LD Resource Guide

**Accommodations,
Learning Strategies,
Assistive Technology,
and
Universal Design
for Instruction**

July 2008

The LD Resource Guide was developed from the ***Accommodations and Strategies that work for me: A Self-Assessment Inventory,*** which was created by Pam Morel and Diane Berzins of Cambrian College (2003). This LD Resource Guide was created with further input from members of the LD Special Interest Group of the College Committee on Disability Issues (CCDI), Psychological practitioners from the Northern Ontario Assessment and Resource Centre (NOARC), and numerous Disability Service Providers from CCDI.

This is a living document which is intended to grow and develop, as we as professionals in the Disability Service community, continue to learn how to more effectively support student success. Any future ideas or suggestions are welcome and can be forwarded to either Pam Morel (pamela.morel@cambriancollege.ca) or Diane Berzins (diane.berzins@cambriancollege.ca) who are the editors of the LD Resource Guide.

Annual revisions will be posted to the CCDI website (http://www.disabilityissues.ca/).

It may be photocopied as required for use by qualified practitioners working with adults experiencing learning problems.

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Introduction

This Resource Guide provides lists of accommodations, learning strategies, and assistive technology as well as suggestions for Universal Design for Instruction which have proven useful for students with learning disabilities at the post-secondary level.

These lists can be a useful reference for a variety of professionals working in the Disability Service Community: disability service providers, learning strategists, assistive technologists, educators and psychological practitioners. This resource can help in **GUIDING** the selection of effective accommodations, learning strategies and assistive technology from a spectrum of possible options. The selection of appropriate supports is often most effective if linked to the student's profile of psychological processing strengths and difficulties. These lists are not all inclusive.

In making use of this guide, it is recommended that the first step would be to identify each student's learning profile from his/her psychological assessment. The learning profile consists of an outline of the processing strengths and difficulties and the specific impact on academic and social skills. Once this profile has been determined, the second step is to locate the sections of the guide which address the student's processing strengths in order to obtain suggestions for approaches to learning which utilize these strengths. The third step is to locate the sections of the guide which address the student's processing difficulties and those sections which address the impact on academic and social skills. Selections can be made in each of these sections from lists of accommodations, learning strategies, and assistive technology which may help to support the student's learning. It is also important to consider which suggestions for Universal Design of Instruction could be promoted within the student's institution to address some of their learning challenges. A Table of Contents for each section is at the start of the guide and an Index of terminology is at the end of the guide in order to assist with section location. **Each section of the Guide is formatted so that it may be printed out separately in order to facilitate the application to individual student needs.**

The lists of suggestions in the Resource Guide are based on interventions that have been shown to be helpful for many individuals with similar profiles. However, as all people are unique, they will not necessarily benefit from a standard set of supports. Appropriate accommodations, learning strategies and assistive technology should be determined as part of a collaborative process between students and their Disability offices, in light of the student's profile of abilities, essential program requirements, and available resources.

Accommodations

Accommodations are differentiated or alternative approaches to receiving information, assignment completion, and/or evaluation. They provide equal access to learning opportunities for students with disabilities by "leveling the playing field". At the post-secondary level, students with disabilities are expected to accomplish the "essential requirements" of their programs. Accommodations are provided in an attempt to minimize or eliminate disadvantages which occur due to disability related factors. Institutions have a duty to accommodate in order to comply with the Human Rights Code.

Determining accommodations is an individualized case by case assessment of what the student needs in view of their processing and academic skills deficits, history of success of any accommodations, and the requirements of the specific course. Significant processing and academic skills deficits documenting the need for accommodations are determined through a review of Psychological Assessments.

Two accommodations that are frequently used and generally found to be useful are quite controversial in academic studies; extra time for tests and reduced course load.

Extra time for Tests:

The general application is time and one half for tests. However, this time should be applied for purposes of planning. There is no evidence that a specific time is able to be validated in any situation. Studies have shown that students with disabilities benefit from extra time whereas their non-disabled peers show little gain when afforded extended time. The extra time is to assist with several difficulties such as, speed of reading, speed of writing, processing speed, verbal comprehension, organization, anxiety, concentration and distractibility. However, since every test has a unique set of tasks that require any of the above skills, there is no one time that can be applied to each student. The only consideration for the limit to time should be the institutional capacity to provide what is necessary and in some cases, the opinions of the specific faculty with respect to time being an essential requirement for that specific test. For example, it would be difficult for a faculty person to claim that time was relevant in a test for an Intro to Psychology course whereas a bell-ringer test for a Paramedic course may need consideration for the strict time lines.

