BROADEN YOUR STUDENTS' EDUCATIONAL HORIZONS THROUGH ASSISTIVE TECHNOLOGIES

TechKnowledgy
Keynote by:
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Educational & Assistive Technology Consultant
www.kellyfonner.com

"We must open the doors of opportunity. But we must also equip our people to walk through those doors."

President Lyndon Johnson

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UNIVERSAL DESIGN FOR LEARNING

- **The ultimate goal of UDL is to appropriately challenge & effectively engage the full range of students.**

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(www.design.ncsu.edu/cud/univ_design/ud.htm)

KEY PRINCIPLES OF UDL

- To support recognition learning, provide multiple, flexible methods of representation
- To support strategic learning, provide multiple, flexible methods of action & expression
- To support affective learning provide multiple, flexible options for engagement

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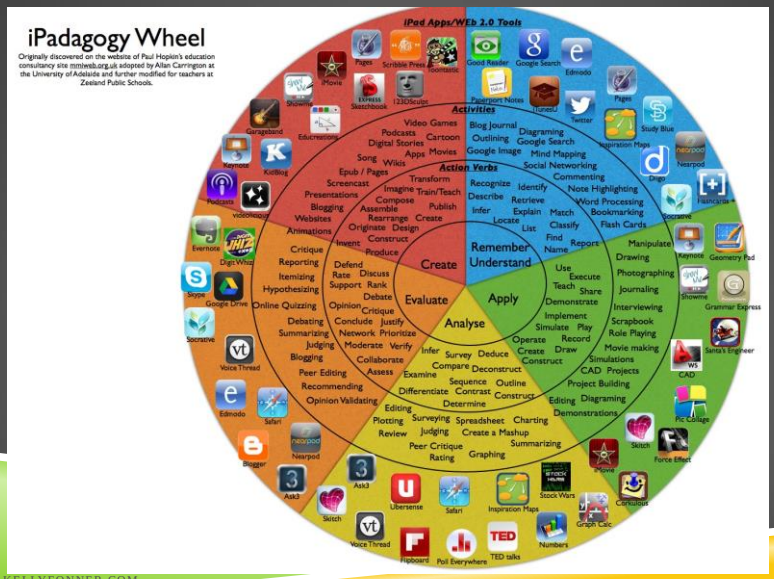
(from Van Garderen & Whittaker)

IPADAGOGY WHEEL



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CURRICULUM IMPACTS ON ASSISTIVE TECHNOLOGY DECISIONS FOR STUDENTS

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TASKS/FUNCTIONS IN SCHOOL

- Reading
- Writing
- Drawing
- Note-taking
- Organizing
  - Time
  - Materials
- Computing
- Problem Solving
- Manipulating materials
- Social Participation
- Speaking
- Presenting
  - In class
  - School wide productions
- Listening
- Comprehension of Curriculum Content

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BASIC SKILLS TO LEARN ACROSS ALL SUBJECTS BY STUDENTS WITH SEVERE DISABILITIES

- Attend to teacher
- Follow directions
- Get out materials
- Put materials away
- Use materials appropriately
- Request attention
- Respond to questions & comments
- Socially interact with classmates
- Attend to a task
- Decision making
- Problem solving

Downing

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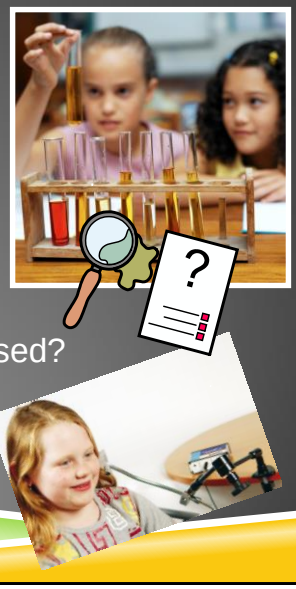
Calculator

PREPARING SUPPORTS

- Let the curriculum be your guide.
- What will the class be doing?
  - Materials
  - Homework
  - Tests
  - Projects
- How can the student participate?
- Which IEP objectives can be addressed?
- What support(s) is needed?



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"Watch for big problems. They disguise big opportunities."

