# Assistive Technology



### **Student Services**



Supporting Student SUCCESS

Assistive Technology

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## Introduction and Purpose

The term "assistive technology" (AT) describes a range of strategies, services, and low- to high-tech tools used to enable, improve, increase, and maintain a student's ability to meet the learning outcomes of the Public School Program (PSP) or of an individual program plan (IPP). AT has the potential to increase a student's control over objects, daily activities, age-appropriate experiences, and subsequent learning. Consideration of AT is usually most effective when carried out within the collaborative program planning process.

In providing AT services, school boards in Nova Scotia must consider priorities, resources, and unique circumstances with their own boards and communities. School boards are encouraged to explore service delivery options and combinations of these options for AT, including

- assistive technology-trained school personnel (e.g., classroom teachers, resource teachers)
- regional support personnel within the community (e.g., Atlantic Provinces Special Education Authority, assistive technology specialists, occupational therapists, physiotherapists, learning disabilities specialists, speech language pathologists)
- clinical services within the community (e.g., occupational therapy, physiotherapy, speech language pathology, rehabilitation services)

The purpose of *Assistive Technology: Supporting Student Success* is to provide educators and students with the strategies and tools required for addressing barriers to learning. Greater access to curriculum and learning opportunities supports students in achieving educational outcomes.

Assistive Technology: Supporting Student Success is designed to represent a beginning—a foundation for building an ongoing comprehensive process to support students through assistive technology.

# **Guiding Principles**

The following guiding principles provide a framework for the provision of assistive technology with the understanding that "only as special as necessary" governs the selection and use of assistive technology.

Assistive technology

- requires ongoing collaboration in planning, implementation, and monitoring
- supports access to learning outcomes within various settings
- considers the student's specific strengths and needs
- considers the least-complex/most-efficient intervention
- relates to task, rather than to specific disabilities
- supports but does not replace instruction in social and academic skills
- requires ongoing professional development to ensure best practices

# Assistive Technology Definition

As noted in the Introduction, AT is a range of strategies and resources, which includes services and tools, used to enable a student to meet learning outcomes or to improve or maintain a student's ability to meet learning outcomes. Assistive technology has the potential to increase a student's control over objects, daily activities, age-appropriate experiences, and subsequent learning. The use of AT should not be viewed as an activity in itself, but rather as a means toward achieving goals. The program planning process should be used to identify and utilize appropriate assistive technology to achieve outcomes and maximize student participation.

## Categories of Assistive Technology

The primary responsibility for decision making within some categories will require consultation with appropriate professionals.

**Aids for Daily Living:** Modified or specialized items for self-help in eating, dressing, personal care, and home management, such as reachers, utensil grips, books stands, grab bars, etc.

Augmentative and Alternative Communication: Devices and systems used to supplement or replace oral and/or written communication, such as communication displays, signs and gestures, speech-generating devices, eye gaze, partner-assisted scanning, etc.

**Computer Access:** Modified standard equipment, alternative equipment, or specialized software that enables a person to use a computer, such as sticky keys, specialized keyboards, touch screens, head pointers, switches, voice input, etc.

**Educational/Vocational/Cognitive Technologies:** Specialized software, hardware, devices, and strategies for developing or supplementing literacy, math, behaviour, work tasks, organization, and memory, such as cueing devices, calculators, timers, graphic organizers, word prediction, text readers, etc.

**Aids for Vision:** Devices and systems used to access print or environmental information, such as large print, magnifiers, Braille, speech output devices, closed-circuit television for magnifying documents, etc.

**Aids for Hearing:** Devices and systems used to access auditory information, such as assistive listening devices, hearing aids, telecommunication devices, visual and tactile alerting systems, etc.

**Recreation and Leisure:** Adapted or specialized items that allow an individual to participate in social and personal play and relaxation, such as items adapted with Velcro, magnets, and handles; items adapted for single-switch operation; adaptive sporting equipment such as a lighted or beeping ball; arm support for drawing/painting; electronic aids to control a TV, VCR, or CD player, software for art, etc.

**Seating and Positioning:** Accommodations to a seating system to provide optimum body stability, support, and posture, such as custom inserts, bolsters, cushions, etc.

**Aids for Mobility:** Devices used to increase personal mobility within environments, such as wheelchairs, crutches, canes, walkers, modified vehicles, etc.

**Environmental Control:** Electronic and non-electronic systems that enable someone with a disability to control various aspects of their environment, such as switch-operated appliances, door openers, switch- or voice-operated security systems, etc.

Adaptations to the Learning Environment: Structures or adaptations that remove or reduce physical barriers, such as ramps, a custom desk or workspace, lifts, bathroom changes, etc.

Prosthetics and Orthotics: Artificial limbs, splints, braces, etc.

**Service Animals:** Animals that are trained to assist individuals with disabilities, by, for example, guiding a person with a visual impairment, alerting a person with a hearing impairment, pulling a wheelchair, carrying and picking up articles for a person with a mobility impairment, or assisting a person with a mobility impairment with their balance, etc.

**Aids for Sensory Integration:** Devices or adaptations that aid a student in regulating environmental stimuli, such as therapy balls or cushions, hand fidget toys, and suspended equipment, etc.

## Low-Tech Tools

These tools typically require little maintenance, have no electronics and do not require a battery source. Examples include, but are not limited to, the following.