Reduced Course Load:

Many students with learning disabilities benefit from a reduced course load. These students will normally spend the full time on campus using additional supports from tutors, learning strategists, assistive technologists, and faculty and utilizing on-campus resources such as assistive technology labs to accomplish what other students are able to do in the regular semester. The reduced course load allows them the time for these tasks as well as the opportunity to study and learn a limited amount of content.

However, there are several considerations that need to be considered in recommending a reduced course load to students with LD:

- Reducing the load increases the time the student requires for graduation thereby increasing the expense of being a student,

- The student will be taking the course work out of sequence and may lose the unity of the courses within the program,

- The eventual loss of the peer group can make studies difficult,

- There is a danger that the requirements of the program may change so that the student may have to repeat courses already successfully taken or be required to take additional ones.

Reducing a program course load should be a carefully thought out accommodation, and the student should be fully informed of the implications. This accommodation decision must always be disability related.

Learning Strategies

Learning strategies are active approaches to learning that benefit all students, but they are crucial tools for students who have learning disabilities. They provide structure and organization so that learning can be accomplished more effectively and efficiently. They include both simple and complex techniques, principles or rules that facilitate learning.

The selection of appropriate strategies can be guided by the students' profiles of processing strengths and difficulties which are determined through psychological assessments. The most effective strategies for individual students will be those which utilize their learning strengths while helping them to manage their areas of difficulties. However, determining the most appropriate strategies for individual students within specific situations may require a period of trial-and-error as various strategies are proven more or less effective. What works for one student, may not be effective for another student even with a similar learning profile. Further, what works for one student in one situation may not easily transfer to new and different learning situations.

Learning strategies have proven even more effective when integrated with appropriate assistive technology.

Assistive Technology

Assistive Technology (AT) is a generic term that includes any piece of equipment that is used to increase efficiency, maintain function, or improve the capability of individuals with disabilities. AT can assist people with disabilities to accomplish many tasks of daily living. These tools can help them to achieve greater independence and to enhance their quality of life. The selection of appropriate assistive technology can be guided by the students' learning profiles which is determined through their psychological assessments. The most effective technology will assist these students in compensating for any functional deficits, allowing them to perform at levels which are closer to their learning potential.

Listed below are some common examples of AT:

- **Personal Digital Assistant (PDA)**—allows the user to store, organize, and retrieve important personal information.

- **Text-to-Speech Software** — verbalizes, or "speaks," everything on a computer screen, including alternative format textbooks, website text, graphics, control buttons, and menus.

- **Mind Mapping Software**— allows the user to organize their ideas through web-diagrams and by creating visual linkages between concepts and information.

- **Word Prediction**—predicts words on the basis of the first few letters typed, which allows users to select the required word from a drop down menu.

- **Editing Software**—provides the user with auditory feedback so they can hear their written text. This "read-back" feature enhances the editing of written documents. Further editing features alert the user to probable errors in written text (grammar, word usage, structure, spelling, style, punctuation and capitalization).

- **Voice Recognition Software**—allows the user to voice computer commands and to enter text using their voice, rather than a mouse or keyboard.

- **Recording Devices** —allows the user to record information presented auditorily (lectures, workshops) and to listen to books in audio format. They also allow the user to verbally store and retrieve telephone numbers, appointments, and individual notes (such as to-do lists).

- **FM Systems (Frequency Modulated Systems)** — transmits an instructor's voice directly to the student at a constant level, insuring that the instructor's voice is heard above the level of background noise.

Universal Design for Instruction

Universal Design for Instruction (UDI) is an approach to teaching which considers the diversity of all students when designing and delivering instruction. This proactive design benefits a broad range of students, including students with disabilities.

Instructors identify and eliminate barriers and build flexibility, options and choices into their course plans and instructional strategies, while maintaining academic rigor. This approach maximizes learning opportunities for all students while minimizing the need for special accommodations.

Listed below are some common examples of the application of UDI:

- **Class Climate:** Adopting practices that reflect high values with respect to both inclusiveness and diversity. Instructors invite students to meet with them to make known any individual learning needs.

- **Delivery Methods:** Presenting information through a variety of methods, such as lectures, group discussions, hands-on activities, projects, cases studies, internet- based interactions, etc.

- **Learning Methods:** (accessibility of information): Providing course information in alternative formats, such as, electronic print materials, on-line PowerPoint notes, advance outlines, captioned video tapes, etc.