H. Jackson Brown

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The Single Biggest, Most Significant Barrier To Learning Is The Fixed Medium Of Presentation

http://www.cast.org/udl

FIXED MEDIUM EXAMPLES

- Printed materials
- Uncaptioned video & audio that is fixed in their presentation
- Images & Posters that lack descriptions
- Apps & software that is fixed in its presentation

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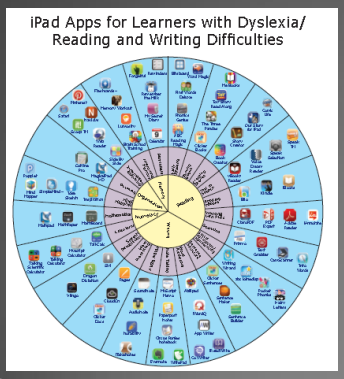
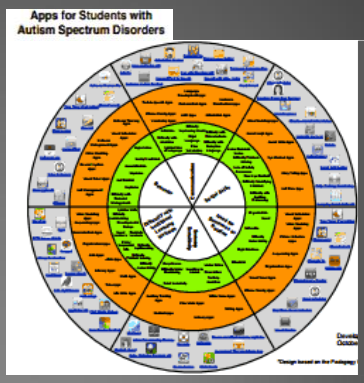
ASSISTIVE TECHNOLOGIES AS A MEANS OF A STUDENT'S INDEPENDENT FUNCTIONING IN THE CURRICULUM





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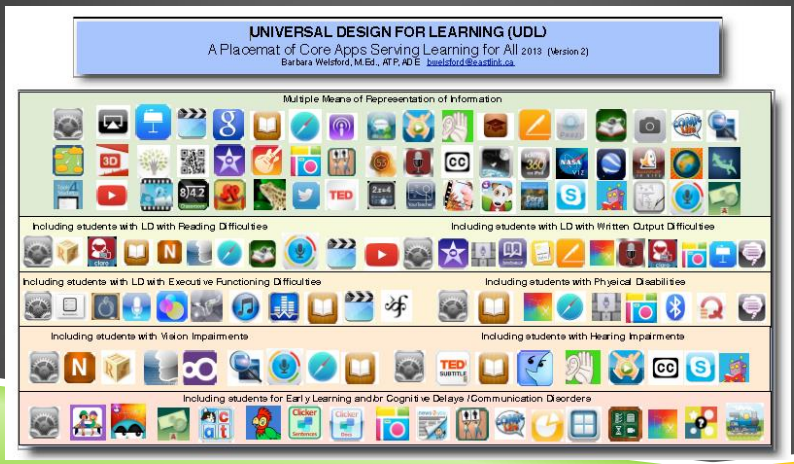
ASSISTIVE TECHNOLOGIES AS A MEANS OF A STUDENT'S INDEPENDENT FUNCTIONING IN THE CURRICULUM



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SPECIALLY DESIGNED SUPPORTS/INSTRUCTION

- Material modifications
- Presentation modifications
- Instructional modifications
- Management modifications
- Content modifications
- Grouping modifications
- Physical & environmental modifications
- Assessment modifications

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INTEGRATING ASSISTIVE TECHNOLOGY: PUTTING TASKS & TOOLS TOGETHER

- Language Arts
- Math
- Social Studies
- Science
- Physical Education
- The Arts

WHAT ARE THE TASKS?

Language Arts & English

- Independent Reading
- Phonics/Decoding
- Sight Word Recognition
- Vocabulary Building
- Reading Comprehension
- Handwriting
- Writing Composition
- Manipulating Books

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TYPES OF ASSISTIVE TECHNOLOGY TOOLS FOR READING

- Color Filters
- Highlighting
- Reading Guides
- Text to Symbol Processors
- Electronic Books
- Text Scanning & Readers/EReader Apps
- Talking Word Processors/Apps
- Spell Checkers
- Low Tech Communication Devices
- Digital Recorders

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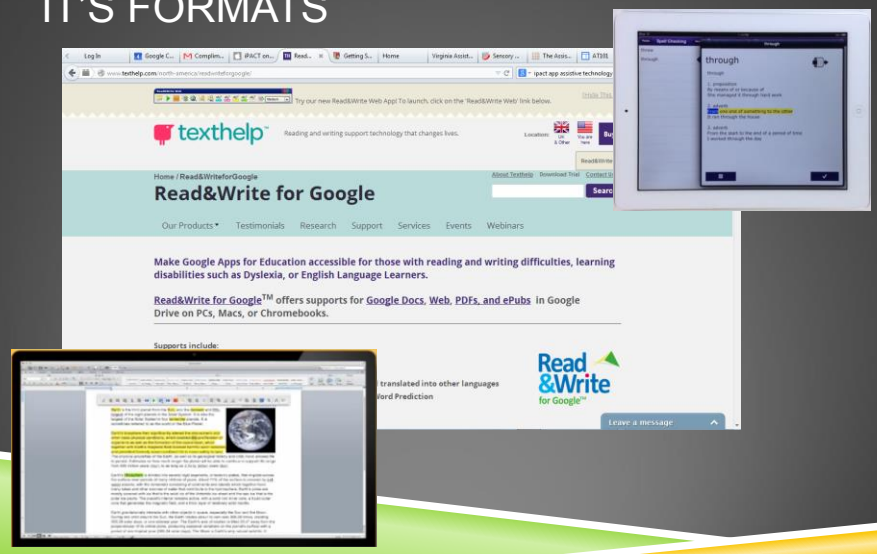
STAYING ON-TOP OF GOOGLE IN ALL IT'S FORMATS