#### **Educational Technologies**

- Reading: picture symbols, adapted books, line guide, predictable books, change text size, spacing, colour
- Writing and Spelling: pocket dictionary/thesaurus, variety of pencils and pens, adaptive grips, adapted paper (e.g., raised line and highlighted line), carbonless paper
- Organization: highlighters/highlighting tape, book holder, pocket folders, calendar/ planner, aids for organizing materials
- Math: graph paper, abacus/math line, enlarged math worksheets, alternatives for answering

**Environment Controls:** book holder, non-slip materials, adapted scissors, book and page holders

Augmentative and Alternative Communication: communication board with pictures/words/objects, eye-gaze board

Aids for Vision: large-print books, magnifiers, high-contrast colour acetate, eyeglasses, Braille materials

Aids for Hearing: sign language visuals, pen and paper

Aids for Mobility/Positioning: cushions, braces, walker, grab bars and rails

## Mid-Tech Tools

These tools typically require some training and maintenance; they may have electronics and a power source. Examples include, but are not limited to, the following.

#### **Educational Technologies**

- Reading: digital recorder, books adapted for page turning, pictures/ symbols with text, scanning pen
- Writing and Spelling: portable word processor, talking spell checker, tape recorder, books on tape
- Organization: appointment books, calendars, timers, graphic organizer worksheets, digital voice or variable-speed tape recorder
- Math: talking calculator, calculator with/without printout, calculator with large keys/displays

**Environmental Controls:** interface and switch to activate electrical appliances, switch-adapted games and toys, simple technologies

Augmentative and Alternative Communication: simple voice output device, voice output device with levels

**Aids for Vision:** books on tape/CD, magnification software, closed-circuit television, talking calculator, screen magnification software, screen-colour contrast, screen reader, text reader

**Aids for Hearing:** voice-amplification system, closed captioning, telecommunications device for the deaf (TDD)

Aids for Mobility/Positioning: manual wheelchair, adapted chairs and tables

## High-Tech Tools

These devices and systems are more complex; they may require more training and maintenance. Examples include, but are not limited to, the following.

#### **Educational Technologies**

- Reading: talking word processor, electronic books, multimedia software, scanner with optical character recognition (OCR) software
- Writing and Spelling: word processor software, adapted keyboard/mouse, word-prediction software, voice-recognition software
- Organization: electronic organizer, software to organize ideas, wordprediction software, voice-recognition software
- Math: calculator with special features, on-screen scanning calculator, math software, software for manipulation

**Environmental Controls:** electronic aid to control augmentative device, environmental control systems, adapted electronic games, computer adaptations for games

Augmentative and Alternative Communication: voice-output devices, dynamic displays, integrated computer-based systems

**Aids for Vision:** adapted keyboard, screen reading software, Braille translation software, enlarged or Braille/tactile labels, enlarged keys, Braille keyboard and note taker

**Aids for Hearing:** speech-amplification system, phone amplifier, personal amplification system/hearing aid

Aids for Mobility/Positioning: van adaptations, hoist/lift, customized wheelchair, powered wheelchair

# Assistive Technology Within the Program Planning Process

In order to consider a student's need(s) for assistive technology, program planning teams need to use a clearly defined decision-making process. This process incorporates a focus on the student and specific environments in which the student functions and the tasks in those environments that he or she needs to accomplish. This section of the document outlines decision making in relation to AT within the program planning process.

It is important to have team members who are knowledgeable about appropriate use and application of assistive technology. If the team is unsure about the student's need for assistive technology or feels that they do not have the necessary knowledge to make a decision, they should pursue further direction at the board level.

Two widely used approaches to guide decision making about AT are the SETT Framework (Student, Environment, Task, Tools) and the WATI Assistive Technology Assessment (Wisconsin Assistive Technology Initiative).

The SETT Framework is built on the premise that in order to develop an appropriate system of assistive technology devices and services, teams must first gather information about the students, the typical environments in which the students spend their time, and the tasks that are required for the students to be active participants in the teaching/learning processes that lead to educational success.

The WATI Assistive Technology Assessment is a process-based, systematic approach to carrying out a functional evaluation of the student's need for assistive technology in his or her customary environment. With WATI's permission, their protocols are found in the appendices. The SETT Framework<sup>1</sup> and the WATI Assistive Technology Assessment<sup>2</sup> are further discussed in this section.

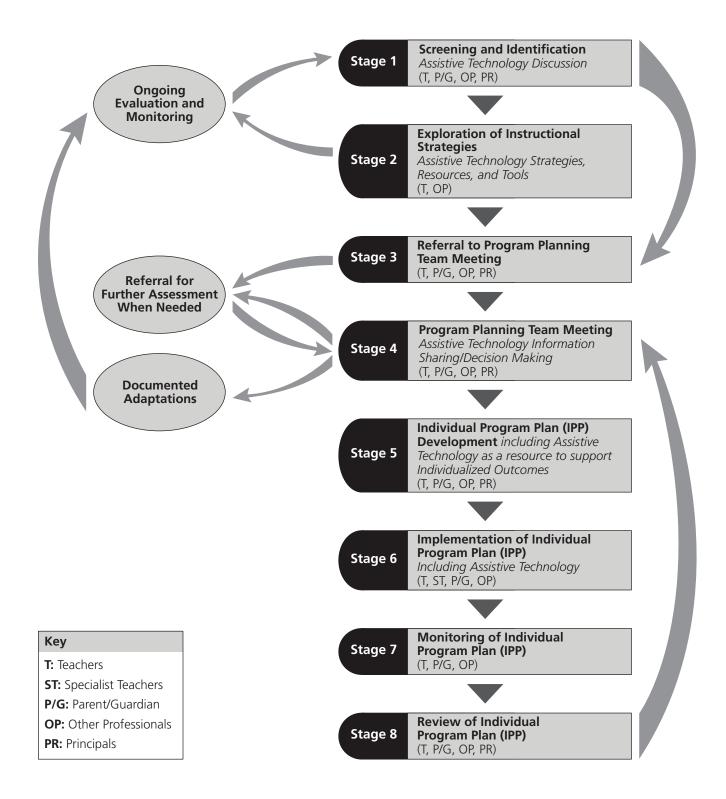
Figure 1 provides an overview of the program planning process and how assistive technology is incorporated within it.

