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Picturing Success: Visual Support Strategies for Individuals with ASD

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Capilano University
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What are Visual Support Strategies?

- Strategies that incorporate the use of concrete cues to support individuals in understanding information and expressing themselves more effectively
- Visual supports may consist of:
  - Objects
  - Partial objects
  - Photographs
  - Black line drawing symbols
  - Text
- Visual supports *may* be delivered via technology (e.g., tablet devices)

Rationale for Using Visual Supports

- Theoretical Premise
  - Individuals with ASD (and other developmental disabilities) tend to have strengths in concrete thinking, rote memory, and visual-spatial skills
  - Processing of visual-spatial information is often better than processing of auditory-temporal information (Hermelin & O'Connor, 1970)
  - Visual strategies take advantage of visual-spatial strengths

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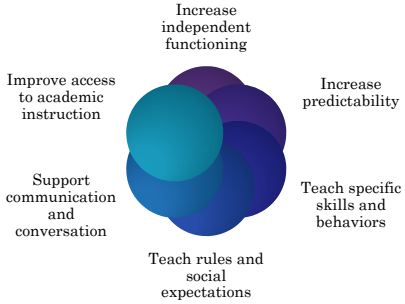
Communication…Think About It!

- Effective communication requires one to:
  - Establish and shift attention
  - Follow rapidly changing stimuli
  - Attend to information
  - Process information
  - Store information
  - Retrieve information
  - Send information
- Stimuli that is auditory-temporal (speech) or visual-temporal (gestures, sign language) is brief and transient
- Stimuli that is visual-spatial (visual supports) is static and non-transient

Visual Support Strategies



Visual Support Strategies: What Does the Evidence Say?

- The National Professional Center on ASD identified Visual Supports as an evidence-based practice (Wong et al., 2014)
  - Individuals aged 3 to 22
  - Address a variety of skills:
    - Social
    - Communication
    - Behavior
    - School readiness
    - Play
    - Cognitive
    - Motor
    - Adaptive
    - Academic

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Types of Representations

- There is no one 'right' form of visual representation
  - It's important to match the visual stimulus to the individual's strengths and needs
- Common visual representations include
  - Objects
  - Photographs
  - Graphic symbols
  - Text

Object Cues (Tangible Symbols, Tactile Symbols)

- Three-dimensional, tactile items that represent things, activities, places, people, etc.
- Often used by individuals who are blind or deafblind
- Also useful for sighted individuals who do readily understand two-dimensional representations

Object Cues

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Photographs

- Photographs of items, places, activities, people, etc.

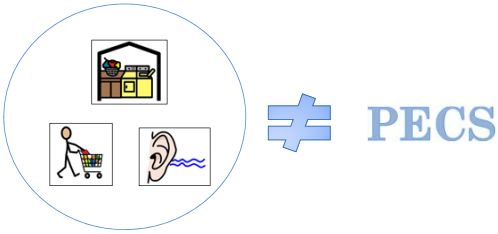
Graphic Symbols

- Computer-generated symbol sets (icons) designed to represent items, activities, places, people as well as more abstract concepts
- Many 'brands' of black line drawing symbols

Picture Communication Symbols

Symbolstix

Widgit Symbols



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Graphic Symbols

- Picture Communication Symbols (PCS)
- Symbolstix
- Widgit Symbols
- Other symbol 'brands'

PECS

- The ***P***icture ***E***xchange ***C***ommunication ***S***ystem
  - A manualized intervention program to teach specific communication-related behaviors

Selecting Appropriate Representations

- Determine what kind(s) of symbols the person recognizes
  - Objects
  - Photographs
    - Color
    - Black and White
  - Graphic Symbols
    - Color
    - Black and White
  - Text
- Consider how quickly a person ***learns*** to recognize symbols

Symbol Assessment

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Symbol Assessment

- Before developing visual supports, it's important to ensure the type(s) of symbols used to represent information is within the individual's ***current*** capability
  - Not too hard
  - Not too easy
  - Just right
- Some individuals may use more than one type of symbol to represent different concepts
  - Graphic symbols for familiar items
  - Photographs for community places

Formats for Symbol Assessment

- Interview: ask the parent/caregiver about the individual's understanding of common symbols
  - "Does Jon recognize logos of his favorite foods, places, etc.?" (e.g., Coke, Dairy Queen, etc.)
  - "Does Jon recognize pictures if you name them?"
  - "Does Jon like looking at books?" "Does Jon read?"
  - "What kinds of symbols has Jon used successfully in the past?"

Formats for Symbol Assessment

- Observations
  - Observe the individual with books and print; note reactions to pictures and logos
- Direct Assessment
  - Trial with most likely symbol set
  - Do a formal symbol assessment

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Preparing for a Formal Symbol Assessment

- Collect 10 to 15 items that are familiar to the individual
- For each of the target objects, collect and/or create:
  - An identical set of objects
  - A non-identical set of objects
  - Color photos of each object
  - Black and white photo of each object
  - Color graphic symbol of each object
  - Black and white graphic symbol of each object
  - Printed word cards for each object

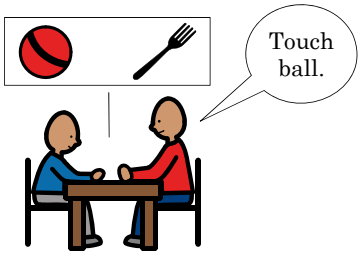
Beukelman & Mirenda, 2013

Symbol Assessment Formats

- Receptive Language Format
  - Requires the individual to follow verbal instructions (e.g., "give me…" or "point to…")
- Yes/No Format
  - Requires a clear yes/no response
- Visual Matching Format
  - Requires the ability to match stimuli
  - *Most often the preferable assessment format for individuals with ASD and/or intellectual impairments*

Receptive Language Format

- Present two or more stimulus items (objects, photographs, graphic symbols, text) to the individual
- Ask "Give me the …" or "Point to the …" or "Look at the …"