- **Interaction:** Encouraging different ways for students to interact with each other, such as, in-class questions, class discussions, group work, internet access, etc.

- **Feedback:** Effective prompting during activities in order to guide student learning. Providing frequent feedback to students about their progress to help correct errors and misconceptions.

- **Evaluation:** Providing frequent, flexible opportunities to demonstrate knowledge, such as, multi-faceted tests, papers, group work, demonstrations, presentations, portfolios, etc.

- **Physical Effort and Access:** Ensuring that classrooms, labs and field work are accessible to individuals with a wide range of physical abilities.

Psychological Processes

Psychological processes are cognitive abilities that are expected to develop naturally as the brain matures. Abilities such as memory, auditory processing, verbal comprehension, attention, and visual-spatial reasoning are considered to be some of the building blocks of the learning process. They are the processes which allow for the acquisition, retention, understanding, organization or use of both verbal and non-

verbal information. Psychological assessments provide measures of these abilities, which can be used to build learning profiles of expected strengths and difficulties. Processing deficits are generally assumed to be the cause of the learning difficulties for individuals with learning disabilities.

Processing strengths can be used to support learning. Strategies, accommodations and assistive technology which incorporate these strengths are essential components in the academic success of students with learning disabilities.

Academic Skills

Academic skills are those learned skills and knowledge which have been acquired through educational activities. Learning disabilities interfere with the acquisition and use of one or more of the following academic skills:

- oral language (listening, speaking, understanding)
- reading (decoding, comprehension)
- written language (spelling, written expression)
- mathematics (computation, problem solving)

http://www.ldao.ca/aboutLDs/Definitions_of_LDs.php

Accommodations, Learning Strategies, & Assistive Technology: Linked to Psychological Processes

Executive Functioning

Planning, monitoring, regulation, organization and metacognition abilities

Using Executive Functioning Strengths

- organizational software (Inspiration)
- organizing a study group
- utilizing strong problem solving skills
- actively monitoring progress using reflective thinking

Managing Executive Functioning Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring Learning strategies training Assistive technology training Extra time for tests/exams Extra time for assignments when negotiated in advance Access to a computer and/or organizational software for tests Reduced course load Distraction reduced environment for assignments and tests Orientation programs Peer mentoring Copies of class notes (from peer note taker, faculty, etc.) Disability related counselling Social skills support Clarification of assignments from faculty	Strategies to **break complex tasks down** into smaller steps: • short term goal setting • numbering • checklists • step-by-step guidelines and procedures • test taking strategies • anticipating and rehearsing plans to cope with complex situations Strategies for **planning and organization:** • a master calendar of important assignments, tests, events • colour coding subject binders • organizational folders for assignments ("to do" and "done") • structures and routines (detailed timetables, schedules)	Technology for general **planning and organization:** • electronic organizers or PDA's • watches or electronic organizers with alarms • computer organization systems with calendars and to-do lists • electronic filing and retrieval systems • portable applications (mobile software for USB drives) Technology for **structuring written assignments:** • organizational/mind mapping software • assignment calculator (breaks down large projects into manageable tasks) **http://www.lib.umn.edu/help/calculator/** Technology for **self-monitoring** written accuracy: • editing software with auditory feedback

Accommodations	Learning Strategies	Assistive Technology
	Strategies for **self-monitoring and tracking details:** • wall calendars and posted reminders • maintaining an agenda (semester, weekly, daily planning) • checklists of tasks to be completed within specific time frames	

Universal Design for Instruction:
- step-by-step examples and templates (sample projects/assignments)
- written and/or electronic copies of course expectations (course outlines, assignments, due dates, procedures for submitting assignments)
- provide lecture outline at beginning of class
- frequent feedback about progress and expectations

Attention

Ability to selectively focus on some activities while ignoring others, to sustain concentration, to resist distraction, and to shift attention among tasks

Using Attention Strengths

- studying with partners or groups
- effective and efficient note taking
- active in classroom participation
- awareness of required detail (with assignment, demonstrations, etc.)
- engaging in active learning