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<sup>&</sup>lt;sup>1</sup> Used with permission from Joy Zabala, Ed.D. For more information, visit <www.joyzabala,com> or contact Dr. Zabala via e-mail to <joy@joyzabala.com>.

<sup>&</sup>lt;sup>2</sup> Used with permission from the Wisconsin Assistive Technology Initiative (WATI) <www.wati.org>.





### Stage 1

#### **Screening and Identification** Assistive Technology Discussion

Stage 1 involves information gathering, discussion, and reflection to determine if assistive technology would enhance a student's potential to achieve outcomes. A focus on the student, the environments, and the tasks are key topics for consideration.

The following questions related to the concept of "only as special as necessary" are taken from the Nova Scotia Department of Education document entitled *Supporting Student Success: Resource Programming and Services* and should be taken into consideration in determining an individual student's need for assistive technology.

- What is the student able to do independently and/or participate in with the class?
- What is the student able to do and/or participate in with the assistance of the natural supports in the classroom?
- What is the student able to do and/or participate in with the assistance of the additional supports in the classroom?
- Are there outcomes of the provincially approved curriculum that cannot be met by the student? If so, what individualized outcomes are required to address the student's needs?
- What level of support is required to assist the student in achieving the individualized outcomes, keeping in mind that the support should be only as special as necessary?
- Are there services and/or programming that are best provided in a setting other than the student's classroom? If so, how can they be scheduled so as to be least disruptive to the student's inclusion in his or her class?

Using the SETT Framework, the following questions may guide discussion at this stage.

#### Student

Consider and establish the need (or lack of need) of an individual student for assistive technology.

- What is the functional area(s) of concern? What does the student need to be able to do that is difficult or impossible to do independently at this time?
- What are the student's current abilities?

- What is the student's learning style?
- What are the student's interests?
- Are there student behaviours that significantly affect impact performance? If so, what are they?

#### Environment

Consider the environment(s) in which a system of tools needs to be used by a student to address identified needs.

- What environments must be considered?
- What materials and equipment are currently available in the environment?
- What is the physical arrangement? Are there special concerns?
- What is the instructional arrangement? Are there likely to be changes?
- What supports are available to the student?
- What resources are available to the people supporting the student?
- Does time of day affect the student's performance?

#### Tasks

Consider the task(s) in the student's environment(s) required for mastering outcomes.

- What specific tasks are required for active involvement in identified environments? (Related to communication, instruction, participation, productivity, environmental control)
- What tasks need to be accomplished? (Fine and gross motor, reading, writing, communication, self-care, etc.)
- What activities occur in the environments that enable progress toward mastery of identified outcomes?
- What are the critical elements of the activities?
- How might the activities be adapted to accommodate the student's special needs?

The WATI *Referrals/Questions Identification Guide* and *Environment Organization Guide*, found in Appendices B and C, also support Stage 1: Screening and Identification.

#### **Stage 2 Exploration of Instructional Strategies** Assistive Technology Strategies, Resources, and Tools

Stage 2 focusses on a review of current adaptations and instructional strategies and an exploration of possible assistive technology tools to be considered or incorporated. Tools include devices, services, and strategies—everything that is needed to help the student succeed. At this point, the team may need to consider accessing other resources and/or expertise.

Continuing with the SETT Framework, an exploration of assistive technology tools may begin.

#### Tools

Analyse the information gathered on the student, the environment, and task to address the following questions and activities and relation to possible tools:

- Is it expected that the student will not be able to make reasonable progress toward educational outcomes without assistive technology devices and services?
- What strategies might be used to invite increased student performance?
- Brainstorm tools that could be included in a system that addresses student needs. (Refer to low-, mid-, and high-tech tools)
- What level of staff expertise, support, and training might be required to consider assistive technology options?
- Select the most promising tools for trials in the natural environment.
- Plan the specifics of the trial (expected changes, when/how tools will be used, cues, etc.)
- Collect data on effectiveness.

It is important to revisit the SETT Framework information periodically to determine if the information that is guiding decision making and implementation is accurate, up-to-date, and clearly reflects the shared knowledge of all team members involved.

A variety of technology checklists as well as checklists for instructional adaptations, strategies, and ideas are also helpful and can be found in Appendices C and D of this document.

#### ASSISTIVE TECHNOLOGY WITHIN THE PROGRAM PLANNING PROCESS

### **Referral to the Program Planning Team**

Following Stages 1 and 2, should further consultation related to the assistive technology needs of the student be necessary, a referral to the program planning team should be made, according to board policy and procedure. Policy 2.2, *Special Education Policy*, Nova Scotia Department of Education, provides the framework for program planning teams.

## Program Planning Team Meeting

Assistive Technology Information Sharing/Decision Making

At this stage the team will

- review information accompanying the referral, including informal and formal assessment data and outcomes
- consider parent/guardian and/or student information (see Appendices E and F for worksheets)
- review information resulting from the use of such frameworks as SETT and/or WATI, including strengths and needs
- review current adaptations, document strategies, and evaluate further adaptations that do not alter PSP outcomes (should PSP outcomes be changed, deleted, or added, proceed to Stage 5: IPP Development)
- determine the need for further assessment data and/or assistive technology consultation/expertise
- determine procedures for the trial use and acquisition of assistive technology, related training, and professional development and follow-up relative to the adaptations
- determine if, when, and for whom training will occur
- establish a trial period, monitoring process, and review date
- establish dates for the team to review the adaptations



