

LEG UP ASSISTIVE TECHNOLOGY FOR INDIVIDUALS WITH COGNITIVE CHALLENGES

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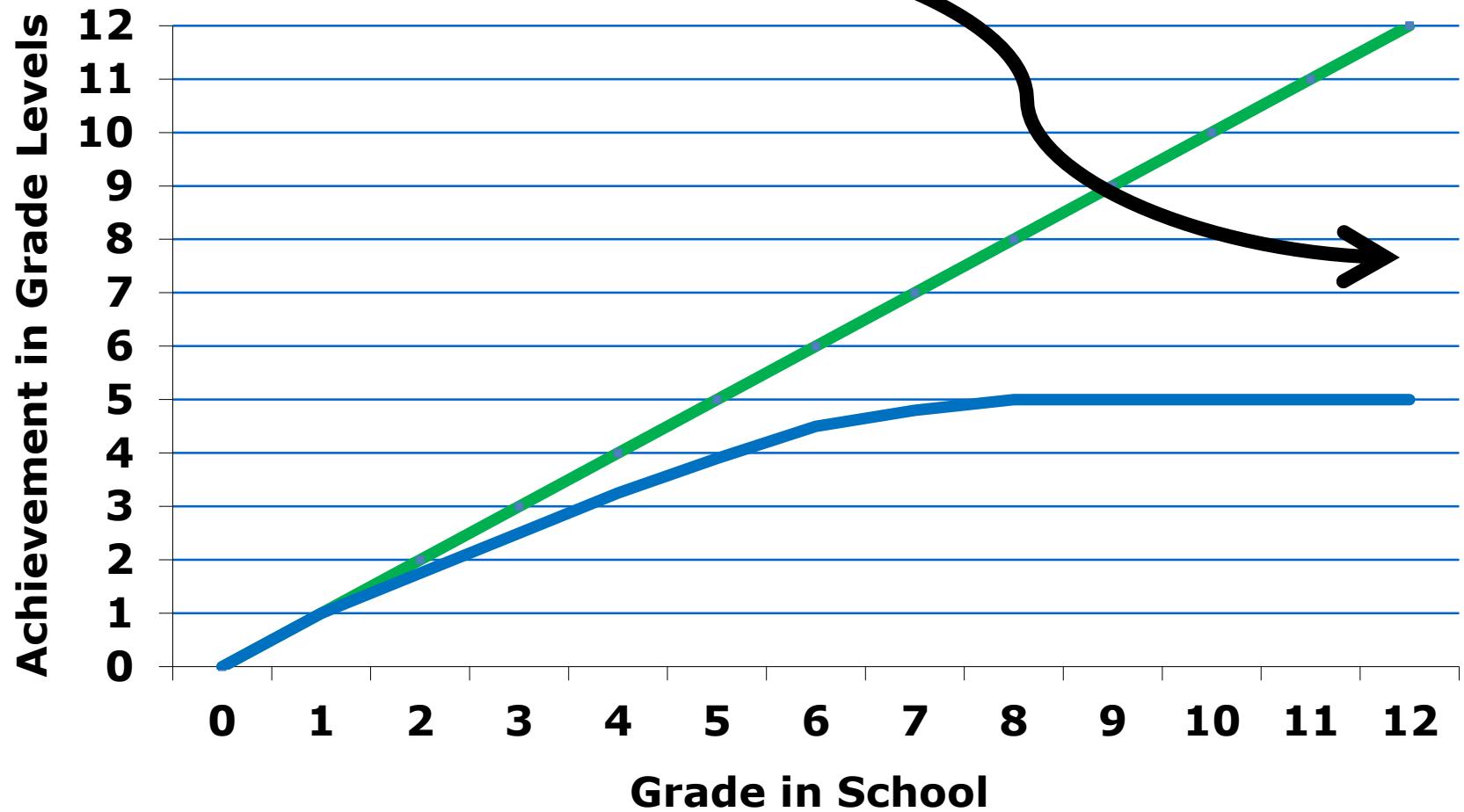
APPROPRIATE CHALLENGE



(Vygotaky, 1978)

(image from :www.education.vic.gov.au/studentlearning/teachingresources/english/literacy/litoverview.htm)

PERFORMANCE GAP



(Deshler et al., 2001)

OVERVIEW OF INSTRUCTION

Universal Design for Learning (broad learning principals)

Response to Intervention

Differentiated Instruction (instructional principals)

Evidence Based Interventions

Remediation

Compensatory

Cognitive

direct instruction

strategy
instruction

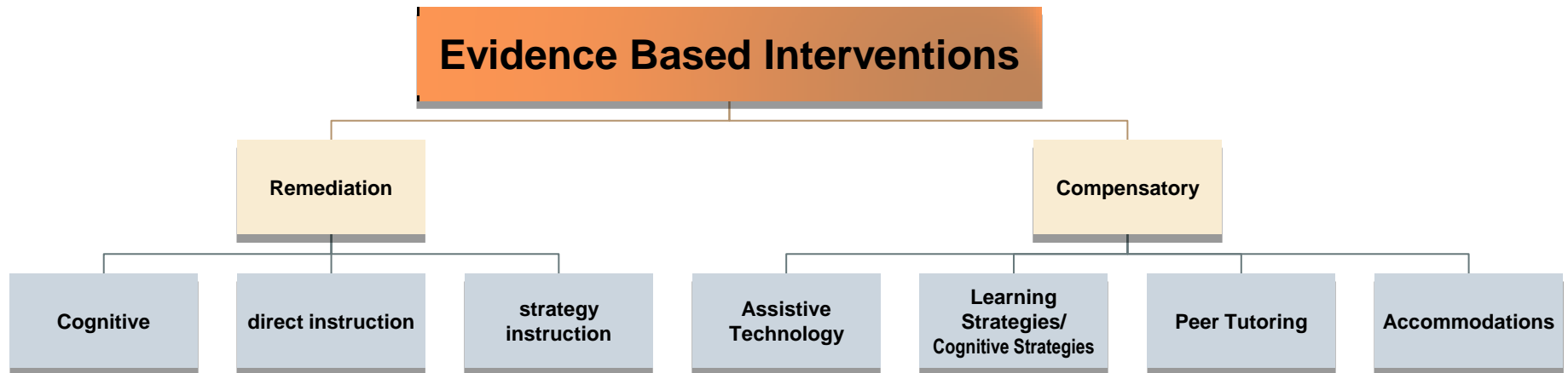
Assistive
Technology

Learning
Strategies/
Cognitive Strategies

Cooperative
Learning

Accommodations

DIFFERED ON THE APPROACHES TO SUPPORT STUDENTS WHO HAVE LEARNING DIFFICULTIES



ASSISTIVE TECHNOLOGY (AT)

Any technology (commercial, modified, or customized) that can assist, increase, maintain, or improve the functional capabilities of individuals with disabilities.


COGNITIVE PROSTHESIS

Technology replaces or
circumvents a skill that is absent
or impaired.

ASSISTIVE TECHNOLOGY WORK BOOK


New

Learn Different Understanding and supporting different ways of learning

Subscribe to RSS Feed 

Home Learning Disability (LD) Types of Assistive Technology

Home



Welcome to Dr. Todd Cunningham's online resource for Assistive Technology and academic support services for students. This website is based on the study and clinical work of Dr. Todd Cunningham C. Psych. (Supervised Practice) who is in the process of becoming registered as a Psychologist in Ontario (Canada). Dr. Cunningham works with children and adolescents in the area of clinical psychology.

Dr. Cunningham has empowered thousands of educators to optimize the use of assistive technology in their classrooms. His innovative research investigates the integration of assistive technology and learning strategies for children with learning disabilities.

enter keyword... **Go**

Assistive Technology

- What is Assistive Technology
- Assistive Technology Work Book
- Useful Links

Services

- Workshops / Presentations
- Consultation

www.learndifferent.ca

Password: atld

SETT FRAMEWORK

- S = Student
- E = Environment
- T = the Task
- T = the Tools

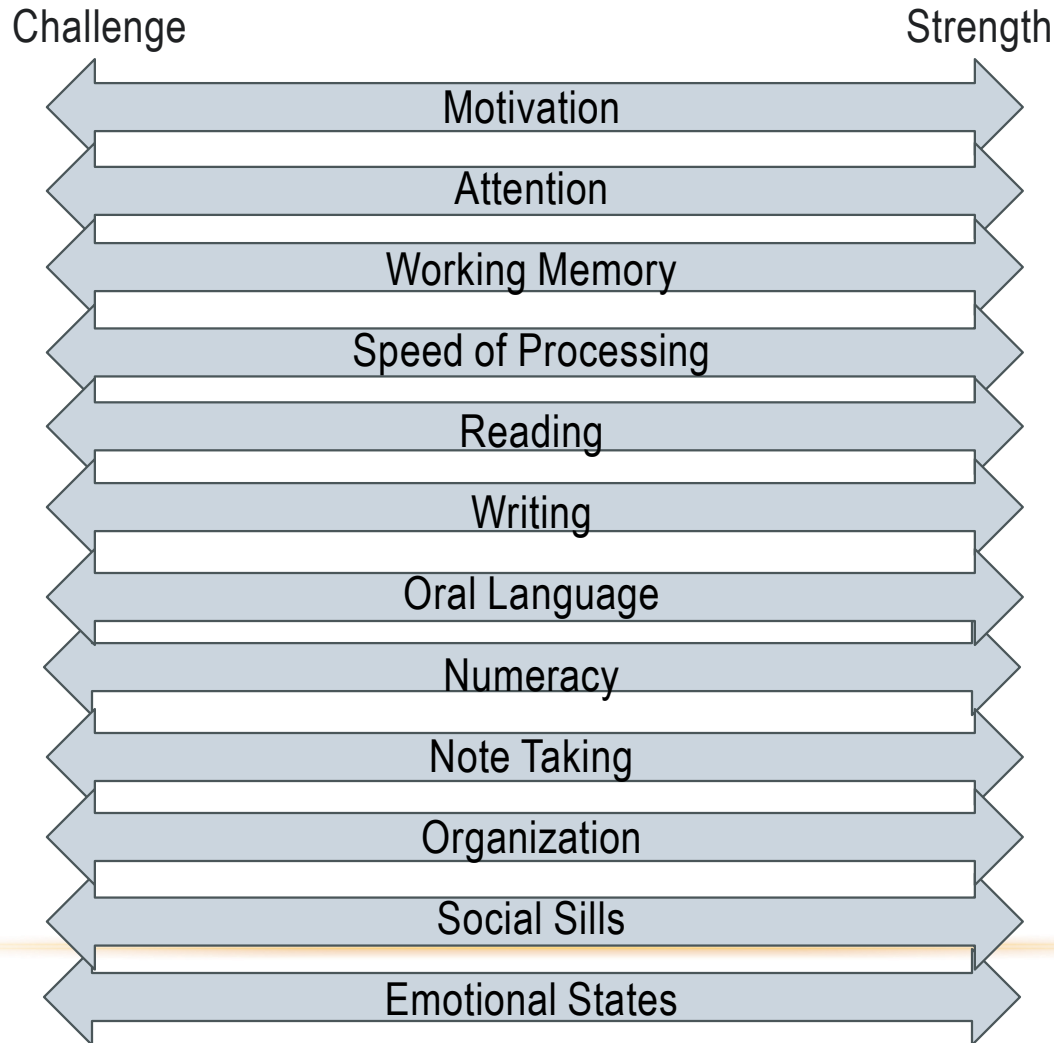


SETT FRAMEWORK

➡ The Student

- Questions
 - What does the student need to do?
 - What are the student's current abilities?
 - What are the student's special needs?
 - Can the student articulate what their strengths and weaknesses are?
- Steps
 - Know the meaning of the diagnostic statement from the assessment and report.
 - Can the student state what their strengths are and how they use them?
 - Can the student state what are their areas of weakness and what adaptations / accommodations work for them?