Managing Attention Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Extra time for tests/exams	Strategies to **enhance attention**:	Technology for **focusing attention:**
Extra time for assignments when negotiated in advance	• program selection in area of interest	• FM system for lectures
Distraction reduced work/ test environment (isolation, headset with music, white noise, ear plugs, etc.)	• reading aloud • colour coding notes • active participation in class discussions	• electronic cue card maker, for example **http://www.download.com/CueCard/3000-2051_4-10075304.html**
Recording of lectures (auditory or visual)	• quizzes, games, and practice tests when studying	• a computer word processor and/or portable keyboard
Access to a computer word processor	• alternate between active and quiet study sessions	Technology to **compensate for distractibility:**
Reduced course load	• real life examples or stories to supplement notes	• recording devices with tracking systems for lectures
Preferential seating	• highlighting of operational signs for math calculations	• laptop computers with audio mics (integrated recording and file management)
Learning strategies training	• proofread in reverse order by sentence or by paragraph	• text-to-speech software with highlighting features
Assistive technology training		• editing software with read–back features
Copies of instructor's and/ or classmate's notes		
Frequent breaks in class and during tests		
Peer mentor or faculty feedback for verbal or non-verbal redirection		

Accommodations	Learning Strategies	Assistive Technology
Access to manipulative materials	Strategies to **reduce distractions:** • distraction reduced work environments, listening to music, wearing earplugs • using a study carrel when studying on campus Strategies to **create structure:** • "to do" lists • short, frequent study sessions with scheduled breaks when studying • specific note taking structures • scheduled study and homework time • chunking assignments into smaller steps with a checklist for self-monitoring	Technology to **create structure:** • electronic organizers or PDA's • watches or electronic organizers with alarms

Universal Design for Instruction:
- provide a lecture outline at the beginning of class
- note sharing (electronically shared PowerPoint presentations, website postings, paper copies, fill-in-the blank worksheets, etc)
- classroom activities involving a variety of student interactions (small group work, presentation, discussions, debates, CPS Student Response Systems **http://ids.ku.edu/clickers.shtml)**
- frequent feedback about progress and expectations

Verbal Comprehension

Ability to think, reason and express knowledge through language

Similar Terminology: **Abstract verbal reasoning, Vocabulary**

Using Verbal Comprehension Strengths

- use language based approaches to learning
- create step-by-step descriptions of procedures
- summarizing main ideas from lectures and textbooks
- participating in study groups
- recording study notes for auditory review
- attend classes and tutorials regularly

Managing Verbal Comprehension Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring Learning strategies training Assistive technology training Extra time for tests/exams Extra time for assignments when negotiated in advance Reduced course load Text-to-speech software or reader for tests Calculator with voice output	Strategies to **capitalize on visual strengths:** • step by step guidelines • formula sheets (models and procedures) • mind mapping • illustrations Strategies to **enhance meaning:** • paraphrasing or putting information in your own words • asking questions to gain more information • relating new information to material already learned • creating concrete or personally meaningful examples • studying with practice tests and sample questions	Technology to facilitate **access to information:** • electronic dictionaries and thesauruses Technology to **free up mental energy** to focus more on meaning: • text-to-speech software (with highlighting features) Technology to provide **visual illustrations** of concepts: • mind mapping software to illustrate relationships and linkages

Accommodations	Learning Strategies	Assistive Technology
	Strategies to **reduce verbal content:** • highlighting of key/main ideas • summarizing verbally complex information • creating review sheets (key ideas and examples) Strategies to **build vocabulary:** • creating personal dictionaries • increasing exposure to print based information and/or educational television	

Universal Design for Instruction:
- visual examples with step-by-step procedures and concrete/manipulative material
- templates or models
- ensure accessibility of web based materials **http://www.w3.org/WAI/**

Visual Spatial Comprehension

Ability to process visual stimuli and to analyze, discriminate, and interpret visual patterns and designs

Similar Terminology: **Visual Spatial Reasoning, Non-verbal Reasoning, Perceptual Organization**

Using Visual Spatial Strengths

- visual references when listening to lectures (overheads, text books)
- visually organizing concepts to illustrate connections or links between ideas (organizational software or graphic organizers)
- organizational software (Inspiration or Smart Ideas)
- practical hands-on activities (simulation, role play, practice exercises)
- using a visual thesaurus (see links)

Managing Visual Spatial Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies to **capitalize on auditory strengths:**	Technology to **capitalize on auditory strengths:**
Extra time for tests/exams	• reviewing information with study partners	• text-to-speech software
Extra time for assignments when negotiated in advance	• recording of lectures and study notes	Technology to **organize visual input:**
Access to a computer word processor	Strategies to **organize visual input:**	• calculators with a printer
Reduced course load	• step-by-step models and examples	• graphing calculators
Learning strategies training	• visual structures to guide numerical operations (graphing paper)	• sequential templates from organizational software
Assistive technology training	• using landmarks when learning way around campus	• electronic maps for some placement situations
Campus/classroom orientation tours		Technology to strengthen social skills:
Providing verbal explanations of visual information		• video recording for analyzing social interactions

