

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 Individual Educational Plan. 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 questions regarding accommodations for SOL testing refer to *Procedures for Participation of Students with Disabilities in the Virginia Accountability System* (<http://www.pen.k12.va.us>).

Instructional or Access Area	Standard Tools	Modifications and Accommodations of Task and Expectations	Assistive Technology Solutions
Writing: Sample Tasks: <ul style="list-style-type: none"> • Write name • Copy letters/words/numbers for skills practice • Write words from memory • Copy print from book or worksheet • Copy notes from board or overhead • Complete written worksheets with single word responses (fill-in-the blank) • Complete written worksheets with phrase or sentence response • Complete written test with multiple choice response (circle/mark answer) • Complete written test and forms with fill-in-the-blank response • Complete written test with matching response • Complete written test with phrase/sentence (short answer) • Complete written test with essay response (multi-paragraph) • Record notes from teacher dictation/lecture with teacher recording notes on board/overhead • Record notes from teacher dictation/lecture without teacher notes • Generate creative/spontaneous writing samples • Copy numbers • Enter number in correct location within calculation problems • Copy math calculation problems with correct alignment • Record dictated math calculation 	<ul style="list-style-type: none"> • Crayon/Marker • Pencil • Pen • Letter and number strip • Clipboard • Typewriter • Computer with word processing software with grammar and spell checker • Instructional software to remediate and enhance specific writing skills 	<ul style="list-style-type: none"> • Increased time for completing assignments • Decreased length of assignment/number of responses • Oral dictation as an alternative to writing • Peer note taker • Format of assignment changed to meet need of student - multiple choice, matching word banks, fill-in-the-blank, short answer • Word banks, sentence starters, and cloze format writing activities for supports • Provide typed outline or typed copy of lecture notes to student prior to delivery for student to use to follow lecture • Student highlights key points on printed copy of notes rather than copying/recording lecture notes • Webbing-concept mapping strategy used 	<ul style="list-style-type: none"> • Pencil grip or other adapted writing aids • Adapted paper (bold line, raised line, different spacing, secured to desk, paper stabilizers) • Slant board • Personal dry erase board • Non-slip writing surface (e.g. Dycem) • Tape recorder for dictated responses and notetaking • Portable word processor (e.g. Fusion, Neo, etc.) • Notetaking device (e.g. Braille, adapted tape recorder, Smartboard, Notetaker) • Computer with word processing software with spell and grammar checks (e.g. Microsoft Word) • Computer with word processing software and outlining/webbing software (e.g. Inspiration, Kidspiration, DraftBuilder) • Computer with graphic-based word processor (e.g. Writing with Symbols, Pix Writer) • Computer with talking word processing software (e.g. Write:OutLoud, IntelliTalk) • Computer with word prediction software (e.g. Co:Writer, WordQ) • Scanner and computer with form filling software to create electronic worksheets <p>NOTE: Adaptive input or output to be used as needed for all computer based writing solutions. Adaptive input is for anyone who cannot successfully use a standard keyboard (e.g.. keyguard, keyboard utilities, enlarged keyboard, alternate keyboard, touchscreen, on-screen keyboard, trackball, switch access, voice dictation software, Braille input). Adaptive output is for anyone who cannot</p>