RESPONSE TO THE LEARNERS NEEDS – LEARNING PROFILES



SETT FRAMEWORK

➡ The Environment

- What are the instructional and physical arrangements?
- Are there special concerns?
- What materials and equipment are currently available in the environment?
- What supports are available to the student and the people working with the student on a daily basis?
- How are the attitudes and expectations of the people in the environment likely to affect the student's performance?

SETT FRAMEWORK

➡ The Task

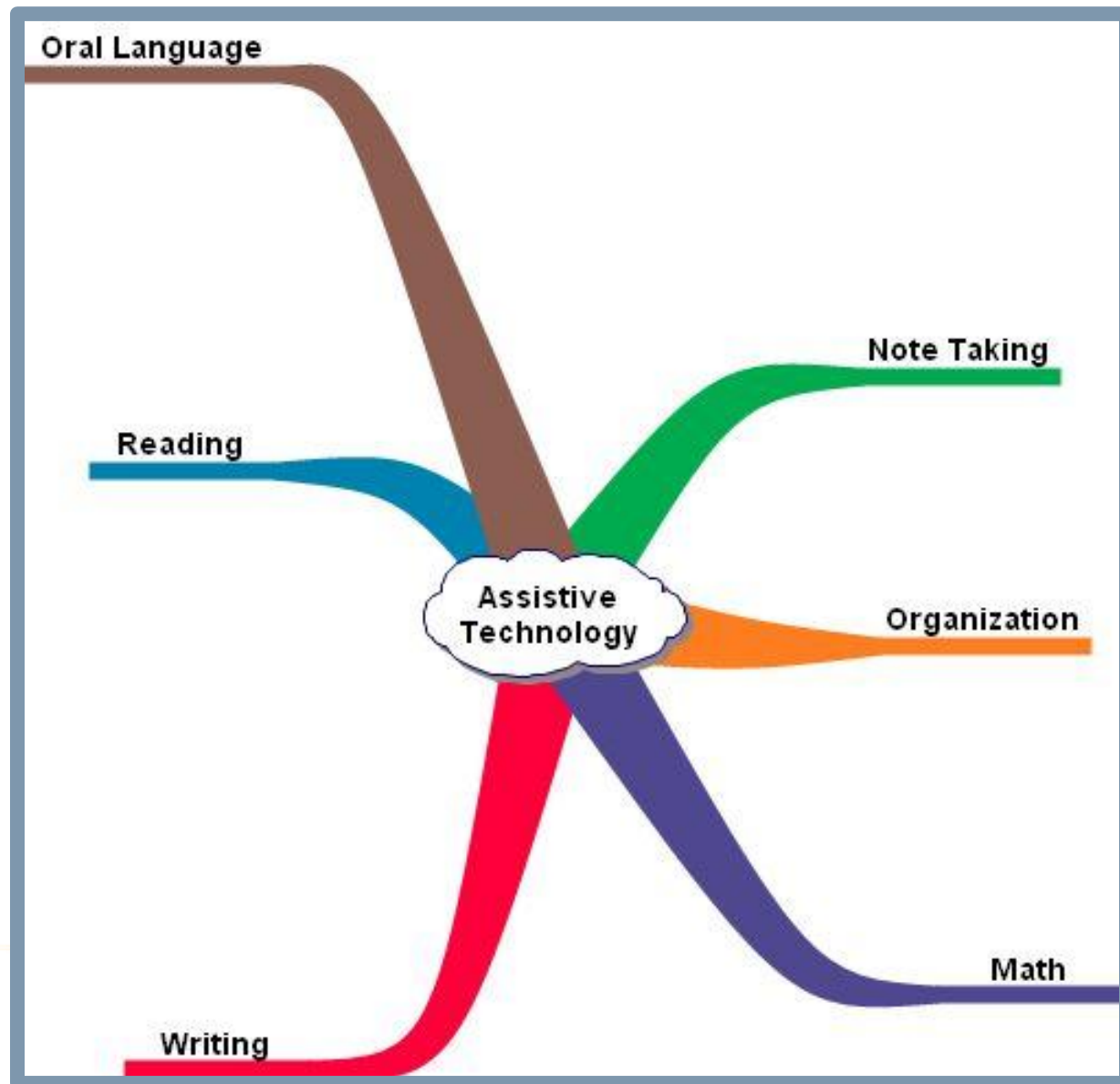
- What is everyone else doing in the classroom?
- What are the critical elements of the activities?
- Based on the students learning profile, what are the barriers that are preventing them from doing the activities?

SETT FRAMEWORK

The Tools

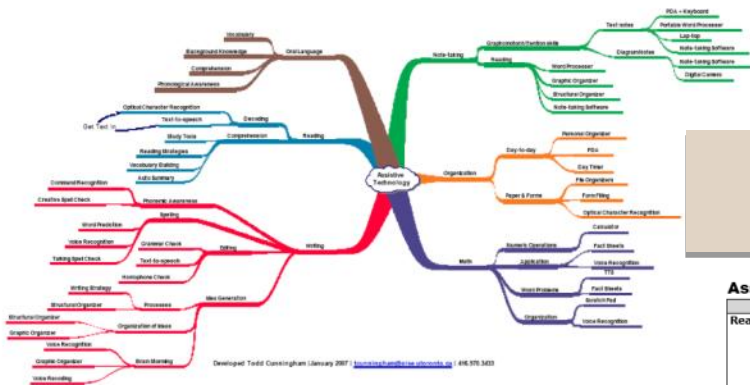
- Is a system of assistive technology tools and strategies required for a student with these needs and abilities to do these tasks in these environments?
- What no tech, low tech, and high tech options should be considered for inclusion in an assistive technology system for a student with these needs and abilities doing these tasks in these environments?
- How might the student's special needs be accommodated without changing the critical elements of the activities?
- Will modifications of the critical elements of the activities be necessary to promote the student's participation?
- What strategies might be used to increase student performance?
- How might the student try out the proposed system of tools in the environments which they will be used?

DOMAINS OF AT



USING THE AT CHART

AT Chart



AT Tools

Linking Assistive Technology to Students Strengths and Weaknesses
 Todd Cunningham | tcunningham@oise.utoronto.ca | 416.970.3433 | January 07

Assistive Technology Tools:

Area	Type	Description
Reading	Text-To-Speech (TTS)	Using synthetic speech, the computer reads text off of the computer screen. This may help students to overcome difficulties with decoding.
	Vocabulary Building	When a student does not know a word, they can look up the meaning of the word which will also have a picture of the concept associated with it. This is good for students who have limited receptive vocabulary.
	Optical Character Recognition (OCR)	Software that converts of an image file of typewritten text into machine-editable text file. OCR enables you to take a text book, scan it onto a computer, and the computer then recognizes the text and what is not.
	Study Tools	Tools that are used by a reader to become "Active Readers". An Active reader is a person who does not simply passively take in information but actively seeks out information to answer questions. Study tools Active Readers use are highlighting to find important passages, Sticky Notes, Text Notes, Recording Ideas through Voice.
Organization	Universal Reader	Universal reading software converts the mouse pointer into a reading tool. When the mouse stops over text, the software will automatically read the sentences or paragraph that the mouse is hovering over. This is great for quickly searching through a document trying to find an important point.
	Auto Summary	Identify main ideas or themes within a fiction or non-fiction passage. It may highlight the main ideas, put the main ideas in point-form, or create a summary of the ideas into a separate document.
Organization	Graphic Organizer	Pictorial or graphical ways to organize information and thoughts for understanding, remembering, and writing about.
	Personal Organizer	This software allows one to use calendar functions to plan the day. Add important appointments, alarms to remind you ahead of time. Look for programs that will synchronize with PDAs.

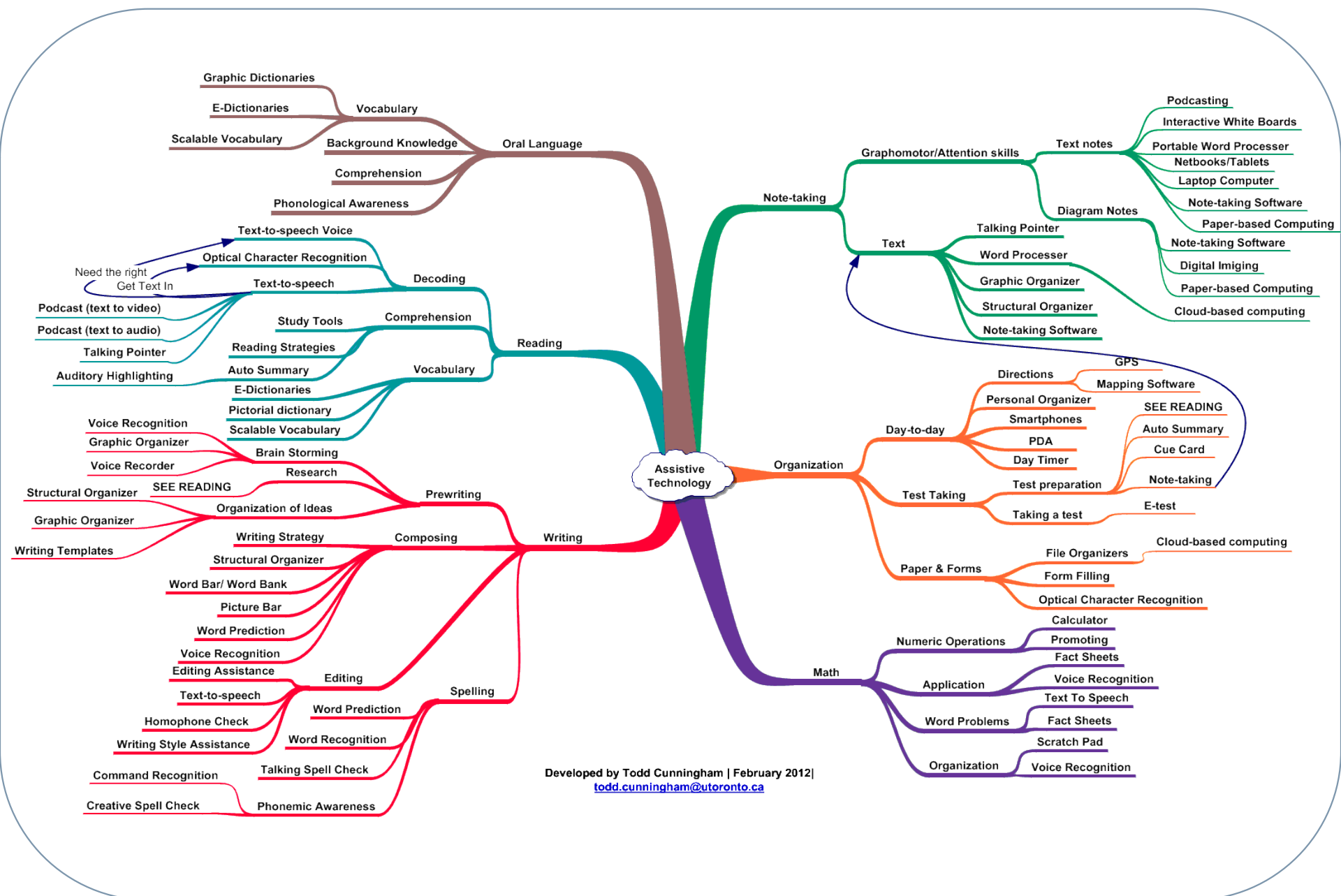
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AT Programs