## Stage 4

Stage 5	Individual Program Plan Development Including Assistive Technology as a Resource to Support Individualized Outcomes
	At Stage 5, when learning outcomes of the Public School Program must be changed, deleted, or added to meet the need(s) of the student, an individualized program plan (IPP) is developed, as set down in Policy 2.6, <i>Special Education Policy</i> , Nova Scotia Department of Education.
	Assistive technology is used to support the achievement of annual and specific outcomes outlined in the IPP. The need to learn the use of a particular assistive technology may be an outcome in an IPP. The WATI Assistive Technology Trial Use Guide in Appendix G is a useful tool to determine if the AT is supporting the outcomes of the IPP.
Stage 6	Implementation of Individual Program Plan Including Assistive Technology
Stage 6	•
Stage 6	Including Assistive Technology Team members are assigned specific responsibilities as documented in the IPP.
Stage 6	Including Assistive Technology Team members are assigned specific responsibilities as documented in the IPP. This would include • related training and professional development

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#### **Monitoring of Individual Program Plan**

At Stage 7, ongoing monitoring of the student's use of assistive technology to achieve individualized outcomes includes

- documenting effectiveness of instructional strategies and tools
- documenting suggestions for review and revision to be addressed at Stage 8
- determining the need for scheduling further training and professional development

Note: During this stage, specialist support should be obtained as needed.

The WATI Assistive Technology Trial Use Summary found in Appendix I can be used to support the monitoring process.

#### **Review of Individual Program Plan**

At this stage, the program planning team meets at least twice annually to review and document the student's progress in meeting individualized outcomes using AT.

Reviews should consider the following

- continued use of existing AT supports
  - long-term use
  - accessibility to the AT technology
  - extended loan possibilities
  - purchase possibilities through home, school, or funding agencies
  - monitoring
  - further training and professional development
  - transition implications
- consideration of additional and/or alternative AT supports (return to Stage 4)
- consideration to fade or discontinue identified AT support

The WATI Assistive Technology and Transition Planning Portfolio found in Appendix J will help identify significant barriers a student may face during the transition process.

### Stage 8

## Assistive Technology Resources

This section provides suggested informational assistive technology resources.

#### Authorized List of Resources (ALR)

Learning resources for use in the Nova Scotia Public School Program are evaluated and authorized for purchase using School Book Bureau Credit Allocation funds vested and authorized with school boards. Textbooks, teacher professional books, some manipulative materials, and assistive technology curricular software are available for purchase using the credit allocation system. Authorized assistive technology resources currently available through the ALR are described at the Nova Scotia School Book Bureau website, <w3apps.ednet.ns.ca/nssbb>. Search using subjects Assistive Technology, Professional Development.

#### **Assistive Technology Listserv**

The Assistive Technology listerv is a closed, private listserv. The intent of the listserv is to provide a cost-effective and efficient vehicle for collaboration and information sharing. Membership is open to Nova Scotia teachers, school boards, and Department of Education staff. To join the conversation, follow the procedure described at <mailman.EDnet.ns.ca/mailman/listinfo/assisttech>.

#### **Technology Recycling**

The Nova Scotia Technology Recycling Program provides older, refurbished computers and related technology to schools on an equitable student population basis. Schools may obtain current specification information for available recycled computers and details of the allocation process by consulting the AT designate or school board technology co-ordinator.

#### Assistive Technology Websites for Teachers

The Department of Education maintains a database of recommended assistive technology websites collated and annotated on the EDnet website, <EDnet.ns.ca>. Select the link for Educators, then select Classroom and Curriculum Resources, then select Curriculum-Related Websites, then select Assistive Technology. Please be aware that non-Department of Education website links are evaluated at the time they are selected for linking; however, they are provided as a convenience to teachers and do not constitute an endorsement by the Department of Education of the content, policies, or products of the external link site. Links are recommended when they match Nova Scotia curriculum outcomes; support teacher professional development, curriculum, and program implementation; and are primarily of a noncommercial nature.

#### **EBSCO**

Professional journals and other print resources are available via the provincially licensed periodical database EBSCO. To access EBSCO, go to <lrt.EDnet.ns.ca>. Select Teacher Resources, Curriculum Materials, and EBSCO Periodical Database. From school, a user name and password are not required. From other locations, teachers must know the school's user name and password, which are available from the principal.

#### WATI and SETT

As referenced earlier in this guide, the Wisconsin Assistive Technology Initiative (WATI) and Joy Zabala (Student Environment Tasks Tools Framework) have published many resources to help school teams develop or expand their knowledge of assistive technology to train others (See Appendices A, B, and C.)

# Appendicies

Appendix A: The SETT Framework—Part 1\*

Collaborative Consideration of Student Need for Assistive Technology Devices and Services

Date: Student Name:

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	Examining Current Conditions to Consider Education Need	on Need Tacks
Student	Environments	lasks
Circle areas that present barriers to student p	progress.	

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#### APPENDICES

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### Appendix B: WATI Referrals/Question Identification Guide\*

Student's Name:	Date of Birth:		Age:
School:			Grade:
School Contact Person:	Ph	one:	
Persons Completing Guide:	Da	te:	
Parent(s) Name:	Ph	one:	
Address:			
Student's Primary Language:	Family's Primary	Language:	
Disability (Check all that apply)			
Emotional/Behavioural Disability	□ Autism	<ul><li>Hearing Imp</li><li>Vision Impai</li></ul>	airment rment
Current Age Group Birth to Three Middle School	<ul><li>Early Childhood</li><li>Secondary</li></ul>	□ Elementary	
Classroom Setting <ul> <li>Regular Education Classroom</li> <li>Home</li> </ul>	<ul> <li>Resource Room</li> <li>Other</li> </ul>	□ Self-contain	
Current Service Providers <ul> <li>Occupational Therapy</li> <li>Other(s)</li></ul>	Physical Therapy	Speech Lang	guage
<ul> <li>Is currently taking medication for</li> <li>Other (describe briefly)</li></ul>	□ Fatigues easily	pain upper respirator problems	

APPENDICES

#### **Assistive Technology Currently Used** (Check all that apply)

□ None	Low-tech writing aids
Manual communication board	Augmentative communication system
Low-tech vision aids	Amplification system
Environmental control unit/EADL	Manual wheelchair
Power wheelchair	Computer-type (platform)
□ Voice recognition	Word prediction
Adaptive input (describe)	Adaptive output (describe)
□ Other	

**Assistive Technology Tried:** Please describe any other assistive technology previously tried, length of trial, and outcome (how it worked or why it didn't work).