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<p>Writing (continued):</p> <ul style="list-style-type: none"> problems with correct alignment Copy diagrams and graphs create and plot linear and quadratic equations on graph 			<p>gain meaning from the display on a standard monitor (e.g. large monitor, screen enlargement software, text or screen reading software, Braille).</p>
<p>Spelling:</p> <p>Sample Tasks:</p> <ul style="list-style-type: none"> Identify correctly spelled word from printed list Write spelling words from dictation Spell words orally Take a written spelling test Use spelling words appropriately in a sentence Locate correctly spelled words in a dictionary Complete writing tasks with correct spelling Identify/correct incorrectly spelled words in writing sample 	<ul style="list-style-type: none"> Flashcards Alphabet strip Print dictionary Computer with word processing software with built-in spell checker Instructional software to remediate and enhance basic phonics and spelling skills 	<ul style="list-style-type: none"> Peer/adult assistance for difficult to spell words Personal or custom dictionary Problem word list Reduce number of spelling words Increased time for completing assignments 	<ul style="list-style-type: none"> Personal dry erase board for practice Tape recorder with difficult to spell words recorded Hand-held spellchecker without auditory output (e.g. Franklin) Hand-held spellchecker with auditory output (e.g. Franklin Talking Dictionary) Portable word processor with built-in spellchecker (e.g., Neo, The Writer) Computer with word processing software with spell check feature (e.g. Microsoft Word) Computer with talking word processing software containing speaking spell check (e.g. Write:OutLoud) Computer with word prediction software, (e.g. Co:Writer, WordQ)
<p>Reading:</p> <p>Sample Tasks:</p> <ul style="list-style-type: none"> Identify letters in isolation and in sequence Recognize/read name Read basic/primer sight words Read functional words (community, emergency, grocery, etc.) Read target/selected words within a sentence Comprehend age/grade appropriate reading materials Read print materials from textbooks and supplemental materials with comprehension Read material from worksheet with comprehension Read material from board/overhead with comprehension 	<ul style="list-style-type: none"> Textbooks Worksheets Printed information on board/overhead Printed test materials Instructional software to remediate basic reading and/or reading comprehension skills 	<ul style="list-style-type: none"> Peer/adult reading assistance High interest, low reading level materials Increased time for completing reading materials Decreased length of assignment Simplify complexity of text Color coding to emphasize key points (highlighting) Custom vocabulary list Increase print size of materials through photocopying 	<ul style="list-style-type: none"> Page fluffers (e.g. foam paperclipped to pages to separate them) Slant boards and book holders for positioning books Color Overlays Tracking strategies (e.g. reading window, bar magnifier) Speaking spellchecker or dictionary as a word recognition aid (e.g. Franklin Talking Dictionary) Reading Pen (e.g. Personal Reading Assistant, Quicktionary II) Audio-taped books (e.g. books-on-tape from Recordings for the Blind and Dyslexic, commercial audio books) Electronic books (e.g. teacher made, Bookshare) Portable reading system for digital audio books (e.g. ClassMate)

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Reading (continued): <ul style="list-style-type: none"> Read material from computer display with comprehension Read longer reading samples with comprehension and without fatigue Answer literal questions regarding materials read Answer questions regarding main idea of materials read Answer inferential questions regarding materials read 			<ul style="list-style-type: none"> Computer with graphic word processor (e.g. Writing with Symbols, Pix Writer) Computer with text enlargement software (e.g. ZoomText) Computer with text reading software (e.g. Read:OutLoud, ReadPlease, Talk-to-Me) Computer-based advanced reading aids (e.g. Kurzweil 3000, WYNN) Solutions for converting text into alternative format (e.g. scanner with OCR software, Braille translation software, Braille printer/embosser, refreshable Braille displays, and tactile graphic production systems, etc.)
Math: Sample Tasks: <ul style="list-style-type: none"> Identify numbers in isolation and sequence Comprehend basic math concepts Complete basic calculations (addition, subtraction, multiplication, and division) Complete complex math calculations Complete math word problems Tell time to the hour, half-hour, etc. using an analog and/or digital clock Calculate passage of time Identify coins and bills Demonstrate understanding of coin and bill value Utilize money to purchase items Utilize coins and bills to make appropriate change Maintain and balance a checkbook 	<ul style="list-style-type: none"> Manipulatives (beads, etc.) Abacus Number line Math fact sheet (e.g. multiplication facts) Calculator Instructional software to remediate and enhance specific math skills 	<ul style="list-style-type: none"> Change format of assignment (e.g.: write answers only) Peer/adult reading of problem and recording of answer Reduce number of problems Provide additional spacing between problems Provide additional time to complete tasks Increase size of print through photocopying Change complexity of material (e.g. separate problems by operations required) Teacher/peer support for reading and assistance 	<ul style="list-style-type: none"> Modified paper (bold line, enlarged, raised line, graph paper, etc.) Talking calculator with speech output Calculator with large print display Calculator with large keypad Calculator with embossed output (e.g. Braille N Speak) Computer based on-screen calculator Electronic math worksheet software with adaptive input and output as needed (e.g. MathPad, MathPad by Voice, Study Works) Graphing calculator software (e.g. Accessible Graphing Calculator) Virtual Math Manipulatives Online math activities (e.g. http://illuminations.nctm.org) Adapted measuring devices (e.g. devices with speech output, large print display, or tactile output)
Study Organizational Skills: Sample Tasks: <ul style="list-style-type: none"> Copy assignments from board Record assignments from teacher dictation Complete assigned task within designated timelines Locate correct pages in text 	<ul style="list-style-type: none"> Instructional materials, including software to remediate deficit areas, to teach compensation strategies, and focus on strengths 	<ul style="list-style-type: none"> Assignment sheet provided by peer and/or adult Outlines of key points Student schedule or checklist Student self monitoring sheets 	<ul style="list-style-type: none"> Print or picture schedule Organizational aids (e.g. Folders, Color coding, appointment book, etc.) Tape recorder, voice message recorder Electronic organizer/personal digital assistant (e.g. StepPAD, PalmPilot)