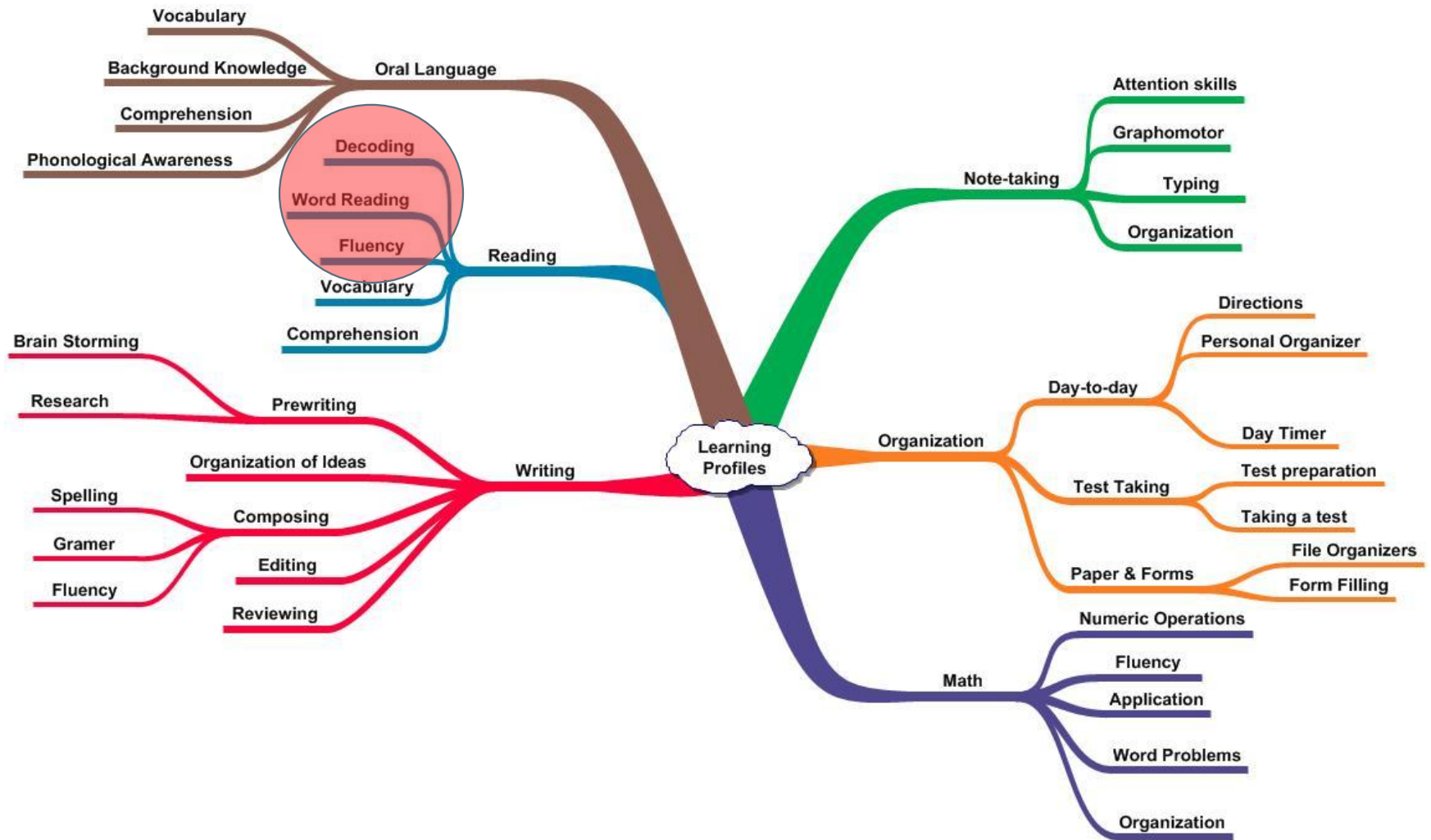
Assistive Technology – Programs

Name	Tools	Description	Price
Read Please www.readplease.com Phone: 866-727-8958	TTS	A Free Text-To-Speech Program that allows the user to cut and paste text into a reading window. Once the text has been inserted into the reading window the computer will read the text out loud.	Free
Kurzweil 3000 www.kurzweil3000.com Phone: 800-894-5374	OCR TTS TTA Dictionary Study Tools	Kurzweil 3000 is very easy to use and has a lot of neat features that many of its competitors do not have. Some of its features include a dictionary, synonyms, syllables and spelling tools which aid you when reading. You can use Kurzweil 3000 as a word processor and it comes with word prediction software.	\$700 - \$1400
Hewlett-Packard www.hp.com Epson www.epson.com	Scanners	Flatbed scanners come with many different options. Two options to consider 1) number of pages it can scan per minute, 2) automatic document feeder that can scan double sided pages. Also check out the Kurzweil scanner compatibility sight for more knowledge about good scanners at www.kurzweil3000.com/scanner_compatibility.asp	\$80 - \$660
DocPen www.docupen.com Phone: 1-888-507-3926	Portable Scanner	This product is a handheld scanner for entering text into your computer. The program also has a feature to read out loud the text which is scanned. Very useful when studying, to create study notes from a textbook. This technology is still up and coming.	\$299
Key To Access Premier Assistive Technology www.premier-programming.com	TTS Dictionary Study Tools	Premier Assistive allows an individual to buy just the tools that they are looking for. This prevents one from buying one program that has more than they would like. The KEY TO ACCESS by Premier is a portable assistive technology device that is worth looking at. Premier Assistive has a lower price point on their products.	\$375 US

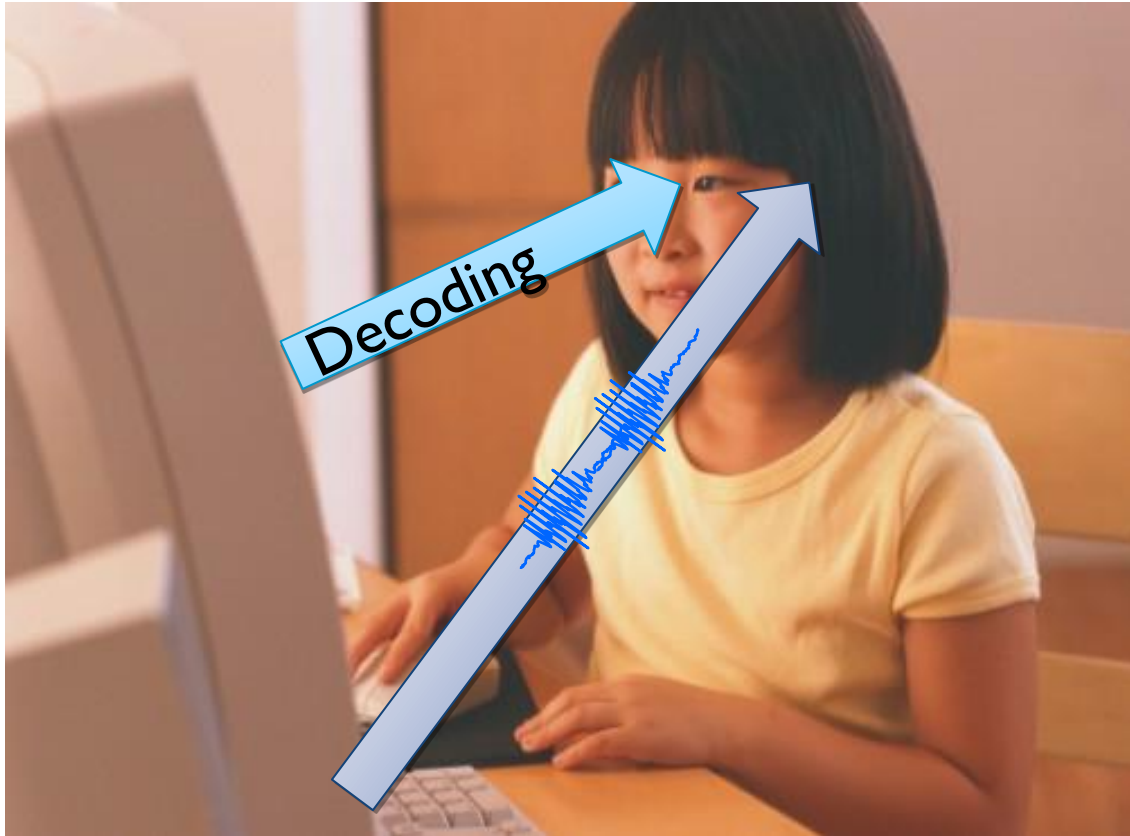
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LEARNING PROFILE - ACADEMIC SKILL



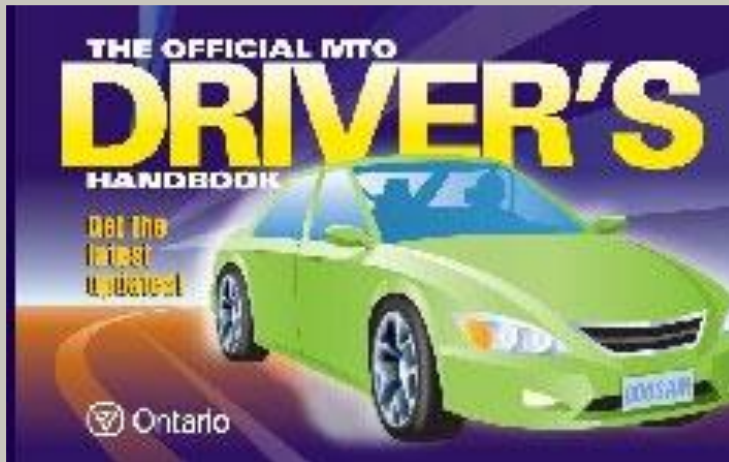
Text-To-Speech (TTS)