Assistive technology: Outcome:	Number and dates of trial(s)
Assistive technology: Outcome:	Number and dates of trial(s)
Assistive technology: Outcome:	Number and dates of trial(s)

**Referral Question:** What task(s) does the student need to do that is/are currently difficult or impossible and for which assistive technology may be an option?

#### Based on the referral question, select the sections of the Student Information Guide to be

**completed** (check all that apply). The *Student Information Guide* is available at <www.wati.org>.

- □ Section 1: Motor Aspects of Writing
- □ Section 2: Fine Motor Related to Computer or Device Access
- □ Section 3: Composing Written Material
- □ Section 4: Communication
- □ Section 5: Reading
- □ Section 6: Learning and Studying

- □ Section 7: Math
- □ Section 8: Recreation and Leisure
- □ Section 9: Seating and Positioning
- □ Section 10: Mobility
- □ Section 11: Vision
- □ Section 12: Hearing
- □ Section 13: General

Appendix C: WATI Environmental Observation Guide\*

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\* Adapted with permission from the Wisconsin Assistive Technology Initiative.

APPENDICES

# Appendix D: WATI Assistive Technology Assessment—Technology Checklist\*

## Writing

#### **Motor Aspects of Writing**

- □ Regular pencil/pen
- □ Pencil/pen with adaptive grip
- □ Adapted paper (e.g., raised line, highlighted line)
- □ Slantboard
- □ Use of prewritten words or phrases
- Portable word processor to keyboard instead of write
- □ Computer with word processing software
- □ Portable scanner with word processing software
- □ Voice-recognition software to word process
- □ Other: \_

#### **Computer Access**

- □ Keyboard using accessibility options
- Word prediction, abbreviation/expansion to reduce keystrokes
- □ Keyguard
- □ Arm support
- □ Trackball/trackpad/joystick with on-screen keyboard
- □ Alternate keyboard
- □ Mouse stick/head with on-screen keyboard
- □ Switch with Morse code
- □ Switch with scanning
- □ Voice-recognition software
- Other: \_\_\_\_\_

#### **Composing Written Material**

- □ Word cards/word book/word wall
- □ Pocket dictionary/thesaurus
- □ Writing templates
- □ Electronic/talking electronic dictionary/thesaurus/ spell checker
- □ Word processing with spell checker/grammar checker
- □ Talking word processing
- Multimedia software
- □ Voice-recognition software
- □ Other: \_

### Communication

- Communication board/book with pictures/objects/ letters/words
- □ Eye-gaze board/frame communication system
- □ Simple voice output device
- □ Voice output device with levels
- □ Voice output device with icon sequencing
- □ Voice output device with dynamic display
- □ Device with speech synthesis for typing
- Other: \_

#### Reading, Studying, and Math

### Reading

- □ Standard text
- Predictable books
- □ Changes in text size, spacing, colour, background colour
- Book adapted for page turning (e.g. page fluffers, 3-ring binder)
- $\Box$  Use of symbols/pictures with text
- □ Talking electronic device/software to pronounce challenging words
- □ Single-word scanners
- □ Scanner with OCR and text-to-speech software
- □ Software to read websites and e-mails
- □ Other: \_

#### Learning/Studying

- □ Print or picture schedule
- □ Low-tech aids to find materials (e.g., index tabs, colour-coded folders)
- □ Highlight text (e.g., markers, highlight tape, ruler, etc.)
- Recorded material (books on tape, taped lectures with number-coded index, etc.)
- □ Voice-output reminders for assignments, steps of task, etc.
- □ Electronic organizers
- □ Pagers/electronic reminders
- □ Single-word scanners
- □ Software for concept development/manipulation of objects—may use alternative input device, e.g., switch, touch window
- □ Software for organization of ideas and studying
- □ Palm computers
- Other: \_\_\_\_\_

#### Math

- □ Abacus/math line
- □ Enlarged math worksheets
- □ Low-tech alternatives for answering
- □ Math "smart-chart"
- □ Money calculator and Coinulator
- □ Tactile/voice output measuring devices
- □ Talking watches/clocks
- □ Calculator/calculator with printout
- $\hfill\square$  Calculator with large keys and/or large display
- □ Talking calculator
- □ Calculator with special features (e.g., fraction translation)
- □ On-screen/scanning calculator
- □ Alternative keyboard
- □ Software with cuing for math computation (may use adapted input methods)
- □ Voice-recognition software
- □ Other: \_

## Recreation and Leisure

- □ Toys adapted with Velcro, magnets, handles, etc.
- □ Toys adapted for single-switch operation
- Adaptive sporting equipment (e.g., lighted or beeping ball)
- □ Universal cuff/strap to hold crayons, markers, etc.
- □ Modified utensils (e.g., rubber stamps, brushes, etc.)
- □ Ergo Rest or other arm support for drawing/painting
- □ Electronic aids to control/operate TV, VCR, CD player, etc.
- □ Software
- □ Completion of art activities
- $\hfill\square$  Games on the computer
- $\Box$  Other computer software
- Other: \_\_\_\_\_