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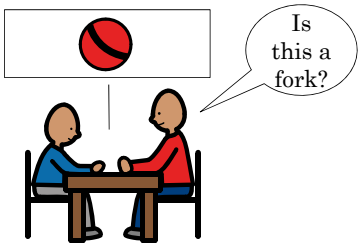
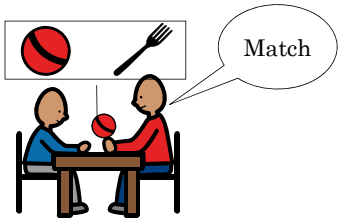
Yes/No Format

- Present one stimulus at a time
- Ask "Is this a …?" (present questions in random order)
- Best for individuals with limited motor abilities



Visual Matching Format

- Two stimuli (e.g., two photographs, two graphic symbols) are placed on the table
- One object is presented to the individual
- The individual is directed to match



Conducting a Symbol Assessment

- Assess the individual's ability to identify/match all of the target items at all levels of complexity
  - Identical objects
  - Non-identical objects
  - Photographs (color, black and white)
  - Graphic symbols (color, black and white)
  - Text (as appropriate)
- Repeat the assessment over multiple days, in different contexts (calm/quiet vs. busy/noisy)
- The highest order of symbol that the individual identifies with 75-80% accuracy is appropriate for use

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Conducting a Symbol Assessment

- What if a student does not demonstrate the ability to identify symbols of any type?
  - Does the student understand the assessment task? If not, spend some time teaching the task (i.e., matching).
  - Is the student sufficiently motivated to do the assessment task? If not, increase reinforcement for correct identification of symbols.
  - Is it clear/likely that the student really does not understand any form of symbols? If so, begin with object cues as they are the most transparent form of symbol.

Planning for the Future

- When doing a symbol assessment, you also want to identify the type of symbol the individual is likely to be able to learn next
  - Objects first, then photographs
  - Photographs first, then graphic symbols
  - Graphic symbols, then text
- When preparing visual supports, you can pair the current symbol (e.g., objects) with the anticipated future symbol (e.g., PCS)

Other Considerations

- Visual acuity
  - Size of symbols
- Fine motor skills
  - Size and placement of symbols
- Visual impairments
  - Background/foreground
  - Need for tactile input
- ***Consult*** with appropriate professionals (e.g., vision specialists, OT/PT, etc.)

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Getting Ready

Tools and Materials for Creating Visual Supports

Where to Get Symbols

- Boardmaker software
  - Online version, $99/year (personal subscription); can only save to Boardmaker 'cloud'
  - Boardmaker v.6 (Mac or PC), $520
  - Boardmaker v.6 (Mac or PC) with 2000-2012 Addendum Libraries Bundle, $670
  - Author your own content
    - Visual schedules
    - Visual scripts
    - Communication supports
    - Social Narratives
    - Academic activities
    - Etc.!

Where to Get Symbols

- Symboxstix Prime, $79 USD/year
  - Web-based symbol search engine and materials creation platform
  - Currently 30,000+ symbols with new symbols added each month

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Getting Photographs

- Software:
  - Picture This (Professional Edition) $97.00
    - 5,000 plus photos to copy/paste into your own software programs
  - Picture This (Photos in Boardmaker Libraries Deluxe) $89.00
    - 5,000+ photos to add to your Boardmaker software library
- Digital Photos
  - Take good, clear pictures of items
    - Solid background
    - Only the target item in the photo
    - Be careful about online images – the quality is not always good!

Laminators and Laminate

- Spend the money for a *high quality* pouch laminator
  - Most laminators sold in office supply or department stores are not of sufficient quality
- Royal Sovereign makes high quality pouch laminators for home use
  - Sometimes available from Costco® online
- Use laminating pouches that are 5 to 7 mm thick
- Laminate at a high heat setting
  - Reduces likelihood of laminate peeling off

Velcro

- Do ***not*** buy Velcro in neighborhood stores…it's expensive!
- Instead purchase from www.hookloop.ca
  - 1" loop or 1" hook Velcro, 25 yard roll, $41.25/roll
  - ½" hook coins (1440 coins per roll), $68.25/roll
  - ***Free*** shipping in BC, AB, SK, MB, ON, PQ for orders over $100 (maximum $20 flat rate shipping to NB, NS, PEI, NFLD)
- ***Always*** put hook (rough) Velcro on the back of symbols/photos
  - Use loop (soft) Velcro for display pages

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Display Loop Fabric

- www.industrialwebbing.com
- Velcro® Brand Veltex® Laminated Loop fabric, $13.50/yard USD (60 inches wide)
  - 19 color options
- Useful for wall displays

Miscellaneous Materials

- Non-stick scissors for cutting Velcro
- 35mm slide pages for organizing and storing 2" graphic symbols
- Photo album pages for organizing and storing photographs
- Small parts organizer for storing small graphic symbols

Visual Support Strategies to Improve Understanding

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Visual Supports to Provide Information

- Visual supports can be used to:
  - Increase predictability and ease transitions
  - Provide information about rules and expectations
  - Provide information regarding the necessary steps for particular tasks
  - Provide time-related information
  - Organize the environment

Visual Support Strategies to Improve Understanding: Environmental Supports

Environmental Supports

- Location supports help clarify where things belong and how to organize one's belongings

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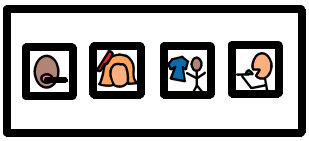
Environmental Supports

- Location supports can be used in home, school, and vocational settings
  - Home: clothing, toys, dishes, food items, etc.
  - School: personal items, learning materials
  - Vocational: personal items, work materials

Visual Support Strategies to Improve Understanding: Visual Schedules

What are Visual Schedules?

- Visual schedules use objects, photographs, graphic symbols, and/or text to provide information about an upcoming event or a sequence of tasks



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Who are Visual Schedules for?

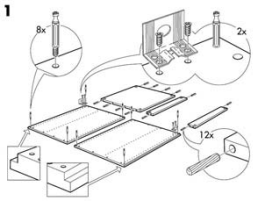
- Visual schedules have been demonstrated to support individuals with ASD and/or intellectual disabilities from preschool through adulthood
  - Increase independence
  - Improve transitions
  - Improve task engagement and completion
  - Increase play skills
  - Teach a variety of skills (e.g., daily living, vocational, recreational, academic)

Two Kinds of Visual Schedules

- Between activity schedules
  - Depict a sequence of activities occurring across a period of time
  - Particularly useful to address problematic transitions or problem behavior associated with a lack of predictability
- Within activity schedules
  - Depict a sequence of steps for a particular tasks
    - How to brush your teeth
    - How to make a sandwich
    - How to buy a coffee at Starbucks

We ALL use Visual Schedules!