Accommodations	Learning Strategies	Assistive Technology
	Strategies to **strengthen social skills:** • training to build awareness of facial expressions and body language • check-back strategies for possible misperceptions during social interactions • role playing • desensitization techniques	

Universal Design for Instruction:
- visual information with auditory support during presentations
- outlines and step-by-step procedures (teacher/tutor)
- access to course information through a variety of modalities (recording lectures, electronic textbooks, copies of overheads,/PowerPoint, notes posted on websites, fill-in-the blank note outlines)

Visual-Motor Coordination

Ability to use sensory feedback to accurately guide physical movements, linking perceptual input to motor output

Similar Terminology: **Grapho-Motor Coordination, Fine-Motor Coordination, Visual-Motor Integration, Kinesthetic Learner, Perceptual-Motor Processing**

Using Visual-Motor Coordination Strengths

- attend class regularly to create detailed lecture notes
- select program using visual motor strengths
- study using manipulative hands-on models

Managing Visual-Motor Coordination Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Access to a computer keyboard	Strategies to **minimize writing:**	Technology to support **output efficiency:**
Copies of instructors' and/or classmates' notes	• practice keyboarding • point form notes • specific note taking structures (mind mapping or two column methods)	• recording devices when note taking • computer or portable keyboard • laptop computers with audio mics
Scribe for tests with extensive writing	Strategies to **structure mathematical solutions:**	• word prediction software • voice recognition software
Access to assistive technology (voice recognition, word prediction)	• sequential templates for multi-step solutions • graph paper to line up numbers when calculating • subdividing answer sheets into boxes	• calculator with printer • computer calculator
Extra time for tests/exams		
Extra time for assignments when negotiated in advance		
Recording of lectures		
Reduced course load		
Learning strategies training		
Assistive technology training		

Universal Design for Instruction:

- note sharing (electronically shared PowerPoint presentations, website postings, paper copies, fill-in-the blank worksheets, etc)
- varying assessment/evaluation methods to demonstrate competency
- assessment prior to program entrance
- early and frequent kinesthetic training and practice

Visual Memory

Ability to recognize and recall visual information both immediately and following a delay

Similar Terminology: **Visual Sequencing, Visual Working Memory**

Using Visual Memory Strengths

- visual based memory strategies (flash cards, visual mapping, mnemonics, colour coding, pictures, charts and illustrations)
- use highlighters and symbols for key concepts
- create point form notes with presentation software (PowerPoint)
- study using music or rhythms
- use mind mapping software
- watch videos related to the topic of study
- role play using a mirror

Managing Visual Memory Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies to **enhance memory:**	Technology to **compensate for memory inefficiencies:**
Learning strategies training	• multi-sensory study using a variety of modalities to enhance memory (see, say, hear, write, colour code)	• recording devices for lectures and labs
Assistive technology training		• text-to-speech software for problems with reading decoding
Extra time for tests/exams	• mnemonic strategies (listing, chunking, imaging, drawing, mapping, devising acronyms and associations)	• editing software (spellchecker, word prediction, homonym checking , auditory feedback for spelling difficulties
Extra time for assignments when negotiated in advance		
Access to a computer with assistive technology	• frequent drill and review of material to be memorized (listening to recordings, paraphrase/ explain to study buddy, verbally rehearse, etc.)	• calculator with auditory/ visual output for math
Reduced course load		
Access to formula sheets during tests		
Copies of instructor's notes and/or classmate's notes		
Orientation on campus (each semester)		

Accommodations	Learning Strategies	Assistive Technology
	Strategies to **track important dates** and events • calendars • to-do lists • agendas • schedules	Technology to **track important dates and events:** • electronic organizer with alarms as a memory tool for tracking details (PDA) • computerized software with calendars and to-do lists for scheduling • digital recorder for thoughts and ideas

Universal Design for Instruction:
- access to course information through a variety of modalities (recording lectures, electronic textbooks, copies of overheads/PowerPoint, notes posted on websites, fill-in-the blank note outlines)
- presentation of information using multi-sensory methods (visual, auditory, motor, verbal discussion, etc.)
- ensure accessibility of web based materials **http://www.w3.org/WAI/**
- appropriate signage to support orientation to campus (external and internal colour coding, symbols, labeled clearly)
- campus orientations