# Activities of Daily Living (ADLS)

- $\Box$  Non-slip materials to hold things in place
- □ Universal cuff/strap to hold items in hand
- □ Colour-coded items for easier locating and identifying
- □ Adaptive eating utensils (e.g., foam handles, deep sides)
- □ Adaptive drinking devices (e.g., cup with cut-out rim)
- □ Adaptive dressing equipment (e.g., button hook, elastic, shoe laces, Velcro instead of buttons, etc.)
- □ Adaptive devices for hygiene (e.g., adaptive toothbrush, raised toilet seat, etc.)
- $\hfill\square$  Adaptive bathing devices
- □ Adaptive equipment for cooking
- Other: \_

## Mobility

- □ Walker
- □ Grab bars and rails
- □ Manual wheelchair including sports chair
- Devered mobility toy (e.g., Cooper Car, GoBot)
- $\hfill\square$  Powered scooter or cart
- □ Powered wheelchair with joystick or other control
- □ Adapted vehicle for driving
- □ Other: \_

# Positioning and Seating

- Non-slip surface on chair to prevent slipping (e.g., Dycem)
- □ Bolster, rolled towel, block for feet
- □ Adapted/alternative chair, sidelyer, stander
- □ Custom-fitted wheelchair or insert
- Other: \_\_\_\_\_

\* Adapted by permission from the Wisconsin Assistive Technology Initiative (WATI).



# Appendix E: Assistive Technology Resources Centers (ATRC) of Hawaii: Instructional Adaptations, Strategies, and Ideas\*

		Handwriting	Reading	Math	Written Expression	Organization
Instructional Strategies		<ul> <li>Tracing exercises</li> <li>"Talk through" letter formation</li> <li>Dot-to-dot</li> <li>Multi-modality instruction</li> <li>Chalkboard practice</li> </ul>	<ul> <li>Use story frame</li> <li>Use before, during, after echo reading</li> <li>Story mapping</li> <li>Multi-modality teaching</li> <li>Structured study guides</li> </ul>	<ul> <li>Use number lines</li> <li>Use mnemonic devices</li> <li>Use "two-finger" counting aids</li> <li>Using colour-coding strategies (e.g., green marker to start, red marker to stop)</li> <li>Use multi-modality approach</li> <li>Use computational aids</li> </ul>	<ul> <li>Content outlines</li> <li>"webbing"</li> <li>strategies/story starters</li> <li>formulate sentences aloud</li> </ul>	<ul> <li>Colour-coding strategies</li> <li>Homework journal</li> <li>Pocket schedule</li> <li>Notebook schedule</li> <li>Schedule on desk</li> <li>Schedule on bulletin board</li> </ul>
Task Adaptation		<ul> <li>Adapt test to fill-in-the- blank, multiple choice, or true/false</li> <li>Provide additional time</li> <li>Shorten assignments</li> <li>Photocopied notes</li> <li>Also:</li> <li>Try different writing tools</li> <li>Change paper position</li> <li>Check student position: feet/pelvis/trunk and arm/hand</li> <li>Avoid using short pencils</li> <li>Utilize cross-age tutoring</li> <li>Utilize peer support</li> <li>Provide typing/keyboarding instruction</li> <li>Highlight key concepts</li> </ul>	<ul> <li>Extra time for completion</li> <li>Shorten assignments</li> <li>Simplify text</li> <li>Use chapter outlines</li> <li>Also:</li> <li>Utilize peer support</li> <li>Utilize cross-age tutoring</li> <li>Information organizer</li> <li>Study carrel</li> <li>Provide tactile letters/ words</li> </ul>	<ul> <li>Reduce the number of problems</li> <li>Eliminate the need to copy problems</li> <li>Enlarge worksheets</li> <li>Avoid mixing "signs" on a page</li> <li>Reduce number of problems on a page</li> <li>Allow more time</li> <li>Also:</li> <li>Utilize peer support</li> <li>Utilize cross-age tutoring</li> </ul>	<ul> <li>Allow extra time</li> <li>Shorten assignments</li> <li>Provide sentence "shells"</li> <li>Provide key words</li> <li>Also:</li> <li>Utilize peer support</li> <li>Utilize cross-age tutoring</li> <li>Study carrel</li> </ul>	<ul> <li>Assignment sheets</li> <li>Appointment book</li> <li>Reminder cards</li> <li>Structured study guides</li> <li>Post signs and label areas in room</li> <li>Also:</li> <li>Utilize peer support</li> <li>Utilize cross-age tutoring</li> <li>Study carrel</li> <li>Organize desk</li> </ul>
A	Т	Provide instruction on use of AT devices	Provide instruction	Provide instruction	Provide instruction	Provide instruction
Technology Considerations	Adaptive (No and Lo Tech)	<ul> <li>Pencil holders/grips</li> <li>Large/primary pencils</li> <li>Large crayons/markers</li> <li>Different kind/colour paper</li> <li>Acetate sheets with markers</li> <li>Light pen</li> <li>Tape paper to desk</li> <li>Dycem to hold paper</li> <li>Clipboard to hold paper</li> <li>Stencils/templates</li> <li>Rubber name stamp</li> <li>Other rubber stamps</li> <li>Magnetic board/letters</li> <li>Slant board/easel</li> <li>Wrist rest/support</li> <li>Arm stabilizer/arm guide</li> </ul>	<ul> <li>Page magnifiers</li> <li>Magnifying bars</li> <li>Coloured acetate</li> <li>Word window</li> <li>Flash cards</li> <li>Letters and word cards</li> <li>Sentence cards</li> <li>Highlighter</li> <li>Coloured tape flags</li> <li>Colour-keyed paperclips to mark pages/paragraphs</li> </ul>	<ul> <li>Abacus</li> <li>Counters, spools, buttons, etc.</li> <li>Containers for counters</li> <li>Manipulatives</li> <li>Flash cards</li> <li>Automatic number stamp</li> <li>Magnetic numbers on metal tray</li> <li>Personal chalkboard/dry-erase board</li> <li>Raised or enlarged number line</li> <li>Number fact charts</li> </ul>	<ul> <li>Word cards</li> <li>Sentence cards</li> <li>Pocket dictionary</li> <li>Pocket thesaurus</li> <li>Personal "word" book</li> </ul>	<ul> <li>Pocket organizer/planner</li> <li>Personal organizer</li> <li>Clipboard</li> <li>Sticky notes</li> <li>Notebook tabs</li> <li>Coloured tape flags</li> <li>Coloured paper clips</li> <li>Highlighter</li> <li>Storage cubicles timer</li> </ul>
	Alternative (mid-Hight Tech)	<ul> <li>Typewriter/Word-processor with correction with custom keyguard</li> <li>Portable work processor that interfaces with computer</li> <li>Computer with macros</li> <li>Computer with spell-checker</li> <li>Computer with alternative input (e.g. on-screen keyboard, switch interface, expanded or mini-keyboard)</li> <li>Compute with word prediction</li> <li>Computer with voice recognition</li> </ul>	<ul> <li>Tape recorder to record reading assignments</li> <li>"Books on Tape"</li> <li>"Language Master"</li> <li>Speaking Language Master</li> <li>Word Master</li> <li>Electronic dictionary</li> <li>Computer with voice output and talking word processing software</li> </ul>	<ul> <li>Hand-held calculator</li> <li>Calculator with printout</li> <li>Talking calculator</li> <li>Language Master and Math Tape</li> <li>Recorder with counting</li> <li>Basic facts</li> <li>Multiplication tables</li> <li>Combination formulas</li> </ul>	<ul> <li>Electronic spell checker</li> <li>Electronic dictionary</li> <li>Electronic thesaurus</li> <li>Word Master</li> <li>Speaking dictionary</li> <li>Companion or Talking Language Master</li> <li>Computer with spelling and grammar checker</li> <li>Computer with macros</li> <li>Computer with word prediction</li> </ul>	<ul> <li>Electronic memo/schedule master</li> <li>Electronic pocket organizer planner</li> <li>Taped schedules/ assignments</li> <li>digital diary</li> <li>Computer with calendar/ reminder software</li> </ul>