- Day planners
- Electronic calendars
- Recipes
- Instruction sheets
- "To Do" Lists



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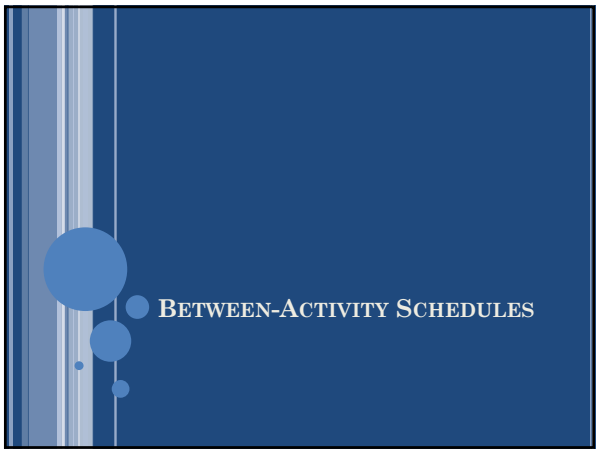

Between Activity Visual Schedules

- Provide information regarding upcoming activities
  - Support transitions from one activity to another
  - Increase predictability
  - Reduce stress and anxiety related to lack of predictability
  - Increase or improve independence and on-task behaviors
  - Decrease disruptive or problem behavior

Object Cue Schedules

- Appropriate for individuals who do not demonstrate understanding of 2-dimensional representations (photographs, symbols, etc.)
- Can be designed with actual objects used in the activity, miniature objects, or tactile cues

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Using Real Objects

- Identify an object used in a particular activity to represent that activity
  - Cooking: wooden spoon
  - Meal time: spoon or fork
  - Painting: paint brush
  - Computer: computer mouse

Using Miniature Objects

- Identify miniature items that represent actual items, places, etc.
  - Reading: book magnet
  - Park: toy slide
  - Dairy Queen: toy ice cream cone

- *Caution:* Individuals who have difficulty understanding that a photo/symbol represents an item, activity, place may also have difficulty making the connection between miniature objects and the associated item, activity, place

Tactile Cues

- Most appropriate for individuals who are blind
- Identify textures and shapes that are related to items, activities, places and teach the individual that specific textures and shapes represent specific items, activities, places

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Object Cue Schedules

Object Cue Schedules

Object Cue Schedules

http://mast.ecu.edu/modules/db_1/concept/

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Using an Object Cue Schedule

- Involve the individual in setting up the schedule
  - Placing each object cue into the sequence
  - Selecting the correct object cue, as directed, to place into the sequence
- Refer to the schedule at every transition
  - Take the object cue for the current activity to the place where the activity occurs
  - Place the object cue in the 'finished box' when the activity ends

Wall Schedules

- Representational photos or symbols are sequenced to portray the order of events
- As activities are completed, photos or symbols can be turned over or placed in a finished envelope or box

Single Page Book Schedules

- Representational photos or symbols are placed in mini photo album
- Each page shows one activity
- Photos/symbols are turned over at the end of each activity
- Advantage: portable
- Disadvantage: shows only one activity at a time; provides less predictability

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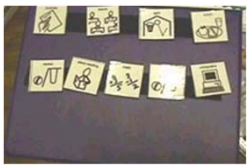
Slide Pocket Schedules

- 2"x 2" symbols are placed inside plastic pages for holding photographic slides
- As activities end, symbol are turned over
- Can be kept in a binder, fanny back, shoulder bag

Velcro Binder Schedules

- Velcro is placed on both the inside and outside covers of a binder
- Front cover shows the schedule
- Inside cover stores photos/symbols



The Portacom System

- Worn around the individual's waist
- Symbols attach with velcro
- Can also hold communication boards, other visual supports, etc.
- Has a zippered pocket that can be used as a finished pocket
- www.portacom.bc.ca

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Using Visual Schedules

- Involve the individual in setting up the schedule
  - Placing each photo/symbol into the sequence
  - Selecting the correct photo/symbol, as directed, to place into the sequence
- Refer to the schedule at every transition
  - Take the photo/symbol for the current activity to the place where the activity occurs
  - Turn the photo/symbol over or place the photo/symbol in the 'finished box/envelope' when the activity ends

Embedding Behavior Support in Visual Schedules

- Add time pieces (e.g., images of clock faces) to show when activities will occur to help with transitions
- Schedule highly preferred activities after less preferred activities (e.g., first, then)
- Provide opportunities for individuals to make choices when setting up the daily schedule

Time Pieces in a Visual Schedule

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Tablet-Based Visual Schedules

- There are a number of good quality apps for visual scheduling
  - Requires that the individual understands 2 dimensional representations (photos or graphic symbols)
- Only use the tablet for visual scheduling, at least initially
  - Can't refer to the visual schedule if other (more reinforcing) apps are open

Apps for Visual Scheduling

- First Then Visual Schedule HD
- IPrompts Pro
- Choiceworks
- Choiceworks Calendar
- Visual Schedule Planner

Teaching with a Visual Schedule

- Visual schedules can be used to teach a number of additional skills and concepts:
  - Orientation of images
  - Receptive communication skills ("find…")
  - Expressive communication skills ("what's next?")
  - Time concepts and vocabulary (e.g., first, next, last, etc.)
- Always have a text-based title on the photo/symbol to expose individuals to sight words

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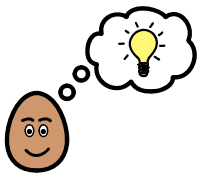
Considerations When Using Visual Schedules

- Identify the most appropriate type of representation
  - Object, photo, symbol, text
  - Size of symbol
  - Color vs. black and white
- Consider needs regarding portability
- Consider preferences of the individual

Within-Activity Visual Schedules

Within-Activity Visual Schedules

- Show the steps involved in a particular activity or routine
- Useful in promoting independence or as a memory aid