- TTS is thought to circumvent the need to decode words by presenting them auditorally. Research to date has shown inconsistent findings of the effectiveness of TTS with regards to passage comprehension (Strangman & Dalton, 2006)

E-Text Services in Ontario

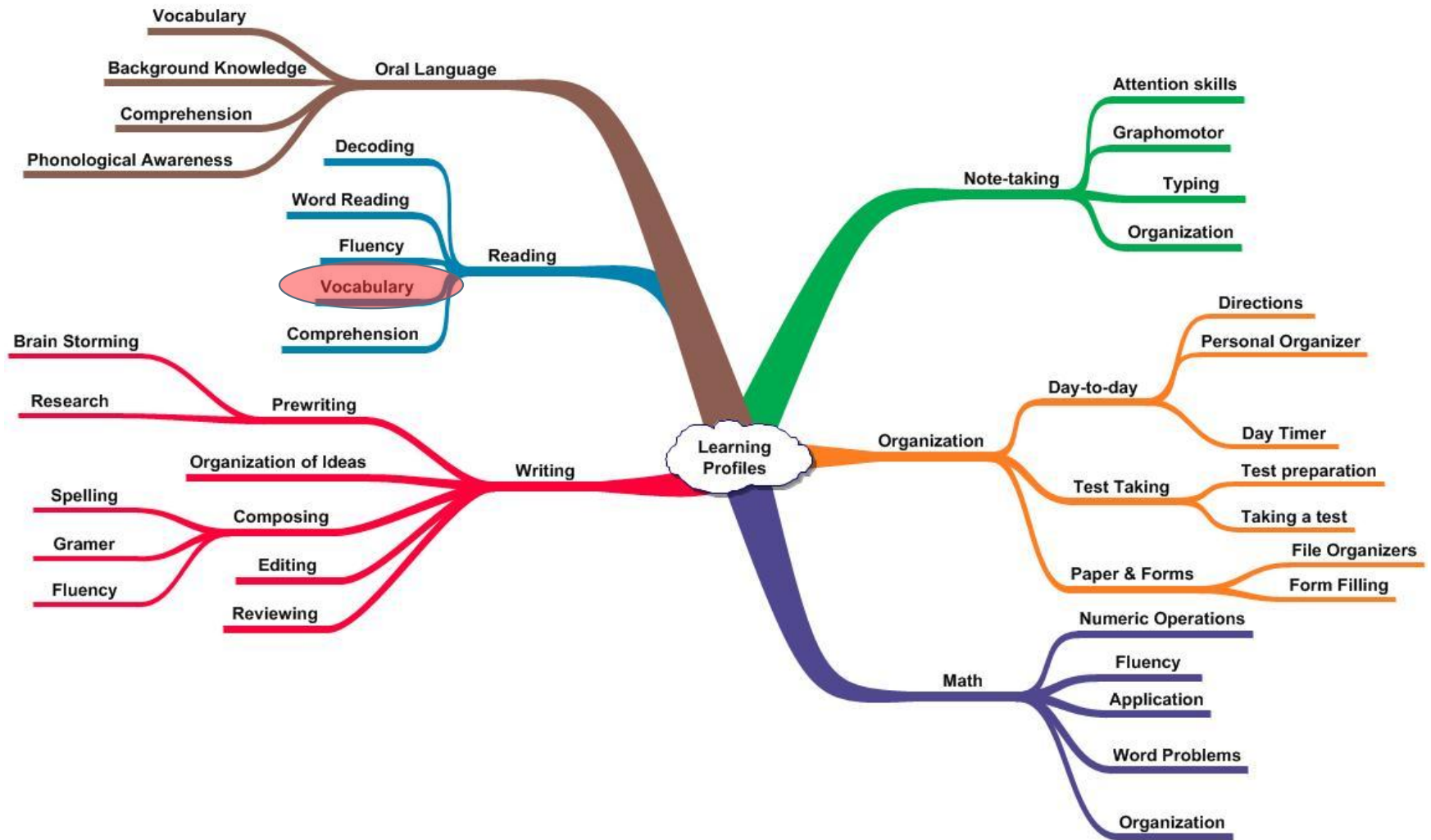
- W. Ross Macdonald School Resource Library
- www.psbnet.ca/webs/wrm/index.htm
- (519) 759-0730



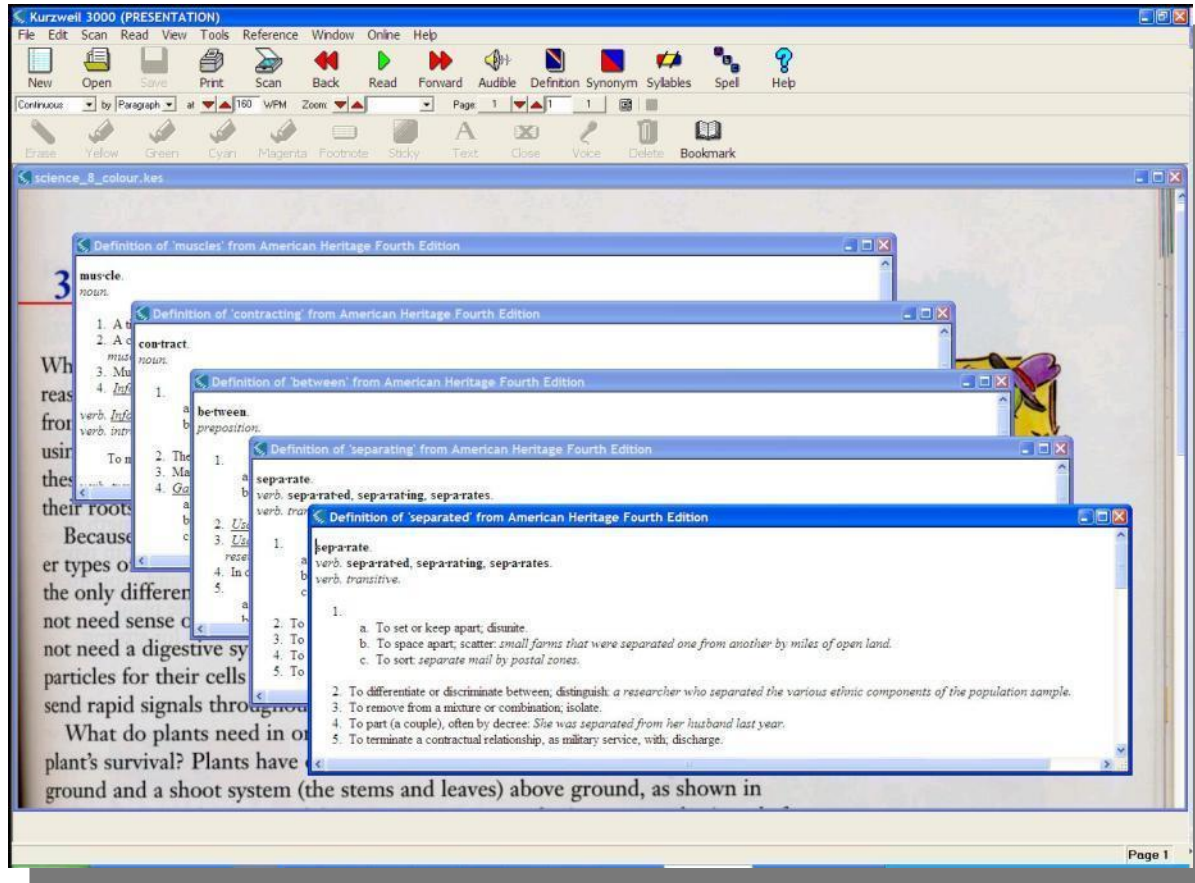
TRENDS IN AT OVER THE PAST 3 YEARS



LEARNING PROFILE - ACADEMIC SKILL



Not all e-dictionaries are effective

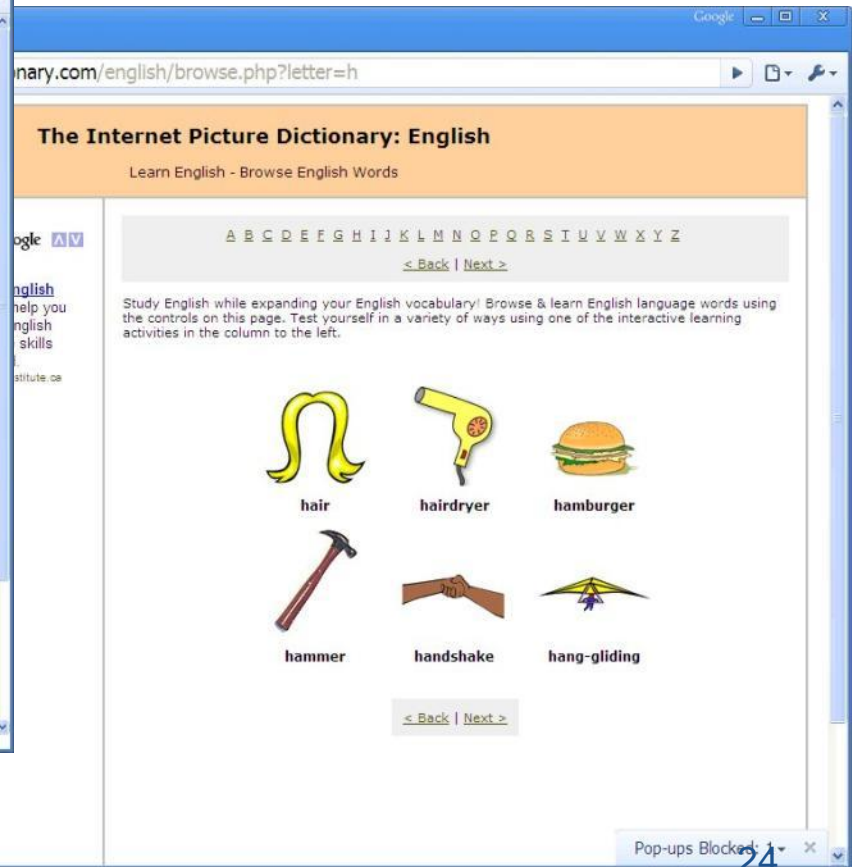
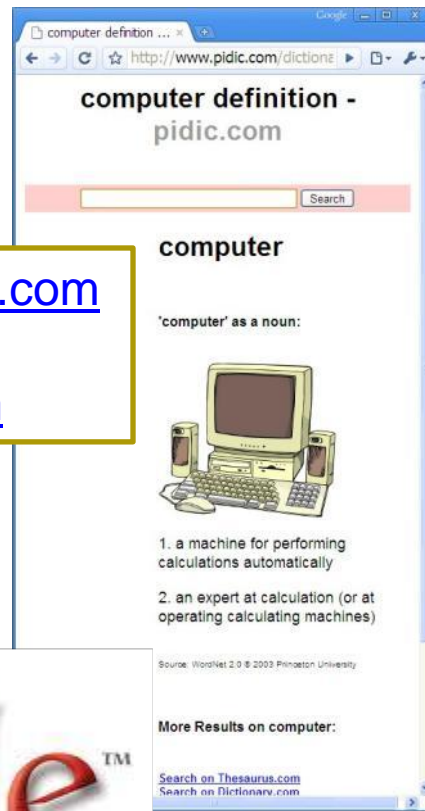


Circular definition effect: when a student has low oral vocabulary and uses in a dictionary it has been observed that after selecting a word that needs to be defined, they will select a word within the definition to be defined, and a word within that definition to be defined. At the end, the student has does not know the meaning of any of the words they have selected.