http://www.texthelp.com/North-America

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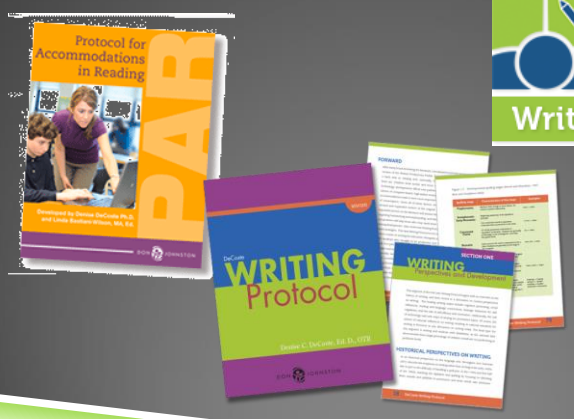
RESEARCH TO SUPPORT PRODUCTS AND ASSESSMENT



First Author®
Writing Software

http://www.donjohnston.com

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TYPES OF ASSISTIVE TECHNOLOGY TOOLS FOR WRITING

- Supports for Handwriting
- Portable Word Processors/Tablets/iPads
- Talking Word Processors/Apps
- Dictation/Voice Recognition
- Word Prediction
- Outliners/Graphic Mapping
- OnScreen Keyboards with Words or Pictures that produce Text
- Spelling Checkers
- Grammar Support
- Multi-media Software/Apps

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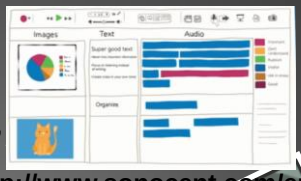
NOTE-TAKING IN ALL SUBJECTS



http://www.sonocent.com/en/us

Lo Tech

- Writing from Outlines
- Highlight Written Text
- Audio Recording
- Note Buddy:
  - Copying or
  - Carbon

Hi Tech

- Recording Pens
- Sound Notes
- Portable Word Processors/Tablets/iPads
- Abbreviation Expansion
- Voice Recognition

http://panthertechnology.com/devx/

http://www.livescribe.com

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WHAT ARE THE TASKS?

Math

- Reading
- Computation
- Comparison
- Measuring
- Problem Solving
- Time
- Writing
- Drawing

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TYPES OF ASSISTIVE TECHNOLOGY TOOLS FOR MATH

- Counting Aids
- Problem Guides
- Calculators
- Electronic Worksheet
- Text Readers (with math reading capacity)
- Measuring Aids
- Multi-media Software/Apps
- Money Aids
- Time Aids
- Dictation/Voice Recognition (with Math capacity)

MOVING FROM LAPTOP TO IPAD

http://www.kurzweiledu.com/

http://www.monarchtt.com/

WHAT ARE THE TASKS?

Social Studies & History

- Reading Comprehension
- Test Taking
- Presentations
- Writing/ Reports
- Studying
- Map Reading
- Timelines

TYPES OF A.T. TOOLS FOR SOCIAL STUDIES / HISTORIES

- Text Readers/Ebooks/Apps
- Portable Word Processors/Tablets
- Electronic Sources of Research
- Keyboards of Words or Pictures to Text
- Talking Word Processors/Apps
- Word Prediction
- Multi-media Software/Apps
- Outliners/Graphic Mapping
- Dictation/Voice Recognition

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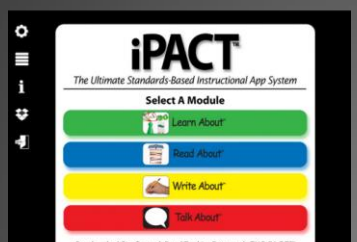
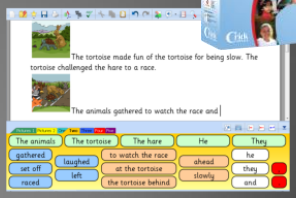
CUSTOMIZING YOUR CURRICULUM YOUR WAY – QUICKLY!





http://www.aboutthepact.com/ **http://www.cricksoft.com/us**

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WHAT ARE THE TASKS?