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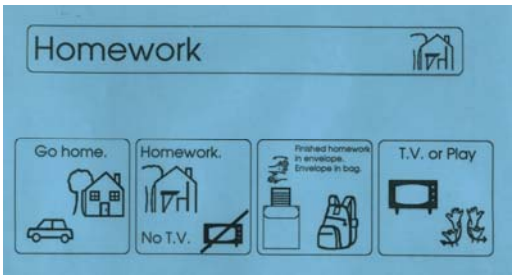
Showering

Transition Routine: School to Homework



Snack Routine at School

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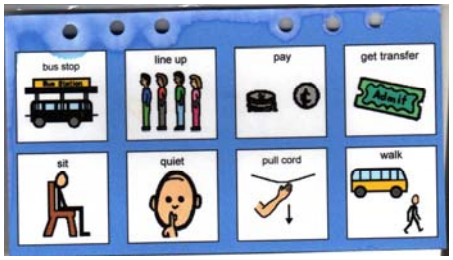
Dressing at the Pool

Making a Sandwich

Get ingredients	Put 2 slices of bread on plate	Spread peanut butter	Wipe knife
Spread jelly	Put bread together	Cut sandwich in half	

Using the Bus



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Tablet-Based Within-Activity Schedules

- Most visual scheduling apps allow users to embed within-activity schedules in between-activity schedules
  - An individual could touch the 'brush teeth' symbol in a between activity schedule to access the step-by-step instructions (aka within-activity schedule) for brushing teeth
- Pictello is an excellent app for creating within-activity schedules (among other visual supports)

Creating and Using Within-Activity Schedules

- Select a specific routine or task to target
- Complete a task analysis of the routine or task
  - List every step required to complete the routine or task
  - Follow the steps you have identified to make sure your task analysis is correct
- Considerations
  - Type of representation
  - Demonstration of completed steps

Creating and Using Within-Activity Schedules

- Create the within-activity schedule
  - Photographs of each step, sequenced
  - Symbols of each step, sequenced
- Teach the individual to use the within-activity schedule
  - Model
  - Prompt
  - Fade prompts
  - Reinforce

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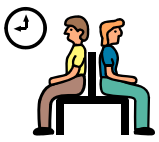
Between- & Within-Activity Visual Schedules: Things to Remember

- Identify the most appropriate type of representation(s) for the target individual
- Select a type of visual schedule to meet the desired purpose(s)
  - Between-activity schedule
    - Improve transitions
    - Increase predictability
    - Increase independence across the day
  - Within-activity schedule
    - Teach new skills
    - Increase independence

Visual Support Strategies to Improve Understanding: Temporal and Waiting Supports

Temporal and Waiting Supports

- Provide information regarding:
  - *When* an activity or event will occur
  - *How long* an activity or event will last
  - *When* an activity or event will be over
  - *How long* one needs to wait



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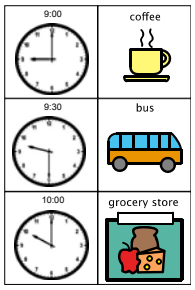
Temporal Supports in a Visual Schedule

- Adding images of clock faces can support individuals who have difficulty transitioning at the 'right' time or who need to know when activities will begin and end
  - They don't need to know how to tell time; they just need to see that the clock in the schedule and the actual clock look 'the same'



Waiting Supports: Time Timer

- Set time up to 60 minutes; red disk shows how long one must wait
- As time passes, size of red disk diminishes
  - No red means that waiting is over!
- Battery operated, silent or with sound, various sizes; also available as an app

Waiting Supports: Time Tracker

- Auditory and visual stimuli; lights flash to warn of upcoming start or stop times
- Can 'count up' from green to red
  - Useful for showing when a preferred activity will be over
- Can 'count down' from red to green
  - Useful for showing when a preferred activity will begin
- Can set each color for any length of time
  - Adjust the length of transitions to suit individual needs

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Visual Supports to Improve Social Skills and Behavior

The Problem with Social Interactions

- Require fluid communication skills
  - Process speech (transient information) quickly
  - Respond to multiple cues (words, intonation, facial expression, etc.)
  - Attend to multiple speakers
    - Often quick shifts between speakers
  - Respond and initiate appropriately
    - At the right time
    - On topic
    - Following societal conventions or expectations
- Individuals with ASD often report difficulty with some, if not all, of the above

How Visual Supports Can Help

- Provide visual information regarding the topic or message
  - To support understanding
  - To support expression
- Provide visual information regarding the rules and expectations
  - Conversational exchanges
  - Behaviors

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The Goal is to Provide Information and Support Expression

- Common visual support strategies to support the development of social skills and/or behavior include:
  - Social Narratives
  - Video Modeling
  - Contingency Maps
  - Rule supports
  - Choice boards
  - Environmental bridges
  - AAC supports (communication boards, PECS, speech generating devices, conversation books)

Social Narratives

Social Narratives

- Social Narratives are story-based interventions designed to improve social understanding
  - Describe social situations by highlighting relevant cues, explaining the thoughts and feelings of others in the target situation, and describing appropriate behavior
- Social Narratives have been identified as an evidence-based practice for individuals from preschool through high school

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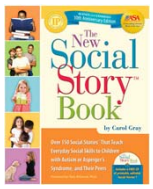
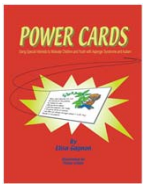
Social Narratives

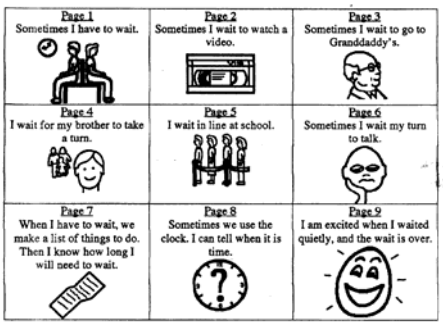
- Social Stories™ are a *specific type* of social narrative
  - Developed by Carol Gray
  - Individualized stories written following a *specific format*
- Power Cards are another *specific type* of social narrative





Social Story: *Talking with Adults*
(Lorimer et al., 2002)

Social Story: *Waiting*
(Lorimer et al., 2002)



