>	<ul style="list-style-type: none"> <li>• Adaptive classroom equipment (prone and supine standers, Side Lyer, adapted chairs with seating modifications and support)</li> <li>• Adapted tables and desks</li> <li>• Walkers</li> <li>• Crutches/canes</li> <li>• Manual wheelchairs</li> <li>• Power wheelchairs</li> <li>• Lap trays and equipment mounts</li> </ul>

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<p><b>Computer Access</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Word processing applications</li> <li>• Online research</li> <li>• Digital games</li> <li>• Data entry</li> <li>• Communicate via e-mail, video conferencing, text messages</li> <li>• Educational activities – testing, drill, practice</li> </ul>	<ul style="list-style-type: none"> <li>• Keyboard</li> <li>• Mouse</li> <li>• Typing tutors</li> <li>• Scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Additional time to complete tasks</li> <li>• Adult/peer assistance</li> </ul>	<ul style="list-style-type: none"> <li>• Keyboarding using accessibility options</li> <li>• Word prediction, keyboard shortcuts</li> <li>• Key guard</li> <li>• Arm support</li> <li>• Track ball/joystick with on-screen keyboard</li> <li>• Alternative keyboards</li> <li>• Mouth stick/head mouse with on-screen keyboard</li> <li>• Voice recognition applications</li> <li>• Touchscreen</li> </ul>
<p><b>Control over Environment</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Turn on lights</li> <li>• Operate appliances (TV, DVD or Blu-Ray Disk, blender, CD player)</li> <li>• Digital devices</li> </ul>	<ul style="list-style-type: none"> <li>• Universal remote</li> </ul>	<ul style="list-style-type: none"> <li>• Assigned peer or aide to respond to call for assistance</li> <li>• Lowered light switches</li> </ul>	<ul style="list-style-type: none"> <li>• Call buttons</li> <li>• Light switch extension</li> <li>• Electronic control unit and switch to turn on electrical appliances (radio, fan, blender)</li> <li>• Bluetooth or IR remote controlled appliances</li> <li>• Large button universal remote</li> </ul>
<p><b>Pre-employment and Employment:</b></p> <p><b>Sample Tasks:</b></p> <ul style="list-style-type: none"> <li>• Complete assigned job skills (filing, sorting, assembly) within designated timelines</li> <li>• Utilize tools, manipulatives, and equipment to complete tasks</li> <li>• Complete single and multiple step tasks</li> </ul>	<ul style="list-style-type: none"> <li>• Sorting and assembling materials</li> <li>• Office equipment</li> <li>• Computer with standard office applications</li> <li>• Timers and watches</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal prompts</li> <li>• Picture and word cues</li> <li>• Modeling appropriate skills</li> <li>• Cooperative participation with peers and adults</li> <li>• Student self-monitoring sheets</li> <li>• Modification of task length and complexity</li> </ul>	<ul style="list-style-type: none"> <li>• Individualized task and material modifications to meet student needs (custom jigs and guides)</li> <li>• Digital devices with adaptive input devices and applications to address pre-vocational or vocational needs</li> <li>• Vibrating and talking watches and timers (Watchminder, Time Timer)</li> <li>• Auditory prompting with and without visual display</li> <li>• Video modelling</li> </ul>