Sciences

- Handling Books
- Text Reading Comprehension
- Diagram Reading
- Experiments
- Manipulating Experimental Equipment
- Lab Reports
- Problem Solving
- Researching
- Studying
- Test Taking
- Oral Reports/ Presentations

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TYPES OF A.T. TOOLS FOR THE SCIENCES

- Portable Word Processors/Tablets
- Electronic Sources of Research
- OnScreen Grids of Words or Pictures that produce Text
- Text Readers/ Ebooks/ Apps
- Multi-media Software/ Apps
- Electronic Lab Reports
- Outliners/ Graphic Mapping
- Dictation/ Voice Recognition
- Switch Activated Products

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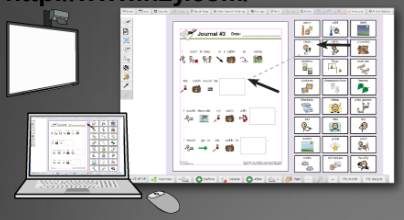
ADAPTED CURRICULUM

N2Y – Unique Curriculum
http://www.n2y.com/



Attainment – Teaching to Standards
Science, Math, English/LanguageArts
http://www.attainmentcompany.com/

AbleNet- MeVille To WeVille Literacy Curriculum
http://www.ablenetinc.com/

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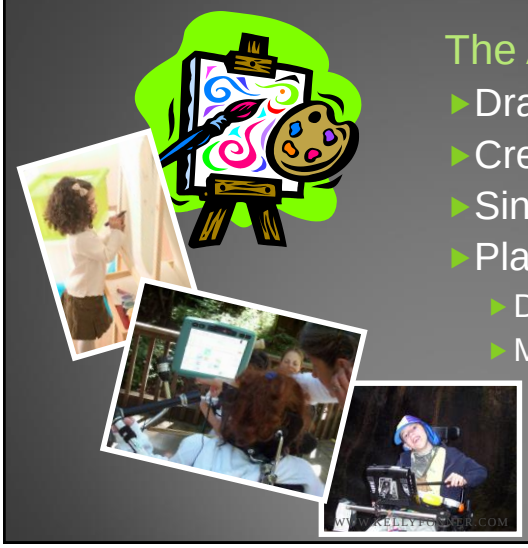
WHAT ARE THE TASKS?



The Arts

- Drawing
- Creative Writing
- Singing
- Playing
  - Dramatic Acting
  - Manipulating Instruments

TYPES OF A.T. TOOLS FOR THE ARTS

- Paint/Draw Software / Apps
- Music Scoring Software/ Apps
- Switch Activated Tools
- Electronic Sources of Art Work
- Talking Word Processors/Apps
- Multi-Media Software/ Apps
- Switch Activated Instruments
- Augmentative Communication Systems

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WHAT ARE THE TASKS?

Physical Education

- Playing
- Jumping
- Throwing
- Riding
- Climbing
- Scoring

TYPES OF A.T. TOOLS FOR PE & MANIPULATING MATERIALS

- Switch activated toys/class materials/ apps
- Multi-media software / apps that manipulate onscreen items
- Gaming Software/ Apps
- Hardware Adaptations to Gym Equipment/Limbs

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GENERAL TASKS OF SCHOOL

Organizing

- Books
- Materials
- Homework
- Projects
- Schedules

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TYPES OF A.T. TOOLS FOR ORGANIZING

- Word Processors /Apps for creating lists
- Symbol maker programs /Apps for creating schedules, calendars, checklists
- Sequencing devices for repeated task lists
- Project management software/ Apps

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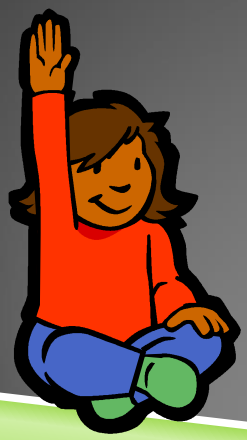
GENERAL TASKS OF SCHOOL



Social

- Behavior in Class & Hallways
- Following Rules
- Appropriate Communication
- Social Interaction

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TYPES OF A.T. TOOLS FOR SOCIAL/ BEHAVIOR

- Symbol maker programs/Apps for creating behavior reminders
- Clocks/Time related products/Apps
- LoTech & HiTech AAC Devices/Apps

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TYPES OF A.T. TOOLS FOR COMMUNICATION/AAC

- Symbol maker programs/Apps for making communication cards, language boards
- Switch activated low tech AAC devices/Apps(clocks, one message, sequencing devices)
- Low Tech AAC devices /Apps(digitized/recordable, small vocab set, levels & locations)
- High Tech AAC devices /Apps (dedicated/non-dedicated, synthetic speech, large vocab set, customized locations, static/dynamic displays)