Auditory Memory

Ability to recognize and recall auditory information both immediately and following a delay

Similar Terminology: **Auditory Sequencing, Auditory Working Memory**

Using Auditory Memory Strengths

- auditory based memory strategies (verbal rehearsal, review with audio recordings)
- study using rhyming words (limericks)
- study by creating new lyrics to known songs
- attend all lectures
- use alternative format textbooks (if associated with reading deficits)
- work in study groups
- "teach" someone else new concepts

Managing Auditory Memory Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies to e**nhance memory:**	Technology to **compensate for memory inefficiencies**:
Learning strategies training	• multi-sensory study using variety of modalities to enhance memory (see, say, hear, write, colour code)	• recording devices for lectures
Assistive technology training		• text-to-speech software for problems with reading decoding
Extra time for tests/exams	• mnemonics (including, listing, chunking, imaging, drawing, mapping, devising acronyms and associations)	• editing software (spellchecker, word prediction, homonym checking , auditory feedback) for spelling difficulties
Extra time for assignments when negotiated in advance		
Access to a computer with assistive technology	• frequent drill and review of material to be memorized (cue cards, writing out key information, mind maps, etc.)	• calculator with auditory/ visual output for math
Reduced course load		• portable electronic dictionary with voice output
Access to formula sheets during tests	• pre-reading textbook material before lectures to build familiarity with content	• electronic cue card maker (**http://www.download. com/CueCard/3000- 2051_4-10075304.html**)
Copies of instructor's notes and/or classmate's notes	• lists of frequent errors to support editing (word lists, grammatical errors)	

Accommodations	Learning Strategies	Assistive Technology
	Strategies to **track important dates** and events: • calendars • to-do lists • agendas • schedules	Technology to **track important dates** and events: • electronic organizer as a memory tool for tracking details (PDA) • computerized software with calendars and to-do lists for scheduling

Universal Design for Instruction:
- access to course information through a variety of modalities (recording lectures, electronic textbooks, copies of overheads,/PowerPoint, notes posted on websites, fill-in-the blank note outlines)
- provide written instructions to supplement oral directions for in-class assignments
- presentation of information using multi-sensory methods (visual, auditory, motor, verbal discussion, etc.)
- advance warning of any required reading to allow for previewing of new information
- ensure accessibility of web based materials **http://www.w3.org/WAI/**
- provide recordings of lectures and webcast

Processing Speed

Ability to rapidly and accurately process simple information

Similar Terminology: **Fluency**

Using Processing Speed Strengths

- participate in classroom discussions (questions and answers)
- take notes from lectures
- multi-tasking of assignments

Managing Processing Speed Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies for **planning for extra time** to complete written assignments and to study for tests:	Technology to c**ompensate for slower writing/reading speed**:
Access to a computer	• creating timelines for long term projects with built-in extra time	• text-to-speech
Copies of instructors' and/ or classmates' notes	• structured study periods	• speech recognition
Access to a computer with assistive technology	• pre-reading of class materials	• keyboarding
Extra time for oral responses	• pre-formulating questions for class	• laptops computers with audio mics
Extra time for tests/exams	• rehearsal of questions or oral presentations	Technology for effective **note taking**:
Extra time for assignments when negotiated in advance	Strategies for effective **note taking**:	• recording devices
Recording of lectures	• reduce volume of writing with point form, mind mapping, and two column methods	• note taking software with integrated recording and file management
Reduced course load	• review notes to fill in gaps (tutor, photocopies, recording devices, textbooks)	
Learning strategies training	• preparing lecture note templates from textbooks/ course outlines before class	
Assistive technology training		

Universal Design for Instruction:

- note sharing (electronically shared PowerPoint presentations, website postings, paper copies, fill-in-the blank worksheets, etc)
- advance warning of topics to be covered in class to allow for previewing of new information
- advance notice of questions to be discussed to allow for preparation of responses
- ensure accessibility of web based materials **http://www.w3.org/WAI/**
- advanced organizers for lecture presentations
- provide frequent reviews
- vary the pace of instruction

Visual Processing

Ability to recognize, perceive, discriminate, analyze and synthesize visually presented stimuli

Similar Terminology: **Visual Discrimination, Visual Closure, Visual Integration**