\* Used with permission of the Assistive Technology Resource Centres of Hawaii <www.atrc.org>.

# **APPENDIX F: PARENT/GUARDIAN WORKSHEET\***

# Assistive Technology Planning Process

Student:	Grade:
Teacher:	Phone:
Meeting Date:	

**Directions:** Please answer the following questions regarding your child's potential need for assistive technology devices or services. As a parent and a member of the planning team, you have important information that can help in making the right decisions about what your child needs to be successful in school. If you have any questions about this worksheet, please contact the teacher named above. Please bring this form with you to the planning meeting.

1. What are your child's strengths, interests, or motivators? Do you have a "success story" you would like to share?

2. What task(s) is your child currently unable to do, due to his or her disability?

3. Do you have any suggestions for tools or strategies that could help your child be more successful?

4. Describe any assistive technology devices (simple or complex) used successfully by your child in the home or school?

5. What are your child's feelings about using these devices?

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6. How successful do you think these devices have been?

7. What other issue should be discussed at the planning meeting?

\* Adapted with permission from the Minnesota Department of Education <education.state.mn.us>.

# **Appendix G: STUDENT WORKSHEET\***

# Assistive Technology Planning Process

Student:	Grade:
Teacher:	Phone:
Meeting Date:	

**Directions:** Please answer the following questions about your potential need for assistive technology devices or services. As a student and a member of the planning team, you have important information that can help in making the right decisions about your needs to be successful in school. If you have any questions about this worksheet, please contact the teacher named above. Please bring this form with you to the planning meeting.

- 1. What tasks do you feel you are unable to complete at school?
- 2. Name or describe the strategies, technology devices, or assistance that could help you to complete school requirements or tasks.
- 3. Describe your feelings about using technology at school, home, and/or in the community.
- 4. What products have you tried, or have seen that you would like to try out?
- 5. What other issues would you like to discuss at the planning meeting?

\* Adapted with permission from the Minnesota Department of Education <education.state.mn.us>.



# Appendix H: WATI Assistive Technology Trial Use Guide\*

Assistive Technology to Be Tried:		
Student's Name:	DOB:	Age:
School/Agency:	Grade/Placement:	
Contact Person(s):		Meeting Date:
School/Agency Address and Phone Number:		
Persons Completing Guide:		
Parent(s)/Guardian(s) Name:		
Parent(s)/Guardian(s) Address:		
Goal for AT use:		

# Acquisition

Source(s)	Person Responsible	Date(s) Available	Date Received	Date Returned

Person primarily responsible to learn to operate this AT: \_\_\_\_\_

# Training

pleted

# Management/Support

Location(s)	Support to Be Provided (e.g. set up, trouble shoot, recharge, program, etc.)	Person Responsible

# **Student Use**

Date	Time Used	Location	Task(s)	Outcome(s)

\* Used with permission from The Wisconsin Assistive Technology Initiative (WATI).

# Appendix I: WATI Assistive Technology Trial Use Summary\*

Student's Name:	Age:
Person(s) Completing Summary:	-
	Date Completed:

 Task Being Addressed During Trial:

 Criteria for Success:

AT Tried	Dates Used	Criteria Met?	Comments (e.g., advantages, disadvantages, preferences, performance)

Recommendations for IPP				

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## Appendix J: Assistive Technology Protocol for Transition Planning\*

**Purpose:** The purpose of this protocol is to review the student's assistive technology needs when transition planning. **Ratings:** In each of the following functional areas, determine if the student has any limitations. If limitations do exist, answer the following questions regarding the student's capacities. Consider their ability with and without the assistive technology.

**Please read and consider each item.** Any **NO** answer is a red flag that the student may confront significant barriers during their transition process. However, these items are minimum standards. Even with a **YES** rating, there may still be a benefit from using assistive technology for this function. Next, consider the examples of types of assistive technology that might be used to address these barriers.