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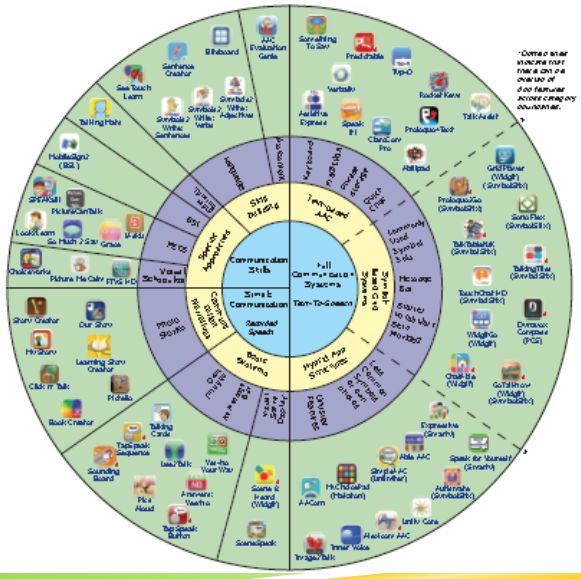
iPad Apps for Complex Communication Support Needs: Augmentative and Alternative Communication (AAC)



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EYE GAZE BECOMING EVERYDAY

http://www.inclusivetlc.com/

http://www.eyegaze.com/

Tobii EyeMobile

http://www.tobii.com

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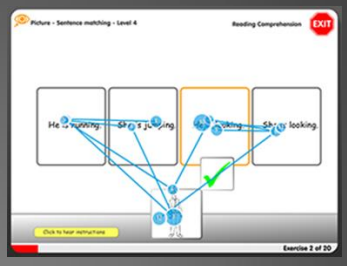
GAZE VIEWING

http://www.tobii.com

Eye Tracking measurement tools with potential use in teaching and assessment



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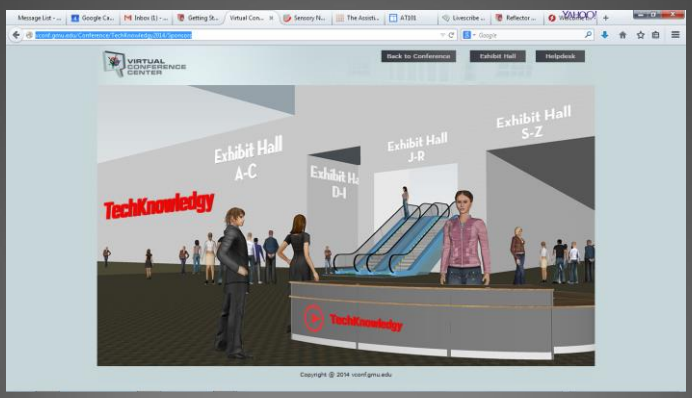
VIRTUAL EXHIBIT HALL



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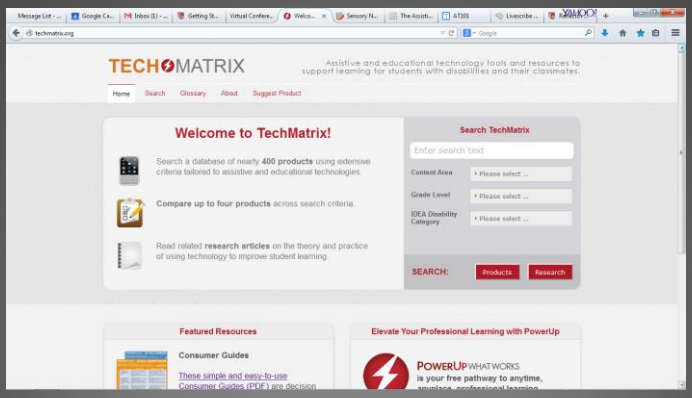
SEARCHING FOR PRODUCTS & RESEARCH



http://Techmatrix.org

WWW.KELLYFONNER.COM

"Teachers are expected to reach unattainable goals with inadequate tools. The miracle is that at times they accomplish this impossible task."

Hiam G. Ginott

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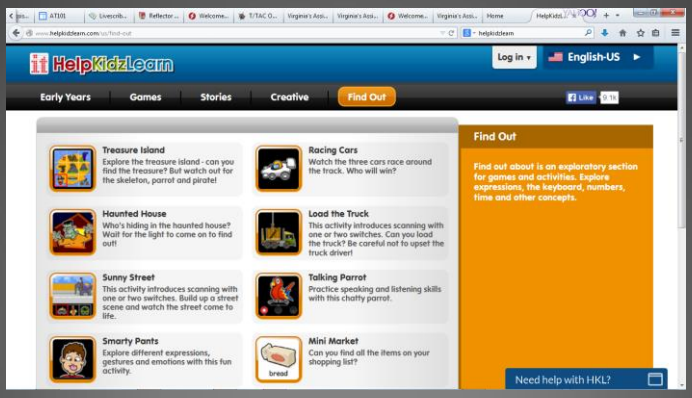
TRY BEFORE YOU BUY WEBSITES



http://www.helpkidzlearn.com/us/

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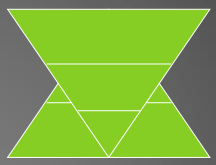
LEARNING PLANNING FOR INSTRUCTIONAL PLANNING