Using Visual Processing Strengths

- enhance notes by adding pictures/diagrams/colour/charts/ illustrations/graphs
- write out notes in own words when studying
- make flowcharts/mind maps to help with studying
- watch videos related to the topic of study

Managing Visual Processing Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Preferential seating Tutoring Copies of instructors' and/ or classmates' notes Access to a computer with assistive technology Extra time for tests/exams Extra time for assignments when negotiated in advance Recording of lectures Reduced course load Learning strategies training Assistive technology training Proof reader to check final copies of written reports Opportunities for repeated practice of practical skills prior to exams	Strategies for enhancing **visual tracking**: • visual aids (ruler, highlighters, etc.) • colour coding of important information • keeping study area free of clutter, having only materials necessary Strategies for s**implifying and organizing ideas**: • creating outlines before writing • using templates/models of completed assignments • using grading rubrics as a guide for planning assignments • using task lists/checklists • sequential step-by-step instructions or templates	Technology to enhance **visual tracking**: • text-to-speech software with tracking features • electronic notes using colour and simplified fonts Technology to **support proofreading:** • software with auditory feedback, or "read back" features Technology to **simplify and organize ideas**: • electronic organizer (PDA) • computerized to-do lists with due dates (software for schedules and agendas) • linear outline software

Universal Design for Instruction:

- Providing templates/models of completed assignments
- presentation of information using multi-sensory methods (visual, auditory, motor, verbal discussion, etc.)
- ensure accessibility of web based materials **http://www.w3.org/WAI/**
- verbal explanations of visual information

Auditory Processing

Ability to efficiently recognize, perceive, discriminate, analyze and synthesize auditory stimuli

Similar Terminology: **Phonological Processing, Auditory Awareness, Rapid Naming, Phonological Memory**

Using Auditory Processing Strengths

- participate in classroom discussions
- work in study groups
- record lectures for later review
- textbooks in alternate (audio) format

Managing Auditory Processing Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Preferential seating	Strategies to **minimize auditory distractions**:	Technology to **compensate for any reading/spelling difficulties**:
Tutoring	• quiet work environment	• text-to-speech software
Copies of instructors' and/or classmates' notes	• select seating at the front of the class	• editing software (word prediction, homonym checking , auditory feedback)
Access to a computer with assistive technology	Strategies to **strengthen auditory comprehension**:	Technology to **strengthen auditory comprehension**:
Extra time for tests/exams	• visual references when being provided auditory information	• electronic dictionaries, thesauruses
Extra time for assignments when negotiated in advance	• requests for instructions in writing	Strategies to **minimize auditory distractions**:
Recording of lectures	• requests for clarification of key information	• FM system to filter out extraneous noise
Reduced course load	• glossary of key terms for each lecture	
Learning strategies training		
Assistive technology training		
FM system for lectures		
Advance notification of textbook topics (for previewing)		

Universal Design for Instruction:

- note sharing (electronically shared PowerPoint presentations, website postings, paper copies, fill-in-the blank worksheets, etc)
- providing clear explanations when changing activities in class
- written copies of assignment expectations
- opportunity to check to see if important information is correctly understood
- presentation of information using multi-sensory methods (visual, auditory, motor, verbal discussion, etc.)
- ensure accessibility of web based materials **http://www.w3.org/WAI/**

Expressive Language

Ability to express thoughts and ideas using oral language; effective communication through fluent word selection

Similar Terminology: **Speaking Vocabulary, Oral Expression, Oral Communication, Dysnomia, Verbal Fluency**

Using Expressive Language Strengths

- study in small groups or with partners

- explain new ideas or new learning to other people

- use a recording devices to create and review study notes

- describe overheads, pictures and other visuals to someone who was not there

- verbal mediation to talk through procedures

- use voice recognition software

Managing Expressive Language Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Learning strategies training	Strategies to **enhance verbal fluency**:	Technology to s**upport oral presentations**:
Assistive technology training	• verbal rehearsal	• presentation software
Extra time for tests/exams	• cue cards to support oral speaking or presentations	• planning presentations in advance using mind mapping software
Extra time for assignments when negotiated in advance	• advance practice of information to be expressed (role play)	• using video recording to pre-record and edit presentations
Reduced course load	• scripting - prepare scripts in advance for common situations (job interview, joining groups, asking for assistance)	
Access to computer with assistive technology	• enriching vocabulary (personal dictionaries, crossword puzzles, educational television/ DVDs, reading a wider variety of more challenging information)	
Advance warning of discussion questions		
Extra time to formulate ideas when speaking		
Longer wait time during conversations		
Smaller group presentations		