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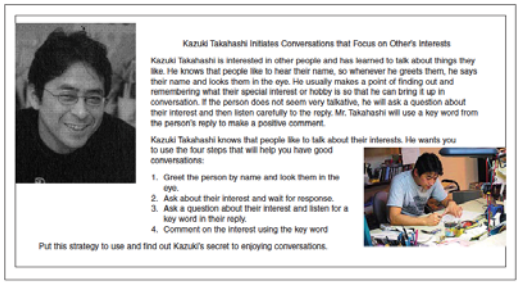
Power Card Scenario
(Davis et al., 2010)



Kazuki Takahashi Initiates Conversations that Focus on Other's Interests

Kazuki Takahashi is interested in other people and has learned to talk about things they like. He knows that people like to hear their name, so whenever he greets them, he says their name and looks them in the eye. He usually makes a point of finding out and remembering what their special interest or hobby is so that he can bring it up in conversation. If the person does not seem very talkative, he will ask a question about their interest and then listen carefully to the reply. Mr. Takahashi will use a key word from the person's reply to make a positive comment.

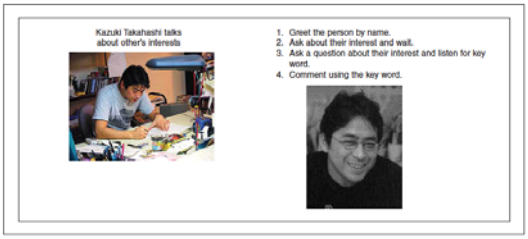
Kazuki Takahashi knows that people like to talk about their interests. He wants you to use the four steps that will help you have good conversations:

1. Greet the person by name and look them in the eye.
2. Ask about their interest and wait for response.
3. Ask a question about their interest and listen for a key word in their reply.
4. Comment on the interest using the key word

Put this strategy to use and find out Kazuki's secret to enjoying conversations.

Figure 1. Sample Power Card Script

Power Card Scenario
(Davis et al., 2010)



Kazuki Takahashi talks about other's interests

1. Greet the person by name.
2. Ask about their interest and wait.
3. Ask a question about their interest and listen for key word.
4. Comment using the key word.

Figure 2. Sample Power Card

Tablet-Based Social Narratives

- Pictello is an excellent app for creating social narratives
  - Create and store multiple social narratives within the app
  - Clinicians can create social narratives on their devices and send to individual client's devices through the app
  - Social narratives can be made with auditory output for non-readers or those who require reading support
  - Video can be embedded within social narratives

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Implementing Social Narratives

- Identify the target social situation
  - Ideally, collect baseline data so you can determine if your intervention is working!
- Choose a type of social narrative
  - Social Story™: best for helping individuals understand specific situations by explaining the situation and the perspectives of others
  - Power Cards: best for using an individual's special interest to describe rules and behavioral expectations for a social situation
- Write the social narrative
  - Use published resources for guidance; evidence-based practices are only evidence-based if done correctly!

Implementing Social Narratives

- Design an appropriate display
  - Consider size of text and type of visual
  - Consider reading level of the learner
- Use the social narrative
  - Read prior to the target social situation whenever possible
  - Read at convenient times
  - Read often, *with* the individual

Implementing Social Narratives

- With the learner, in a distraction free space, introduce the social narrative
- Read the social narrative to the individual or, if possible, have the individual read the social narrative to you
- Review key concepts by asking comprehension questions
  - For any incorrect responses, review the appropriate section of the social narrative
  - Practice the target behavior using role play
- Use prompts and/or reinforcement as needed
- Collect data to determine if behavior is improving

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Contingency Mapping & Rule Supports

What is a Contingency Map?

- Visual support designed to provide information regarding the consequences for positive and problematic behavior
  - First reported in the literature by Brown & Mirenda, 2006
- Visual support that depicts
  - The common antecedent (trigger) that precedes both the problematic and the replacement/desired behavior
  - The problematic and the replacement/desired behavior
  - The reinforcer that will be available contingent on the replacement/desired behavior
  - The reinforcer that *used to be but will no longer* be provided following problem behavior

Brown & Mirenda, 2006

- 'Kirk'
  - 13 years old, ASD, grade 6/7 class in neighborhood school
  - Rarely initiated interactions; would interact with peers during group activities
  - Able to speak in phrases and short sentences
  - Performed academically at a grade 2 level; modified academic curriculum
  - Problem behavior: lack of initiation behaviors during academic tasks
    - Prompt dependent: would sit for 30+ minutes after completing a task unless prompted to turn in work, begin next task
    - Other interventions (prompt fading, visual schedules, reinforcement for independence, etc.) were not successful

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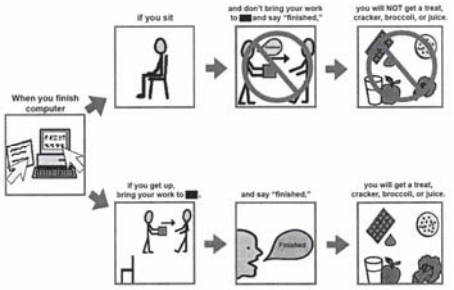
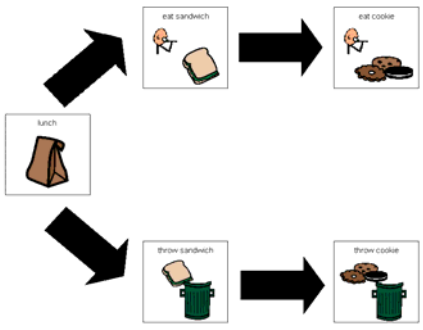
Brown & Mirenda, 2006

- Intervention conducted in the classroom during three tasks:
  - Math
  - Keyboarding
  - Printing
- One contingency map was created for each task
- Brown provided training to Kirk's EA
  - Step by step instruction sheet
  - Description of procedures
  - Role play
  - Feedback

Brown & Mirenda, 2006



Contingency Map: Eating Lunch



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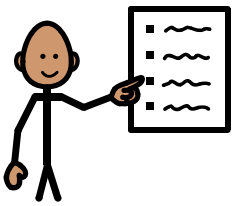
Using Contingency Maps