Student Name:		Person Completing Report:	
Date of Birth:		Date of Report:	
Grade:	Age:	Expected Date of Graduation:	

Daily Living				
Daily Living Activities: Can the student inde	eper	nden	tly .	
Eat?			Ν	0
Prepare food?	Y	es	Ν	0
Do laundry?	Y	es	Ν	0
Groom and take care of hygiene?	Y	es	Ν	0
Perform housekeeping activities?	Y	es	Ν	0
Manage time and follow a schedule?	Yes No		0	
Daily Living Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently
Dressing Aids				
Adaptive Clothing				
Adaptive Kitchen Utensils and Dishes				
Roll-in Shower				
Adaptive Appliances				
Adaptive Grooming Tools				
Adaptive Appliances				
Reachers/Grabbers/Low-Tech Aids				
Assistive Time Devices				
Assistive Memory Devices				
Electronic Organizers/Day Planners				
Emergency Response Systems				
Alarm Systems				
Adaptive Positioning and Seating Devices				
Adaptive Mobility Devices				
Adaptive Bathing Devices				
Colour-coded Items (for easier locating and identifying)				
Other:				
Comments:				

Transportation						
Transportation Activities: Can the student						
Drive?	Y	es	No			
Get in/out of any vehicle to be a passenger?	Y	es	No			
Transfer into vehicle and load mobility device	? Y	es	No			
Get into vehicle with ramp or lift?	Y	es	Ν	0		
Independently arrange transportation?	Y	Yes		0		
Independently utilize public transportation?	Y	Yes		Yes No		0
Transportation Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently		
Adaptive Driving Equipment						
Car Top or Bumper Carrier for Mobility Device						
Van with Ramp or Lift						
Other:						
Comments:						

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Tolerance				
Tolerance (to school/community/work en	viro	nme	ent)	:
Can the student				
Physically tolerate full-day school/work?	Y	es	Ν	0
Emotionally tolerate full-day school/work?	Y	es	Ν	0
Medically tolerate full-day school/work?	Y	es	Ν	0
Environmentally tolerate full-day school/work (allergies, sensitivities, to the environment, etc.)	? Y	es	N	0
Tolerance Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently
Distance Learning				
Adaptive Seating and Positioning				
Electronic Communication				
Organizers/Day Planners				
Other:				
Comments:				

Mobility				
Mobility Activities: Can the student				
Navigate at a reasonable pace?	Y	es	No	С
Navigate outside on varied terrain (e.g., college campus	)? Y	es	No	С
Tolerate and be mobile at this pace to 3 city blocks	? Y	es	No	С
Carry a 5-pound backpack while being mobile?	Y	es	No	C
Operate controls to activate community building a devices (e.g., electronic doors, elevator, walk light)				C
Mobility Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently
Power Wheelchair				
Manual Wheelchair				
Powered Scooter				
Walker				
Cane/Crutches				
Grab Rails				
Environment Controls				
Other:				
Comments:				

Communication				
Oral Communication Activities: Can the s	tuder	nt		
Communicate wants and needs to a				
non-familiar communication partner?	Ye	es	N	0
Independently operate a telephone?	Ye	es	No	
Independently communicate with a				
non-familiar person on the telephone?	Ye	es	N	0
Understand and remember				
simple verbal instructions?	Ye	es	N	0
Understand and remember	V		NI	_
complex verbal instructions?	Ye	25	N	
			Jsing but could be improved	ntly
	able	use Use	but -	Jsing ndependently
Communication	Vot applicable	Possibly could use	ing	depe
Adaptations	a Nc	8 8	s a	S.⊑
Eye-Gaze Board	_			
Picture or Spelling Board				
Electronic Voice-Output Device				
Computer-Based Speech Device				
Adaptive Telephone				
Adaptive Writing Device				
Laptop Computer				
TTY				
Relay System				
Voice-Output Reminder				
Electronic Organizers				
Other:				
	- 1			

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Computer Access				
Computer Access Activities: Can the student	inde	penc	lentl	y
Perform manipulative tasks (includes turning computer on/off, entering data, operating mouse, handling paper in an efficient matter)				
Access the Internet?	Ye	íes No		
Control the cursor?	Ye	Yes No		
See the computer screen?	Ye	es	No	C
Manage the keyboard?	Yes No			~
Computer Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently
Keyboard/Built-in Adjustments				
Alternative Keyboard				
On-screen Keyboard				
Armrests/Adjustable Work Station				
Alternative Mouse Function				
Productivity Enhancement Software				
Voice Input				
Voice Output				
Mouse Code				
Switch Operator/Scanning				
Braille Writer				
Screen Adaptations				
Other:				
Comments:				

Literacy					
Literacy Activities: Can the student					
Manipulate books and newspapers to read independently?	Ye	Yes		0	
Comprehend print materials prepared for general public?	Ye	es	Nc		
See text to read it?	Ye	es	No		
Physically produce written information?	Ye	Yes No		0	
Communicate ideas in a written format at their expected level of proficiency?	Yes		N	No	
Literacy Adaptations	Not applicable	Possibly could use	Using but could be improved	Using independently	
Page Turner/Book Holder					
Scanning/Optical Character Recognition					
Picture Texts and Instructions					
Voice Output					
Highlighted Text/Enlarged Text					
Recorded Materials					
Organized Aids					
Talking Word Processor					
Computerized Text Adaptations					
Productivity Enhanced Software					
Signature Stamp					
Electronic Organizers (e.g., Palm Computer)					
Hand-Held Text Readers and Scanners		1	1		
Other:					
Comments:					

 $* Used with permission from The Wisconsin Assistive Technology Initiative (WATI), <\!\!www.wati.org\!\!>\!\!.$ 

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