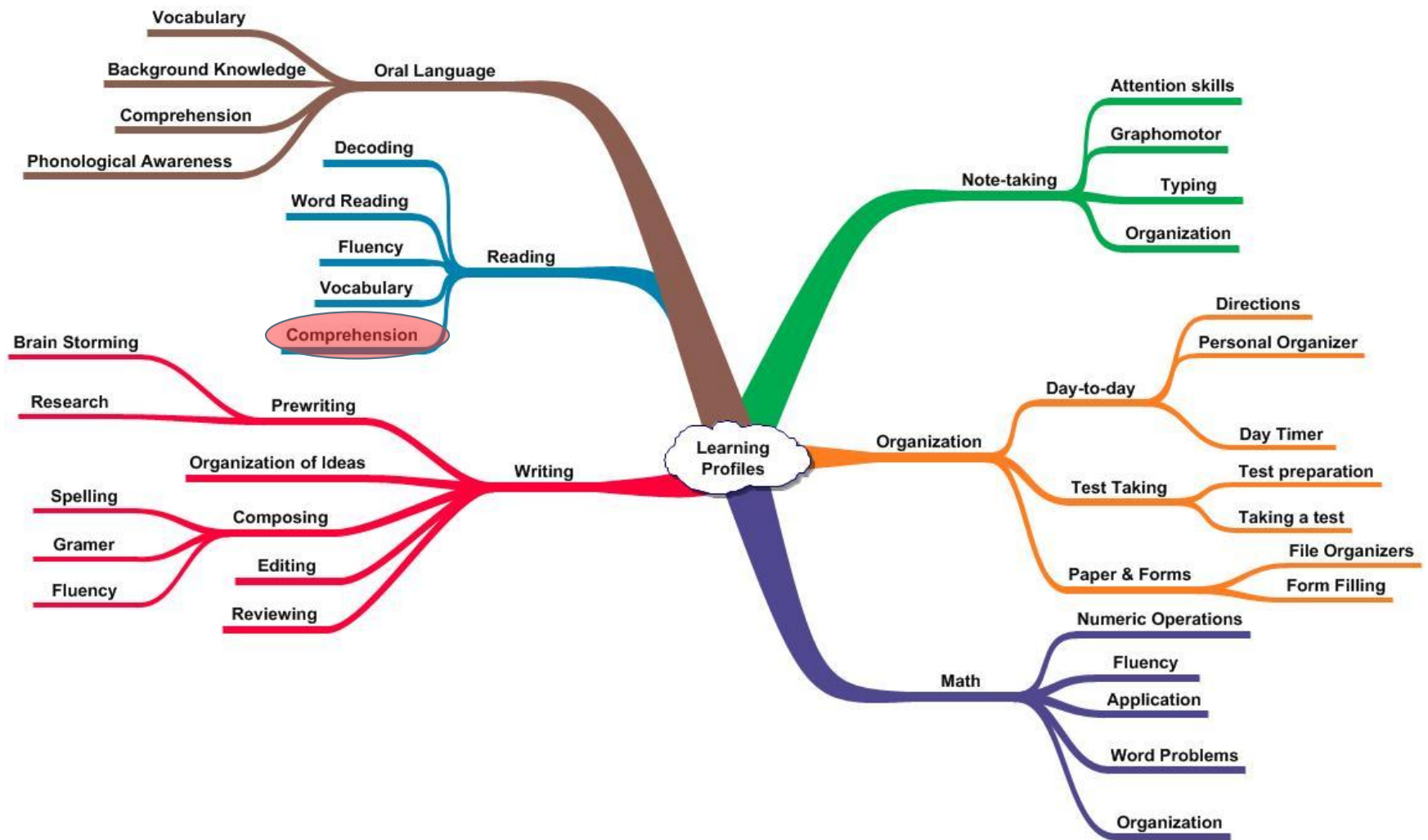
Online Picture Dictionaries

Picture dictionaries may be more suited to students who have low level of vocabulary within the new language their learning.

Example from: www.pidic.com
&
www.pdictionary.com



LEARNING PROFILE - ACADEMIC SKILL



Study Tools

- E-Highlighters
- E-Posted Note
- E-Notes or sketch pads
- Voice summarization



Notes Everywhere

SQ3R - Mission

Survey



See how many pages to read
and look at pictures



YELLOW Highlight ALL titles

GREEN Highlight all Bold words

Question



Create a Stick Note at top of paper
asking a question about the article

Read



Read

Self-paced

by

Paragraph

at

140

WPM



Cyan

Magenta

BLUE Highlights main ideas

PURPLE Highlights supporting ideas

Recorded

Answer the question when you hear the
answer

Rehearse



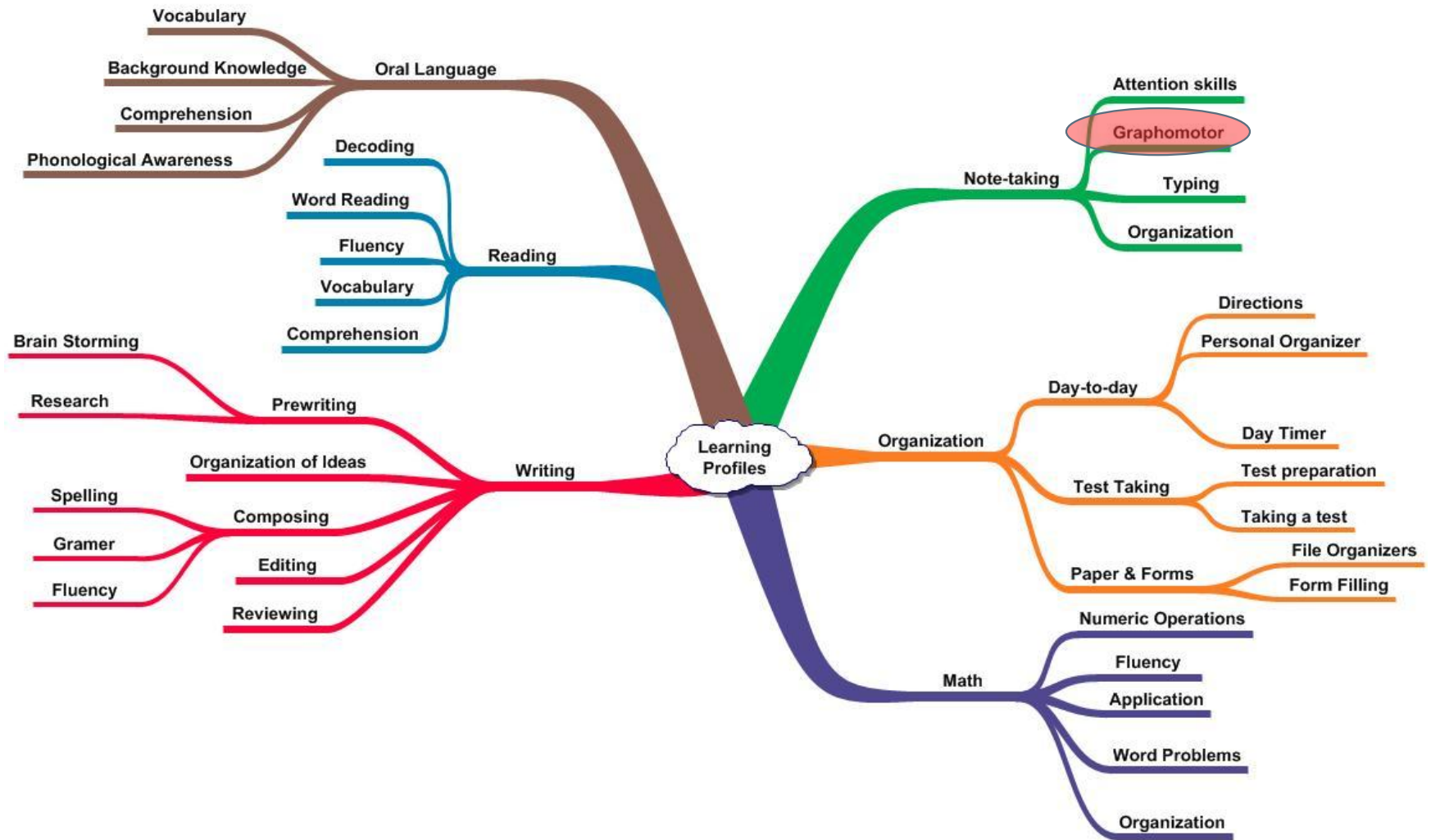
Voice

Sum up main points with voice note

Highlights

Extract highlighted notes

LEARNING PROFILE - ACADEMIC SKILL



Netbook



Example Hardware

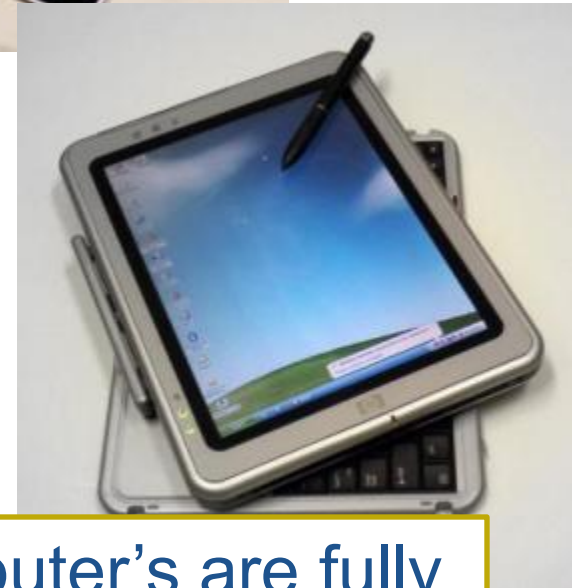
- ASUS
- Dell
- Acer
- HP
- Sony
- Lenovo

“Relatively new category of small, light, minimalist and cheap laptops”(Walt Mossberg). They are designed to meet 90% of our daily computing needs and are able to run all assistive technology. \$300 to \$600

Tablets

Example Hardware

- Lenovo
- Apple
- Dell
- HP
- Sony
- AND MANY MORE



Tablet PC's (hybrids) and Tablet Computer's are fully functional computers with a touch screen, which allows input from a stylus, digital pen, or fingertips.