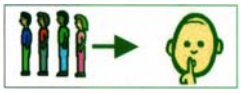
- To be effective, a contingency map must depict:
  - The antecedent trigger
  - The reinforcer that is currently "paying off" problem behavior
  - A reinforcer that will "pay off" an appropriate alternative/desired behavior
- A functional assessment may be needed to identify all of the necessary components of a contingency map
  - Work with a behavior consultant/analyst if unsure of these components

Rule Supports

- Visual supports can provide information regarding rules and assist with teaching individuals to follow rules
  - What to do
  - What not to do



Rule Supports



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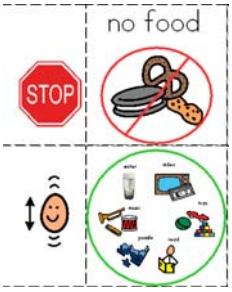
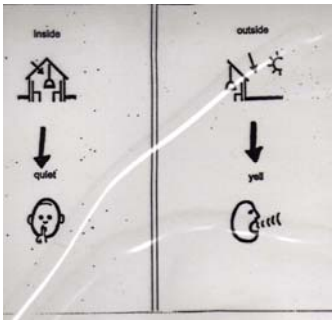
Rule Supports



Rule Supports



Augmentative & Alternative Communication

- AAC, as defined by the American Speech Hearing Language Association (2005), is an area of research and a set of clinical and educational practices that:

  "…attempts to study and, when necessary, compensate for temporary or permanent impairments, activity limitations, and participation restrictions of persons with severe disorders of speech-language production and/or comprehension, including spoken and written modes of communication." (p.1)

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Supporting Expressive Communication

- Many individuals with ASD experience challenges with expressive communication
  - Some may have limited speech output
  - Some may be able to use speech for basic wants and needs but have difficulty with conversational exchanges
- Visual support strategies and AAC interventions can support individuals in developing and improving a variety of communication skills
- The evidence is *extremely clear*: the use of visual support strategies and/or AAC interventions *does not* interfere with the development of speech

Visual Support Strategies to Improve Expressive Communication: Choice Making

Choice Making

- Individuals with ASD and other developmental disabilities often experience difficulty making choices
  - They don't know or understand the options available
  - They don't have a reliable way to communicate their choices
- Some individuals engage in problem behavior, in part, to exercise control over their daily lives
  - Teaching individuals to make choices and providing them with opportunities to make choices can prevent problem behavior

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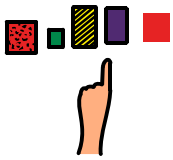
Opportunities for Choice Making

- There are many different kinds of choices we can provide individuals, including children!
  - Activities during free time
  - Snack items
  - Toy items
  - Academic tasks
  - Work tasks
  - Who to spend time with
  - Places to go
  - Materials to use



Visual Support Strategies for Choice Making

- Consider the types of choices you can provide:
  - Between activities
    - Watch a movie *or* play a game
    - Go to the park *or* ride bikes
  - Within activities or materials
    - Green shirt *or* blue shirt
    - Peas *or* carrots
  - Refusal
    - Go to the park *or not*
    - Wear socks *or not*
  - People
    - Go to the store with *mom* or *dad*

Visual Support Strategies for Choice Making

- Consider the types of choices you can provide:
  - Where
    - Clean the play room *or* your bedroom
    - Eat at McDonalds *or* KFC
  - When
    - Go to the park *before dinner* or *after dinner*
    - Do your homework *now* or *after dinner*

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Visual Support Strategies for Choice Making

- Provide clear information regarding the available options
  - Show two or more items to choose from
  - Show two or more photos to choose from
  - Show two or more graphic symbols to choose from
- Teach the individual to engage in a choice making response
  - Touching the desired choice
  - Pointing to the desired choice
  - Picking up the desired choice

Choice Boards

Choice Boards

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Visual Support Strategies to Improve Expressive Communication: Communication Boards & Books

Communication Boards & Books

- Boards with graphic symbols
- Messages are communicated by pointing to individual symbols or sequences of symbols
- Requires that the individual understands the need to gain the attention of a communication partner before pointing to symbols
  - Many individuals with ASD have difficulty with this
- Important to *model* the use of communication boards

Communication Board

Goossens', Crain, & Elder, 1992

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Communication Board

Communication Board

Communication Board

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Communication Books

Visual Support Strategies to Improve Communication: The Picture Exchange Communication System (PECS)

The Picture Exchange Communication System (PECS)

- An *instructional program* for teaching functional communication skills
  - Remember…PECS does ***not*** refer to a type of graphic symbol!
- Based on principles of Applied Behavior Analysis
- Developed by Dr. Andy Bondy and Lori Frost in the 1980s
  - Originally developed for young children with ASD
  - Developed to address challenges children with ASD often demonstrate with other AAC interventions
  - Can be used with older children, youth, adults with ASD or other developmental disabilities

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Evidence for PECS

- PECS has been identified as an evidence-based practice (Wong et al., 2014)
  - Preschoolers with ASD
  - Children with ASD from 6 to 14 years of age
  - To address social, communication, and joint attention skills
- Although there are insufficient studies to establish PECS as an evidence based practice for older individuals at this time, older individuals (and those with other developmental disabilities) may also benefit

When is PECS Appropriate?

- Is the individual using functional communication?
  - No: PECS is appropriate
  - Yes: PECS may be appropriate
- Is the individual *understandable* to unfamiliar communication partners?
  - No: PECS is appropriate
  - Yes: PECS may be appropriate
- Does the individual *initiate* communication?
  - No: PECS is appropriate
  - Yes: PECS may be appropriate
- PECS may also be used to increase length of utterance and/or increase vocabulary for any individual

What Does PECS Involve?