- Reason for Lesson
- Learning Standards addressed in lesson
- List what students will learn:
  1. ALL students
  2. Most students
  3. Some students
- Resources
- Activities
- Assessment of skill/knowledge acquisition
- Modifications



Schumm, Vaugn, & Leavell
Edyburn www.setp.net

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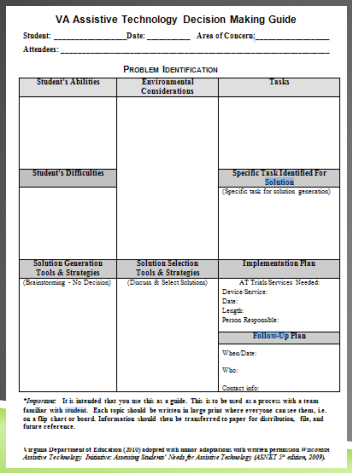
VIRGINIA ASSISTIVE TECH NETWORK ONLINE SUPPORTS



VA Assistive Technology Decision Making Guide

Student: _____ Date: _____ Area of Concern: _____

Attendees: _____

Problem Identification

Student's Abilities	Environmental Considerations	Tasks
Student's Difficulties		Specific Task Identified For Solution (Specific task for solution generation)
Solution Generation Tools & Strategies (Brainstorming - No Decision)	Solution Selection Tools & Strategies (Discuss & Select Solutions)	Implementation Plan: AT Trials/Services Needed: Device/Service: Date: Length: Person Responsible:
		Follow-Up Plan: When/Date: Who: Contact info:

*Important: It is intended that you use this as a guide. This is to be used as a process with a team familiar with student. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

Virginia Department of Education (2010) adapted with minor adaptations with written permission Wisconsin Assistive Technology Initiative: Assessing Students' Needs for Assistive Technology (ASNAT 3rd edition, 2009).

Assistive Technology Consideration & Assessment

- Framework
- Consideration in the IEP
- Referral for AT Assessment
- AT Assessment Process
  - Information Gathering
  - Decision Making
  - Trial Implementation
- AT Report