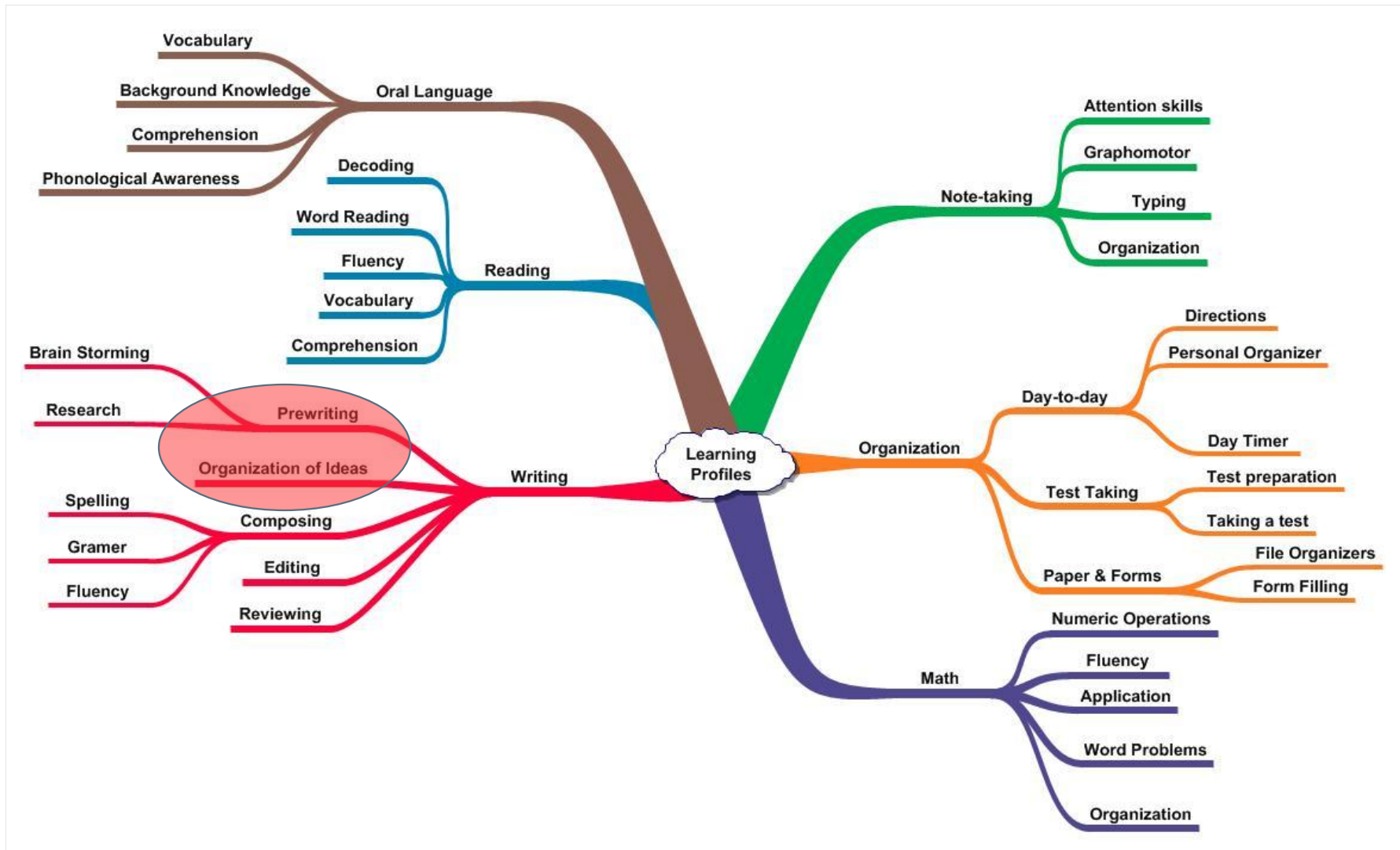
Typing or Keyboarding Skills

- Start teaching between SK and 2nd grade (Rogers, 2006)
- Students that keyboarded at home improved keyboarding skills at a significantly faster rate than school based instruction alone (Pisha, 1993)
- Move from looking to feeling around 18-23 wpm (NBEA, 2006)
- In a two year follow up study, only students that previously obtained 20wpm maintained or increased their typing speed (Ertl, 2007)

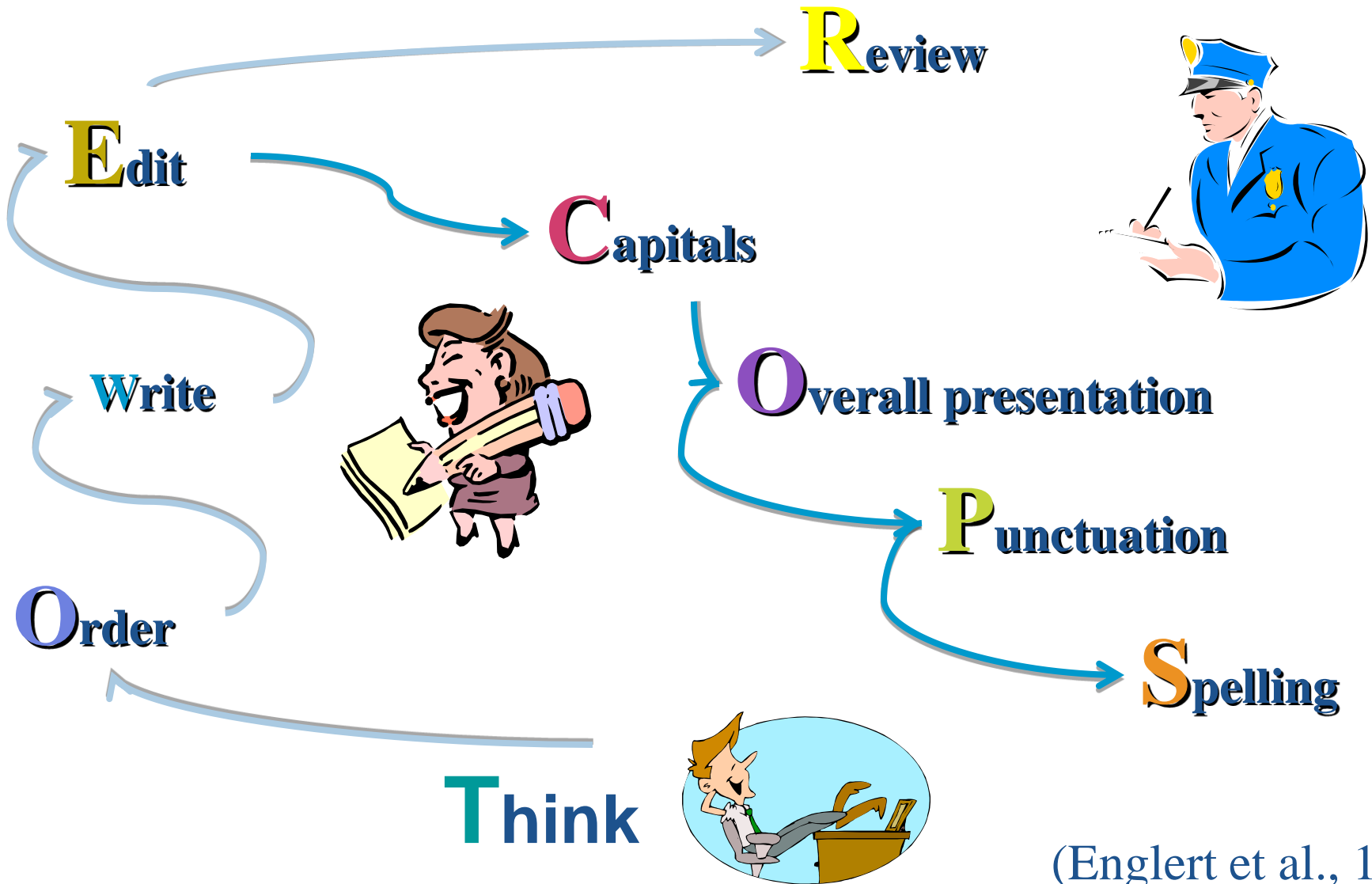
15 minutes a day for 2 years is what it takes to get a student to 32wpm.



LEARNING PROFILE - ACADEMIC SKILL



Two Writing Strategies (TOWER + COPS)

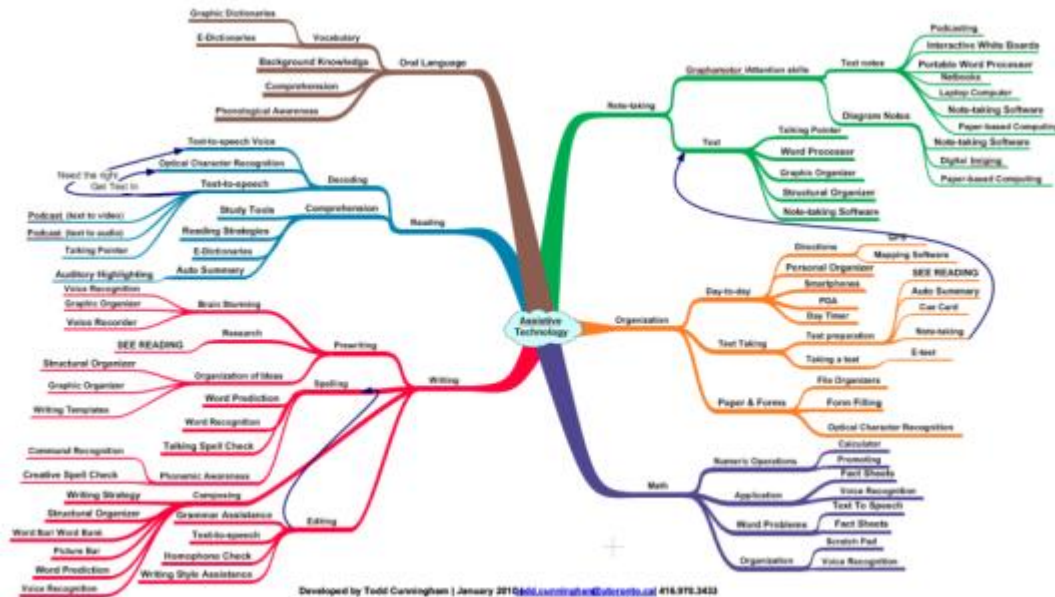


(Englert et al., 1991)

Graphic Organizer

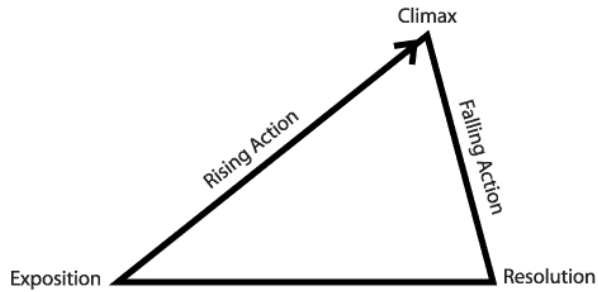
Example Software

- Inspiration
- Kidspiration
- SmartIdeas
- MindJet

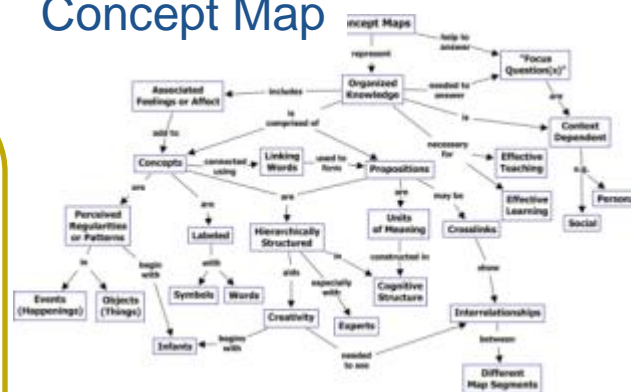


A graphic organizer allows for the visual representation of knowledge, concepts, or ideas. They help with learning, planning, and organizing information. Features of the software support brainstorming, planning, organizing, outlining, pre-writing, diagramming, concept mapping, webbing, and more.