- Using functional activities and functional materials to teach communication
  - Things the individual finds fun and interesting
- Using powerful reinforcers
  - Teaching the individual to ask for things he/she likes and wants
- Teaching individuals to make requests from multiple communication partners in multiple settings
- The initial focus is on initiation of requests
- Over time, instruction addresses more diverse and complex sentence forms

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Six Phases of PECS Instruction

- Phase 1: The physically assisted exchange
  - Focus on initiation
  - Focus on teaching the individual to exchange a symbol for a reinforcer
- Phase 2: Distance and persistence
  - Focus on teaching the individual to move to the communication partner and/or move to location of symbol
- Phase 3: Discrimination
  - Focus on discriminating between symbols

Six Phases of PECS Instruction

- Phase 4: Sentence Construction
  - Focus on combining symbol for 'I want' plus symbol for desired item/activity
  - Focus on expanding sentences to include attributes
- Phase 5: Responding to the question 'What do you want?'
  - Focus on teaching individual to make requests in response to question from communication partner
- Phase 6: Commenting
  - Focus on teaching the individual to comment on things in the environment

PECS is Not as Easy as It Looks…

- …but with some instruction, it's not rocket science, either!
- The ***best*** way to learn to implement PECS is to take the two day basic training provided by Pyramid Educational Consultants Canada
  - ***And*** work with a behavior consultant/analyst, educator, or SLP also trained in PECS

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PECS in Daily Activities

PECS in Daily Activities

PECS During Cooking

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Exchange-Based Communication Support

Visual Support Strategies to Improve Conversation

Conversation Supports

- Visual bridges (Hodgdon, 1995)
  - Used to convey information across environments
- Conversation books
  - Used to support individuals in initiating and engaging in conversations about predetermined topics of interest

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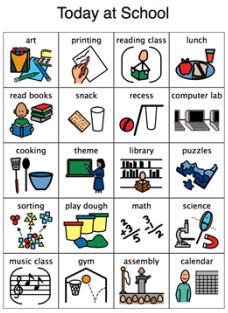
Visual Bridges

- Visual supports designed to enable individuals to share information across environments

Visual Bridges



Visual Bridges

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Visual Bridges

Conversation Books

- Small, portable notebook with activity remnants, photographs of the individual engaging in specific activities, etc.
- All media have captions with comments and questions
- Conversation books need to be updated regularly, so that topics and content are new and interesting
- Ideally, co-construct the book with the individual

Teach Conversation Book Use

- Short teaching sessions in natural settings
- Coach the target individual and a conversational partner
  - Teach the individual to use the conversation book to share information and ask questions
  - Teach the conversational partner to respond appropriately and to use the conversation book to prompt further conversation
- Teach additional conversational skills
  - Turn taking
  - Fillers ("uh-huh," "yeah," etc.)

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Tablet-Based Conversation Books

- Pictello is an excellent app for creating conversation books
  - Take photos of the individual engaged in various activities during the day
  - Use the photos to create a book about the day's activities
  - Caption each page; the app reads out text (or you can record your own voice)
  - Can also be used to create conversational supports for 'big' events
    - Trips
    - Parties
    - Holiday celebrations

Developing Communication Skills

- There is *much* more to communication than choice making, communication books, PECS, and conversation books
  - Some individuals will need more intensive AAC supports
  - Work with behavior consultants/analysts and SLPs to develop and implement individualized communication supports
- Regardless of the communication supports used, remember to *model* use of the system
  - How can we expect individuals to use *any* form of communication if they never see anyone else use it???

Visual Support Strategies to Improve Skill Acquisition: Video Modeling

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What is Video Modeling?

- Video of a model demonstrating desired behavior
  - Individual watches the video and imitates the behavior
- Different types of video modeling
  - Video modeling:
  - Video self-modeling:
  - Point-of-view video modeling
  - Video prompting

Video Modeling as an Evidence-Based Practice

- Video Modeling has been identified as an evidence-based practice
  - Research to date supports the use of video modeling with individuals from early childhood through middle school
  - While a sufficient number of studies have yet to be conducted to establish video modeling as an evidence-based practice for individuals of high school age and older, it is likely beneficial for this group as well

Video Modeling

- An individual is video recorded engaging in the targeted behavior or task
  - Peer, family member, teacher, other adults
  - Does *not* need to be the same age or gender of the learner
- The learner watches the video before the teaching situation or context in which the target behavior or task should occur
- Prompting, reinforcement and multiple opportunities for practice are commonly necessary

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Video Self-Modeling

- The learner is video recorded engaging in the targeted behavior or task
  - Some learners may find it particularly motivating to see themselves on the screen
- It must be possible to video record the learner engaging in the target behavior
  - Sometimes it's necessary to edit out any inappropriate behavior and/or errors
  - Examples must show good performance of the target behavior or task

Point-of-View Video Modeling

- Demonstrates the target behavior or task from the perspective of the learner
  - Shows the learner's view of the target behavior or task

Video Prompting

- Used to teach a sequence of steps
- Similar to a video model except that there is a pause at the end of each step to provide the learner time to perform the step

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What Can We Teach with Video Modeling?

- Used to teach a variety of skills and behaviors, including:
  - Social skills: initiating interactions, making requests, responding to others, engaging in conversation
  - Play skills: conversational exchanges, solitary play, pretend play
  - Social understanding: emotion recognition, perspective taking
  - Adaptive behaviors: self-help skills, using an ATM, going to the dentist, grocery shopping, etc.
  - Academic skills: on-task behaviors, reading comprehension, etc.
  - Vocational skills and tasks

Implementing Video Modeling

- Plan the video model
  - Identify the target behavior or skill
  - Determine the type of video modeling strategy
  - Identify a model or models
  - Identify necessary equipment (hand held video camera, digital camera, cell phone/tablet, tripod, editing software)
  - Create a script and/or task analysis of the target behavior or skill; multiple, different scripts are recommended to support generalization

Implementing Video Modeling

- Make the video
  - Select an appropriate location and time
  - Gather additional models as needed and gain consent if using peers as models
  - Rehearse!
  - Do several 'takes', ideally in multiple settings to increase generalization
  - Edit the video
    - Remove errors or extraneous behaviors
    - Add voice over if needed to support the video

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Implementing Video Modeling

- Show the video
  - Identify viewing equipment
  - Determine viewing schedule (time, place, frequency)
  - Prepare necessary materials for the target behavior or task (as shown in the video)
  - Provide viewing support as needed
    - Reminders to view
    - View with the learner
    - Draw the learner's attention to relevant aspects of the video
  - Embed additional strategies as needed
    - Visual schedule or script, social narrative, reinforcement, etc.