http://www.ttaconline.org/atsdp/

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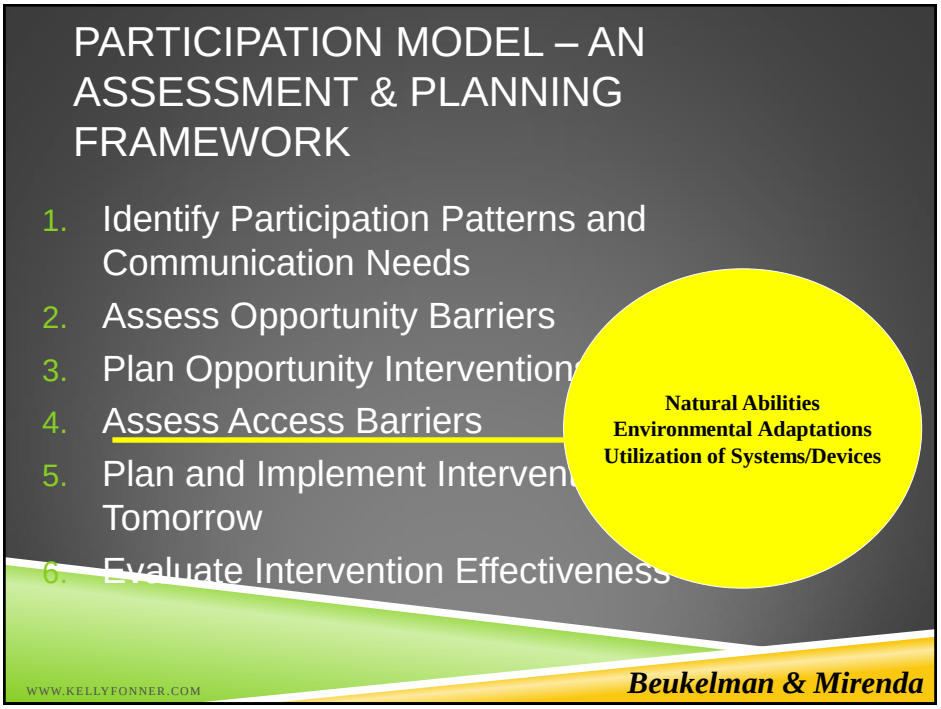
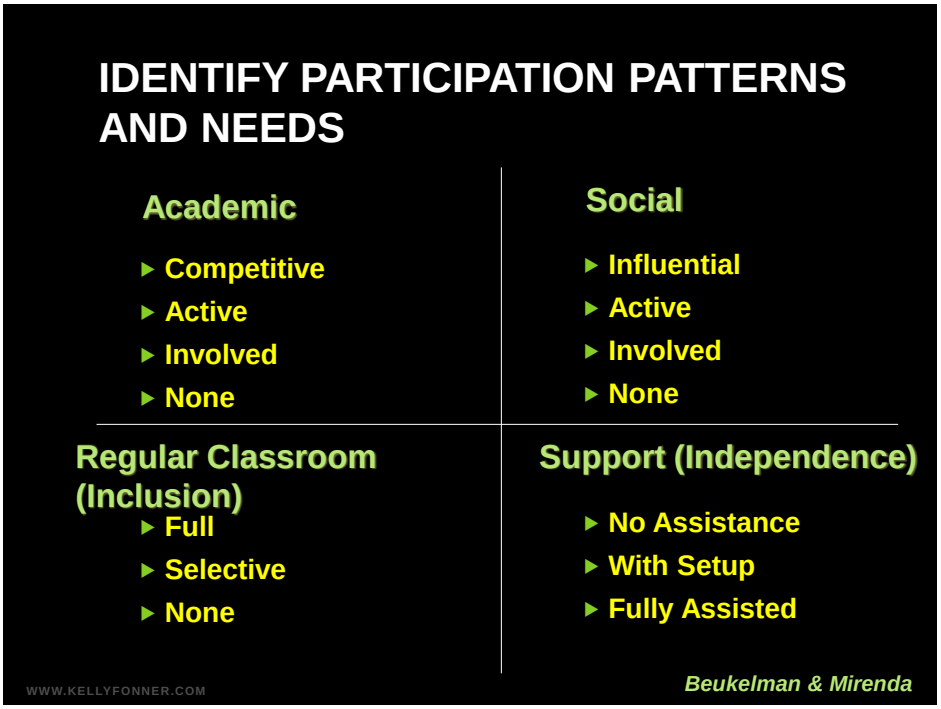
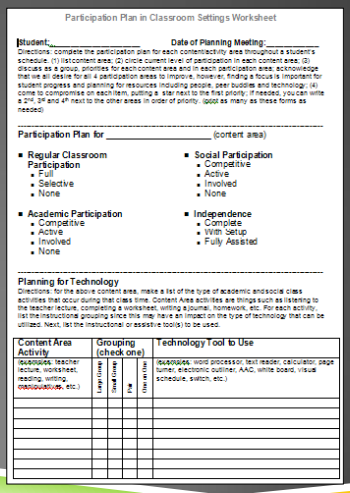

PARTICIPATION MODEL – AN ASSESSMENT & PLANNING FRAMEWORK
1. Identify Participation Patterns and Communication Needs
2. Assess Opportunity Barriers
3. Plan Opportunity Intervention
4. Assess Access Barriers
5. Plan and Implement Interven
Tomorrow
6. Evaluate Intervention Effectiveness
Natural Abilities
Environmental Adaptations
Utilization of Systems/Devices
WWW.KELLYFONNER.COM
Beukelman & Mirenda


IDENTIFY PARTICIPATION PATTERNS AND NEEDS
Academic
Competitive
Active
Involved
None
Social
Influential
Active
Involved
None
Regular Classroom (Inclusion)
Full
Selective
None
Support (Independence)
No Assistance
With Setup
Fully Assisted
WWW.KELLYFONNER.COM
Beukelman & Mirenda

PUTTING A PLAN TOGETHER

1. Student
2. Curriculum
3. Environment
4. Participation
5. Function
6. Tools
7. Trials
8. Schedule Use



Participation Plan in Classroom Settings Worksheet

Student:_____ **Date of Planning Meeting:**_____

Directions: complete the participation plan for each content/activity area throughout a student's schedule. (1) list content area; (2) circle current level of participation in each content area; (3) discuss as a group, priorities for each content area and in each participation area; acknowledge that we all desire for all 4 participation areas to improve, however, finding a focus is important for student progress and planning for resources including people, peer buddies and technology; (4) come to compromise on each item, putting a star next to the first priority. If needed, you can write a 2nd, 3rd and 4th next to the other areas in order of priority. (print as many as these forms as needed)

Participation Plan for _____ (content area)

- **Regular Classroom Participation**
  - Full
  - Selective
  - None
- **Social Participation**
  - Competitive
  - Active
  - Involved
  - None
- **Academic Participation**
  - Competitive
  - Active
  - Involved
  - None
- **Independence**
  - Complete
  - With Setup
  - Fully Assisted

Planning for Technology

Directions: for the above content area, make a list of the type of academic and social class activities that occur during that class time. Content Area activities are things such as listening to the teacher lecture, completing a worksheet, writing a journal, homework, etc. For each activity, list the instructional grouping since this may have an impact on the type of technology that can be utilized. Next, list the instructional or assistive tool(s) to be used.