Accommodations	Learning Strategies	Assistive Technology
Alternative format evaluations		
Prerecording of presentations		

Universal Design for Instruction:
- allow use of PowerPoint/cue cards/notes for oral presentations
- advanced notice of topics for discussion prior to class
- providing discussion questions at the beginning of class
- alternate methods for oral presentations

Receptive Language

Ability to understand oral language; including spoken vocabulary, multiple meaning of words, and figurative language

Similar Terminology: **Listening Vocabulary, Verbal Comprehension, Pragmatics of Language**

Using Receptive Language Strengths

- study in small groups or with partners
- explain new ideas or new learning to other people
- use of recording devices to create and review study notes (MP3, digital recorders)
- describe overheads, pictures and other visuals in your study notes
- verbalize step-by-step procedures
- text-to-speech software to read/listen to textbooks and study notes

Managing Receptive Language Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies to improve **understanding of oral language**:	Technology for **improving listening comprehension**:
Learning strategies training	• asking people to clarify what they said (different words, slower, louder)	• text-to-speech software with built in dictionaries
Assistive technology training	• asking questions	• electronic dictionaries
Extra time for tests/exams	• getting directions in both written and spoken form	Technology for **supporting note taking** from lecture:
Extra time for assignments when negotiated in advance	• joining study groups for understanding and clarification	• recording devices for lectures (digital recorder with variable speed control)
Reduced course load	• previewing of textbooks before lectures	• computer recording software with time management features
Access to computer with assistive technology		• FM system to filter out extraneous conversations
Copies of instructor's and/or classmate's notes		
Advance notification of textbook topics (previewing)		
Recording of lectures		
FM system for lectures		

Accommodations	Learning Strategies	Assistive Technology
	Strategies for **supporting note taking** from lectures: • getting copies of another student's lecture notes and paraphrase to supplement the content of your own notes • advance preparation of note taking structures for key concepts (Cornell note taking system, mind mapping headings) • supplementing course notes with content from recorded lectures	

Universal Design for Instruction:
- provide opportunities for students to obtain additional explanation, review and clarification
- access to course information through a variety of modalities (recording lectures, electronic textbooks, copies of overheads,/PowerPoint, notes posted on websites, fill-in-the blank note outlines)
- presentation of information using multi-sensory methods (visual, auditory, motor, verbal discussion, etc.)
- ensure accessibility of web based materials **http://www.w3.org/WAI/**
- providing assignment with written instructions
- supplementary course materials to aid comprehension (formula sheets, vocabulary lists, dynamic web links, etc.)

Abstract Reasoning

Ability to understand complex relationships between ideas

Ability to analyze and interpret information, form theories and think logically, including cause and effect problem solving and non-literal conceptualization of categories

Similar Terminology: **Conceptualization, Problem Solving**

Using Abstract Reasoning Strengths

- summarize main ideas from textbooks and lectures
- use prediction capabilities to enhance lectures (guess what's coming up next, where is the speaker going with this?
- synthesize information by creating sample test questions
- use cognitive flexibility to practice teaching others
- use strong idea development and divergent thinking to create examples of textbook materials

Managing Abstract Reasoning Difficulties

Accommodations	Learning Strategies	Assistive Technology
Being provided with:	*Utilizing:*	*Utilizing:*
Tutoring	Strategies to **increase comprehension of abstract concepts**:	Technology to **illustrate linkages between ideas**:
Direct instruction of step-by-step procedures	• solve problems using step-by-step procedures	• organizational software (mind mapping)
Learning strategies training	• use concrete materials when learning new concepts (math, science experiments)	• math websites for demonstrations
Assistive technology training	• use concept mapping to illustrate relations between ideas	
Extra time for tests/exams	• linking abstract concepts with practical and concrete examples (personally meaningful and relevant)	
Extra time for assignments when negotiated in advance	• link ideas with real life events when possible	
Reduced course load	• create "trouble shooting" guides to help you remember how you solved typical problems	

Universal Design for Instruction:
- provide concrete and relevant examples
- incorporating graphic organizers into lectures to show connections with concepts
- web based programming to illustrate course materials
- opportunity for further clarification of complex concepts (tutorial sessions, modeling of abstract thinking)
- opportunities to review assignments and projects
- opportunities for hands-on practice

Accommodations, Learning Strategies, & Assistive Technology: Linked to Impact on Academic and Social Skills