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Study Organizational Skills (continued): <ul style="list-style-type: none"> Request teacher/peer assistance when needed Locate appropriate materials/supplies for class activities in timely manner Stay focused on task 		<ul style="list-style-type: none"> Positioning student strategically within classroom environment Timers 	<ul style="list-style-type: none"> Computer based electronic organizer with adapted input and output provided as needed Speech prompting device Specialized timers (e.g. Time Timer, WatchMinder)
Listening : Sample Tasks: <ul style="list-style-type: none"> Follow verbal directions Listen to stories, books, etc. and answer comprehension questions Listen to classroom discussion and apply information (answer questions, record notes, etc.) Listen to teacher lecture and apply information (answer questions, record notes, etc.) Listen to verbally presented information and retell with correct sequencing and facts Listen to videos to gather information about current instructional topics Respond to environmental stimuli appropriately (someone knocking on classroom door, bell ringing, fire alarm) 	<ul style="list-style-type: none"> Television Video player Cassette recorder/player Headphones for clarity of sound and blocking of extraneous noises for cassette/ television Overhead projector to provide visual outline during notetaking Closed captioning access to caption ready television and video presentations 	<ul style="list-style-type: none"> Preferential seating Use teacher proximity Elimination of extraneous noise (air conditioner) Break directions into smaller steps/segments Use verbal prompts Use gestures Pre-teach vocabulary and/or components of the lesson Audio-tape verbally presented information for repeated presentation Use visual aids (picture symbols, diagrams, maps) to illustrate key points Provide a written outline of lecture Use a peer note-taker to record notes in class Provide print copy of script in videotapes Provide sign language/oral interpreter 	<ul style="list-style-type: none"> Personal amplification system Classroom sound field system Auditory trainer Personal hearing aids Tape recorder with indexing capability Smart Board for transferring teacher written notes to student computer for viewing or printing and viewing Environmental alert system Voice to text software application for converting teacher lecture to text Closed captioning on non-caption ready instructional materials Real time captioning of class lecture and discussion
Oral Communication: Sample Tasks: <ul style="list-style-type: none"> Gain attention of peers/adults within environment Express basic wants/needs Request assistance as needed Provide appropriate greetings Participate in conversation with peers/teachers 	<ul style="list-style-type: none"> Organizing diagram for presentations 	<ul style="list-style-type: none"> Interpreter Verbal prompts Modeling appropriate skills Repetition of spoken answers Additional response time Provide questions before time Accept shortened responses 	<ul style="list-style-type: none"> Speech enhancing devices (e.g. amplifiers, clarifiers) Low tech Augmentative communication solutions (e.g. object based communication displays, picture communication boards, books, and wallets)

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Oral Communication (continued): <ul style="list-style-type: none"> Respond appropriately to teacher/peer questions and/or comments Provide oral report in class on assigned topic Inform others of events, topics, etc Terminate conversation 			<ul style="list-style-type: none"> Simple speech generating devices with recorded messages (e.g. talking switches, single message devices, multiple message devices with one or more levels with adaptive input as needed) Sophisticated speech generating devices (e.g. dynamic, linking systems capable of generating complex sentences with adaptive input as needed)
Activities of Daily Living Sample Tasks: <ul style="list-style-type: none"> Feed self using appropriate utensils Drink using appropriate utensils Prepare simple snack Prepare basic meal Dress and/or undress self using appropriate tools Complete personal hygiene and grooming tasks (brushing teeth, hair, etc.) Toilet self Perform simple household chores 	<ul style="list-style-type: none"> Eating utensils (ex. spoon, cup, etc.) Personal hygiene tools (ex: toothbrush, comb, brush, etc.) Toileting supplies (ex: tissue) Bathroom rails and adaptive faucet handles Cleaning materials and appliances 	<ul style="list-style-type: none"> Verbal prompts Modeling appropriate skills Picture cues and prompts Additional time to complete tasks Modification of task length and complexity 	<ul style="list-style-type: none"> Adapted eating aids (e.g. grips for standard eating utensils, adapted cups/glasses, etc.) Feeding machines Adapted dressing aids (e.g. button holers, pulls for zippers, Velcro fasteners, etc.) Adapted cooking and food preparation aids (e.g. blender attached to power control unit, adapted pouring handles, etc.) Adapted household cleaning tools and appliances See other sections of this document for leisure, vocational, mobility, and learning aids
Recreation, Leisure and Adaptive Play: Sample Tasks: <ul style="list-style-type: none"> Participate in play activities Participate in leisure activities (ex: look at/read book or magazine, listen to music, etc.) appropriately Manipulate and/or operate toys, tools, and/or electronic appliances required for participation in leisure activities appropriately 	<ul style="list-style-type: none"> Puzzles Games Toys Music (e.g. tape player, CD-ROM, etc.) 	<ul style="list-style-type: none"> Verbal prompts Adult peer assistance Modeling appropriate skills Cooperative participation with Game modification 	<ul style="list-style-type: none"> Knobs for puzzles Adapted crayon holders Adapted books Adapted music with symbols Raised line coloring sheets Spinners for games Switch accessible toys (commercially available or switch accessible through switch interface) Environmental control devices