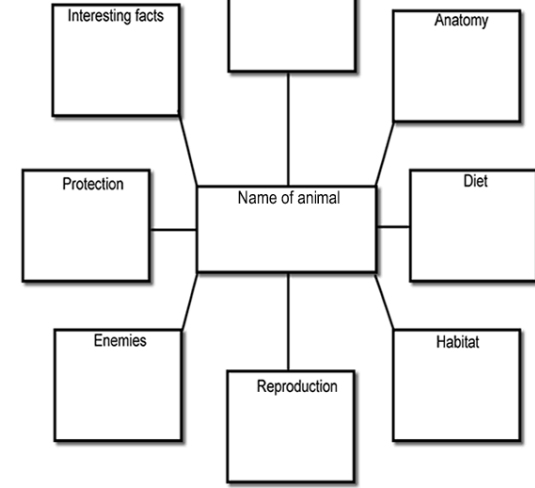
Narrative Structure



Concept Map

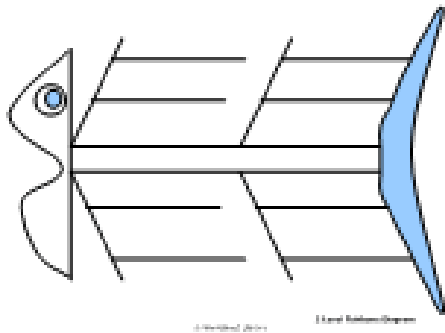


Web

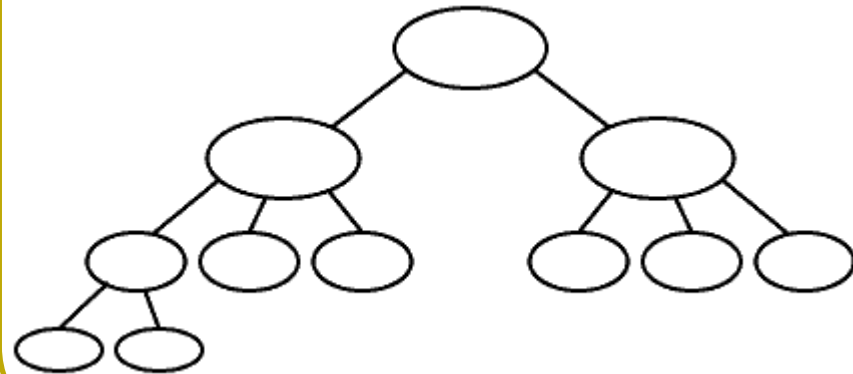


Graphic Organizers

Fishbone



Network Tree



Structural Organizers



Example Software

- Draft:Builder
- MS Word
- Inspiration
- SmartIdeas

Breaks down the writing process into steps. Helps with brainstorming, organizing notes, and laying out the first draft. Many programs come with templates to help students start organizing their ideas.

Templates

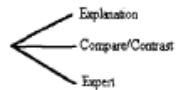
P O W E R

PLAN

AUDIENCE :What ?
PURPOSE :Why ?
BACKGROUND KNOWLEDGE :What do I Know

ORGANIZE

CATEGORIZE IDEAS : How can I group my ideas ?
ORDER IDEAS: :How can I order my ideas ?



Write

TRANSLATION: Extend, Elaborate, Fleshout

Edit/Editor

MONITOR: Does everything make sense ?
Did I achieve my plans ?
Is it interesting ?

Revise

Fix up my text

Plan Think-Sheet

Name: _____

Date: _____

Topic: _____

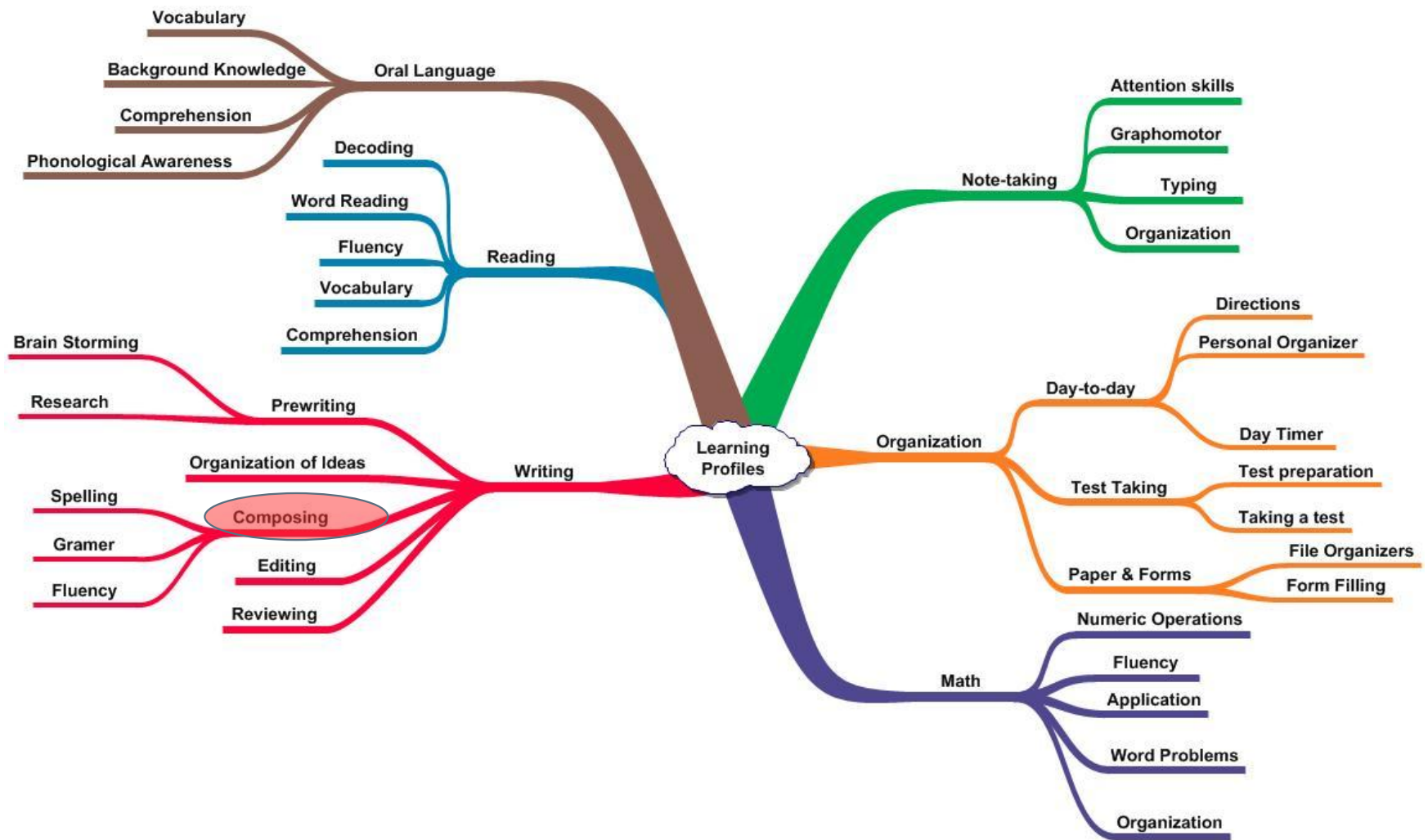
WHO: Who am I writing for ?

WHAT: What do I know ? (Brainstorm)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

HOW: How can I group my ideas ?

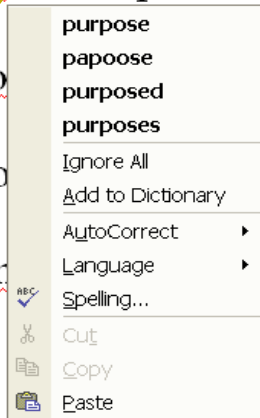
LEARNING PROFILE - ACADEMIC SKILL



Spell Check

Microsoft Spell-check

The pupose of the present study is to look the effects of different scedulas of renfosment and extintio frequency of a operanted. The sduy will move throught a shapeing procedure of g a bar. The sedualtes that will be examined are countones reinforment nated renfosment



Speech Recognition or Voice-to-text

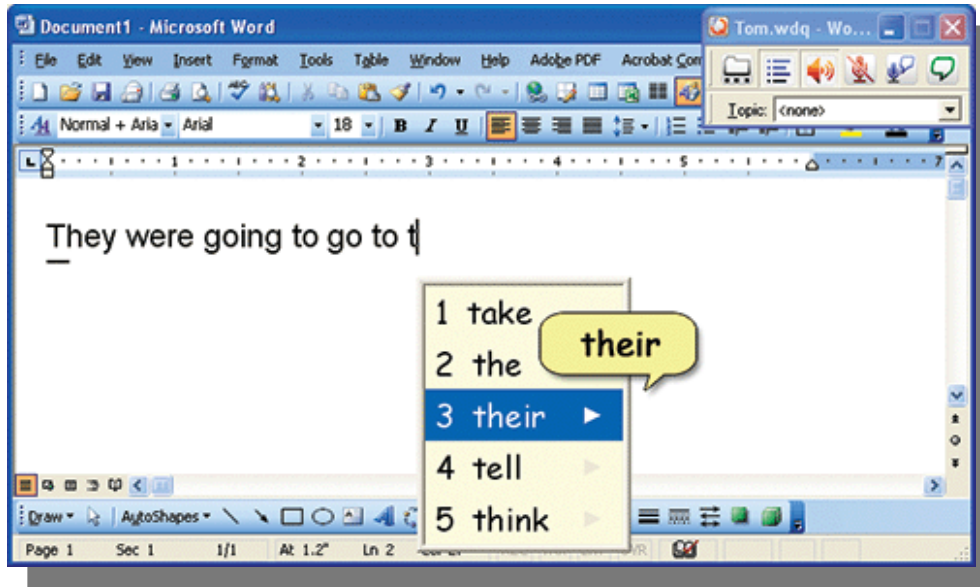


Example Software

- Dragon NaturallySpeaking
- MacSpeech
- SpeakQ
- VoxForge

Converts spoken words into text. User can also speak commands. This can help overcome difficulties with spelling. Can allow a person to dictate up to 180wpm. New versions only take 5 minutes to train.