Content Area Activity	Grouping (check one)				Technology Tool to Use
(examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)	Large Group	Small Group	Pair	One on One	(examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)

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FEATURE MATCHING

The Student/Person

- Abilities – What are their strengths in the areas of senses, cognition, language & motor?
- Needs – How do they learn best? Visual, auditory, both?
- Expectations – What level of participation is expected during this activity?

The Person

The Technology

- Input – What are the access options?
- Processing – What does the layout look like? Are there rate enhancements?
- Output – Do I want to produce text or produce pictures? Are there speech options?
- Other properties – OS? Cost? Support? Ease?

The Technology

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SELECTING AT TOOLS

THE SETT FRAMEWORK - PART II - A
Identifying Features of Assistive Technology Tool System and Brainstorming Tools that May Address Identified Student Needs

STUDENT: _____ **AREA OF ESABLISHED NEED (See SETT:Part I):** _____

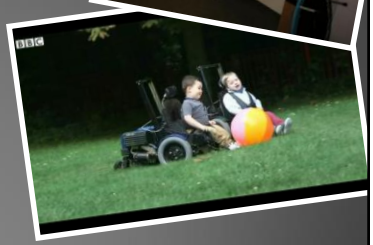
Enter one important descriptor of a system needed by the student in each column Enter one possible tool in each row									

http://www.JoyZabala.com

WWW.KELLYFONNER.COM

A.T. MOCKUP & TRIAL PERIODS

- Choose several items to trial (no less than 2)
- Prioritize according to:
  - maximum features
  - student preference
  - training needs
  - availability
- Decide upon a game plan including:
  - timeliness
  - targeted activities for trial
  - team responsibilities
- Explore environmental considerations



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SHARING THE WORK… ROLES AND RESPONSIBILITIES

- Create a list of responsibilities for the curriculum & technology
- Create columns of team members
- Each responsibility should be a assigned a main member & back-up

Roles & Responsibilities Matrix
From the work of Gary Cumley (in the book by Buekleman & Mirenda)

The purpose of this matrix is to identify all of the items of responsibility around a student who needs assistance with communication. These responsibilities should be distributed throughout the team. Team members should speak for themselves, not be assigned by others. No one person should hold all Assignments and no one should have no assignments or back-ups.

Steps to completion of this matrix:
(1) In the left column, make a list of the items that need to be done for this student.
(2) Across the top, make a list of the team members including the student.
(3) For each item, agree upon a team member who is **(A) Assigned Responsibility** and one who is **(B) Back-up Responsibility or Secondary role**

RESPONSIBILITIES	ROLES							
	Jon -student	Mom -staff & parent	District -admin	Kelly -consult	Local AT Consultn	District -autism consult	?	?
1. Keep up with Paperwork/ Tracking the process		B	B	A				
2. Pursue possible products that fit features needed (See feature match page)		B	A	A	B			
3. Order products for trial (from WATI, from CESA 2)			A		B			
4. Learn new devices as they arrive	A	A		Helper if needed	Helper if needed	B		
5. Use devices in restaurant setting	A	A				B		
6. Track Data Collection in restaurant setting (once a week or at least twice per trial)		A				B		
7. Updating feature ratings as devices are trialed	A	A	B	A				
8. Picture of each device as it arrives (maybe of Jon using device too)		B	A			B		
9. Keep device charged, contact administration or company if product isn't working		A	B	Helper if needed	Helper if needed			
10. Pursue funding sources for trial selection		B	A	Helper if needed	Helper if needed			

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Cumley

DATA TO BE COLLECTED IN ASSISTIVE TECHNOLOGY

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CONSIDERATIONS IN DATA TO BE COLLECTED

1. Effectiveness of the technology in compensating for specific difficulties as compared to alternative strategies
2. Ease in learning & using technology
3. Interest in & comfort with the technology
4. Degree to which the tech taps into the individual's strengths
5. Extent to which the individual was able to use the tech independently & troubleshoot
6. Overall psychological & behavioral response to the tech

from Raskind, Literacy through Assistive Technology

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USER CONSIDERATIONS IN DATA TO BE COLLECTED

- What's the problem?
- What's the situation?
- Would I use this AT?
- What will I use & how will I use it?
- What needs to be done?
- How is my AT working for me?

From Bowser & Reed – Hey, can I try that? www.wati.org; www.douglasesd.k12.or.us

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"When someone is taught the joy of learning, it becomes a life-long process that never stops…This is the challenge and joy of teaching."

Marva Collins

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THANK YOU!

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