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Recreation, Leisure and Adaptive Play (continued):			<ul style="list-style-type: none"> • Power control units and battery adapter devices • Adaptive sports equipment • Computers with adaptive input devices as needed and appropriate software to address leisure skills
Positioning, Seating, and Mobility: Sample Tasks: <ul style="list-style-type: none"> • Move about/ambulate about the classroom, school, and/or community • Manipulate educational materials as required in assigned activities • Maintain appropriate seating/position for participation in relevant activities 	<ul style="list-style-type: none"> • Classroom chairs, desks and tables 	<ul style="list-style-type: none"> • Limit mobility requirements through careful scheduling of daily activities (order, location, etc.) • Peer and adult assistance • Modification of requirements based upon student's daily energy level and the task to be completed 	<ul style="list-style-type: none"> • Adaptive classroom equipment (e.g. prone and supine standers, side lyers, adapted chairs with seating modifications and support, etc.) • Adapted tables and desks • Walkers • Crutches/canes • Manual wheelchairs • Power wheelchairs • Lap trays and equipment mounts
Computer Access Sample Tasks: <ul style="list-style-type: none"> • Word processing • Surf the internet - research • Play games • Data Entry • Communicate via e-mail, video conferencing • Educational activities – testing, drill, practice 	<ul style="list-style-type: none"> • Keyboard • Mouse • Typing tutors • Scanner 	<ul style="list-style-type: none"> • Additional time to complete tasks • Adult/peer assistance 	<ul style="list-style-type: none"> • Keyboarding using accessibility options • Word prediction, abbreviation/expansion to reduce keystrokes • Keyguard • Arm support • Track ball/joystick with on-screen keyboard • Alternate keyboards (e.g. IntelliKeys, Tash mini keyboard, BigKeys) • Mouth stick/head mouse with on-screen keyboard • Switch with Morse code or scanning • Voice recognition software • Touchscreen
Control over Environment Sample Tasks: <ul style="list-style-type: none"> • Turn on lights • Operate appliances (TV, VCR, blender, CD player, etc.) • Operate computer 	<ul style="list-style-type: none"> • Universal remote 	<ul style="list-style-type: none"> • Assigned peer or aid to respond to call for assistance • Lowered light switches 	<ul style="list-style-type: none"> • Call buttons • Light switch extension • Electronic control unit and switch to turn on electrical appliances (e.g. radio, fan, blender, etc.) • Radio or ultrasound remote controlled appliances • Large button Universal remote • Automated software packages with

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Control over Environment (continued)			simplified activation <ul style="list-style-type: none"> • Voice activated systems • Remote controlled systems
Pre-employment and Employment: Sample Tasks: <ul style="list-style-type: none"> • Complete assigned job skills (ex: filing, sorting, assembly, etc.) within designated timelines • Utilize tools, manipulatives, and/or equipment to complete tasks • Complete single and multiple step tasks 	<ul style="list-style-type: none"> • Sorting and assembling materials • Office equipment • Computer with standard office applications • Timers and watches 	<ul style="list-style-type: none"> • Verbal prompts • Picture and word cues • Modeling appropriate skills • Cooperative participation with peers and adults • Student self-monitoring sheets • Modification of task length and complexity 	<ul style="list-style-type: none"> • Individualized task and material modifications to meet student needs (e.g. custom jigs and guides) • Computer with adaptive input devices as needed and appropriate software to address pre-vocational or vocational needs • Vibrating and talking watches and timers (e.g. Watchminder, Time Timer) • Auditory prompting with and without visual display (e.g. Step by Step, Pocket Coach)