Word Prediction

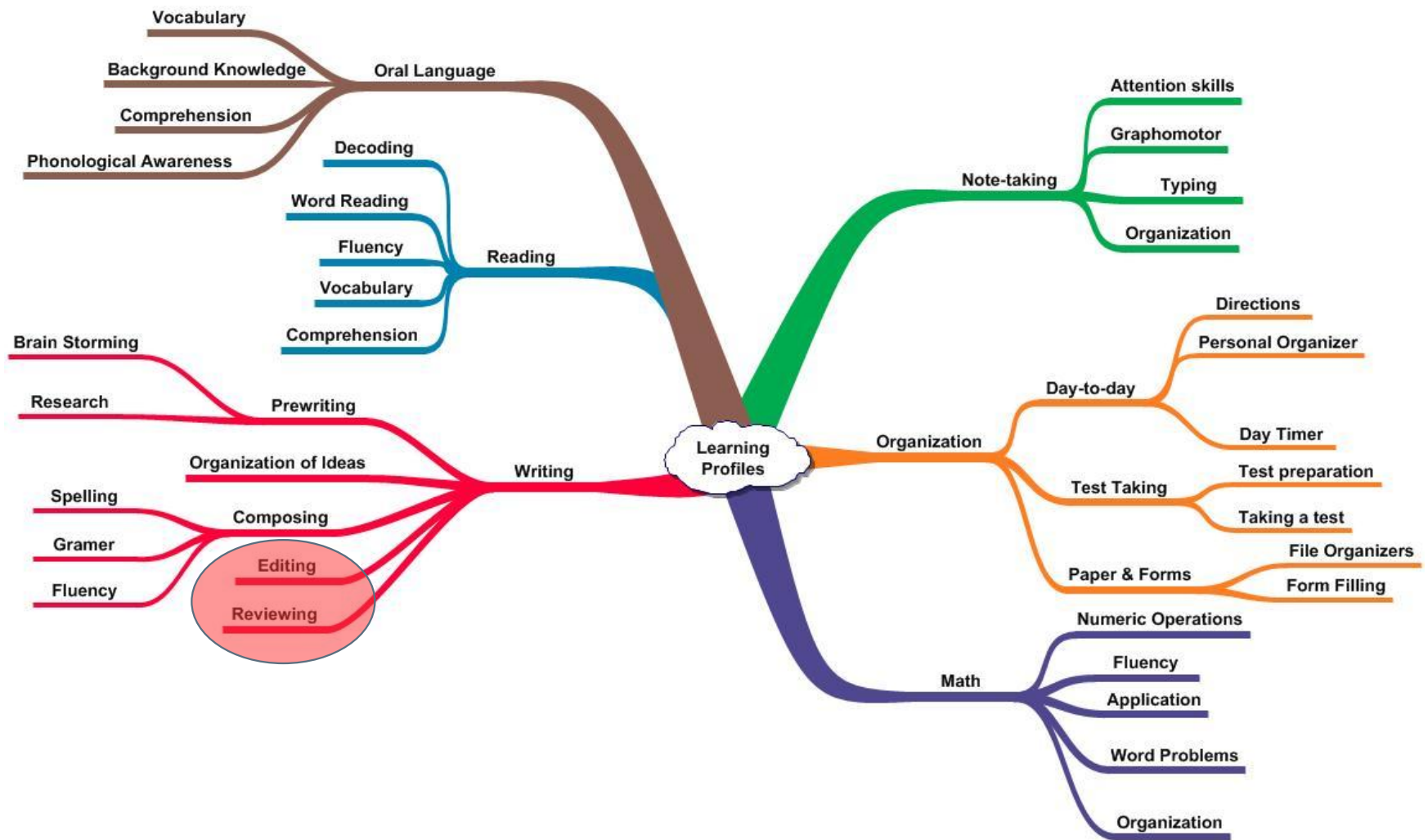


Example Software

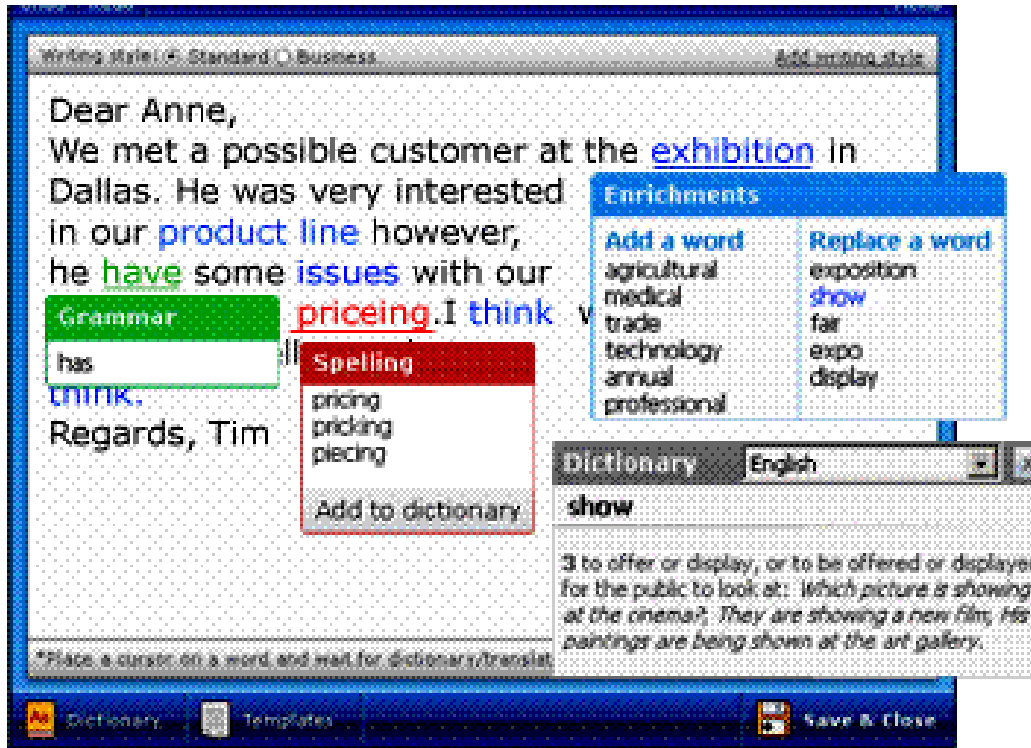
- WordQ
- Premier Prediction Pro
- Read & Write
- CO:Writer

- As the student types, word prediction tries to guess what word they are trying to spell and provides 1 to 9 suggested words.
- Allows students to be more independent with their writing as they can find the spelling of the words themselves.
- Shown to increase the quantity and quality of writing, as well improve spelling. (MacArthur, Ferretti, Okolo, & Cavalier, 2001)

LEARNING PROFILE - ACADEMIC SKILL



Grammar Assistance

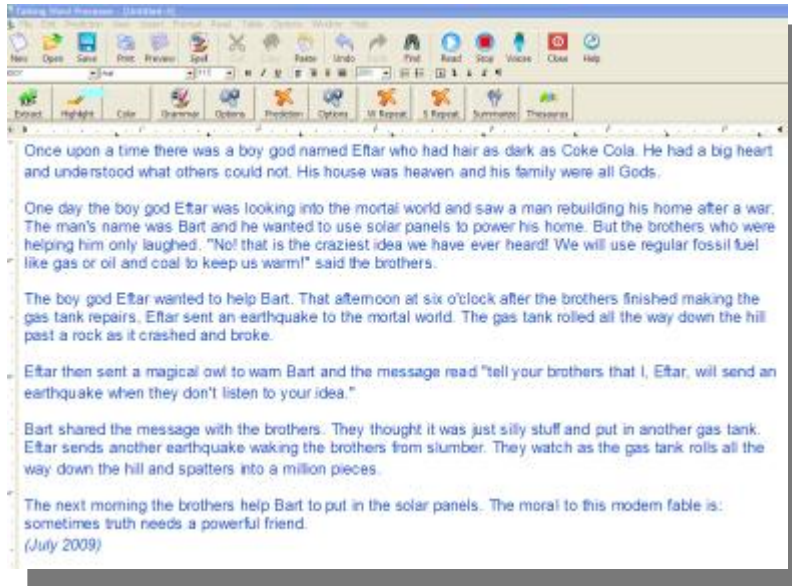


Example Software

- White Smoke 2010
- Ginger: The Write Solution
- GotIT

Identifies when grammatical rules have been violated and provides suggestions. Many combine a spell check. Some programs allow for tailoring of the type of grammar to be focused on.

Text-to-speech and editing



Example Software

- Talking Word Processor
- WordQ
- Natural Reader
- Most TTS Programs
- MS Word 95 to 2003

- Have a computer read aloud written work to increase independence with editing.
- Use of TTS with Spelling Checkers can increase the accuracy of words selected.

All Students Learn

Feel Safe

+ Motivated

+ KNOW THEIR STRENGTHS

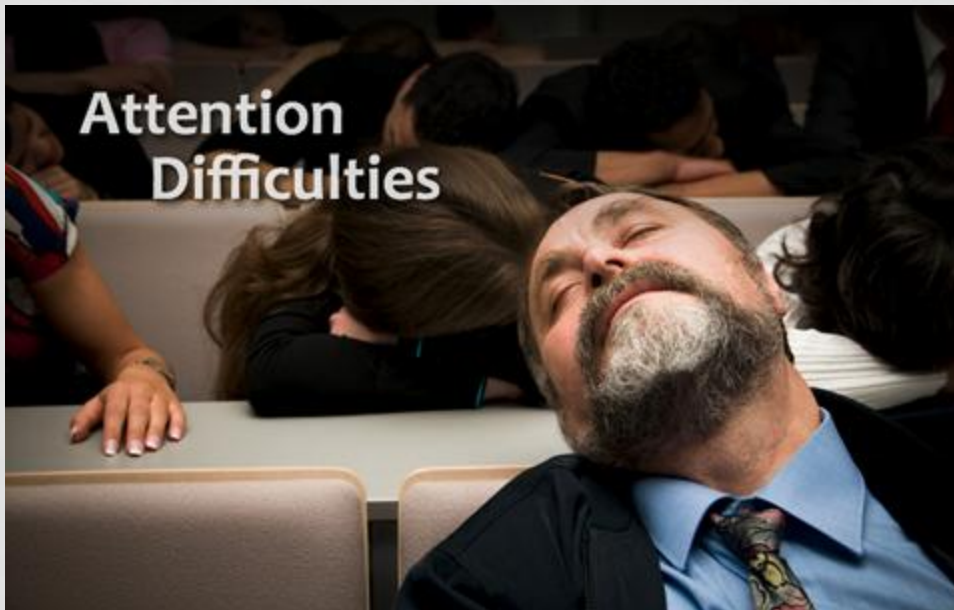
+ Compensatory & Remediation

+ Support Network

= Their *GOALS*



TIME FOR ME TO STOP!



Attention
Difficulties

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ANY QUESTIONS?