Apps for Video Modeling

- Pictello is a good option for video models embedded within social narratives
- VideoTote is an excellent video modeling app
  - Create video models within the app
  - Video models can play in entirety
  - Video models can be designed to pause at the end of specific steps, allowing the individual to complete the step before continuing the video

Visual Support Strategies to Improve Access and Participation During Academic Activities

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Access to Academic Activities

- Students with autism and other developmental disabilities often experience challenges accessing academic instruction
  - Whole group instruction
  - Group discussion
  - Reading for information

Participation in Academic Activities

- Students with autism and other developmental disabilities often experience challenges participating in learning tasks and activities
  - Asking and answering questions
  - Engaging in large and small group discussion
  - Participating in large and small group learning activities
  - Engaging in independent learning activities

Visual Supports for Whole Group Instruction

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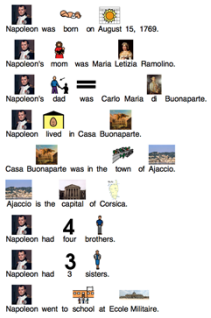
Instruction Guides

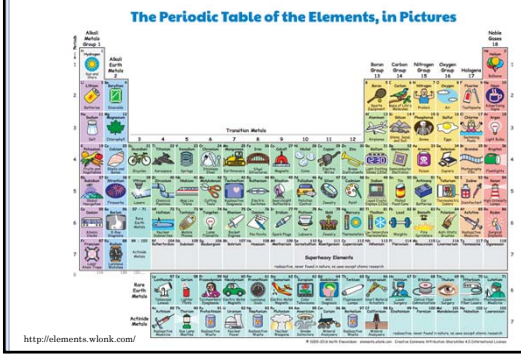
- Visual supports that are related to the topic of instruction
  - Level of complexity can be adapted as needed for individual students
- Provided in various formats
  - On paper for individual student use
  - Projected for class use
- Can be created by a peer or teacher during instruction
  - Draw to show key points of lesson
- Peers or teaching assistants can highlight sections of paper guides to focus student attention

Lesson Topic: Napoleon



- Instruction guide highlighting the key points of the teacher's lesson

Lesson Topic: The Periodic Table



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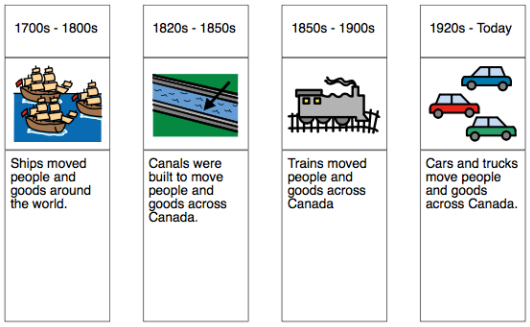
Lesson Topic: The Periodic Table

- Individual cards for all elements
- Cards can be used to answer a variety of questions
  - Which element do we find in coins?
  - Which element is poisonous?

http://elements.wlonk.com/

Lesson Topic: History of Transportation in Canada



Story Guides

- Visual supports that provide improved access during teacher 'read-alouds'
  - Rewritten-text
    - Simplified
    - Symbolized
  - Graphic summary of text
    - Comic strips

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Tales of a Fourth Grade Nothing

- Adaptation created to support a Deaf student with ASD during class reading
  - Special education teacher created adaptation during 1:1 instructional time with student
    - Provided student with a preview of the material
    - Teacher targeted individualized learning objectives (e.g., making predictions, theory of mind, etc.)
  - Student used adapted material during class readings
    - Watched the teacher sign the story
    - Referred to the adapted material if she needed clarification

Tales of a Fourth Grade Nothing

Subsequent Novels

- Increased amount of text in the adapted versions
- Used comic strips to illustrate the content
  - Initially drawn by the special education teacher
  - Later drawn by the student to demonstrate comprehension
- Previewed text in advance during 1:1 instructional settings
- Continued focus on making predictions, theory of mind, etc.

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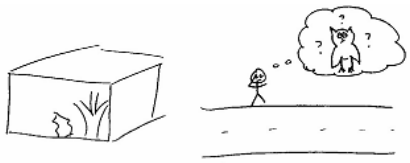
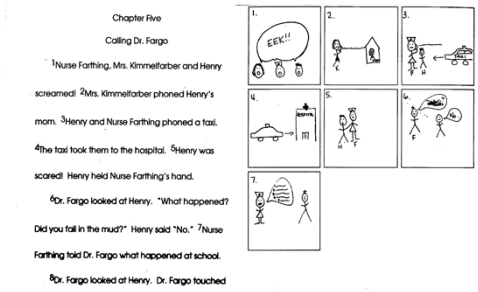
Owls in the Family



Billy woke up. Oh no! Wol was gone! Billy was worried. Billy looked for Wol.

Chocolate Fever



Chapter Five

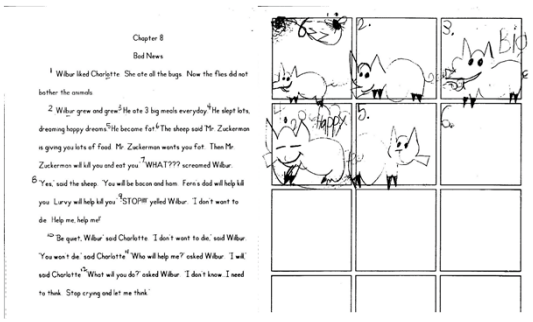
Calling Dr. Fargo

[1]Nurse Farthing, Mrs. Kimmelfarber and Henry screamed! [2]Mrs. Kimmelfarber phoned Henry's mom. [3]Henry and Nurse Farthing phoned a taxi. [4]The taxi took them to the hospital. [5]Henry was scared! Henry held Nurse Farthing's hand.

[6]Dr. Fargo looked at Henry. "What happened? Did you fall in the mud?" Henry said "No." [7]Nurse Farthing told Dr. Fargo what happened at school.

[8]Dr. Fargo looked at Henry. Dr. Fargo touched

Charlotte's Web



Chapter 8

Bad News

[1] Wilbur liked Charlotte. She ate all the bugs. Now the flies did not bother the animals.

[2] Wilbur grew and grew.[3]He ate 3 big meals everyday.[4]He slept lots, dreaming happy dreams.[5]He became fat.[6]The sheep said Mr. Zuckerman is giving you lots of food. Mr. Zuckerman wants you fat. Then Mr. Zuckerman will kill you and eat you. [7]WHAT??? screamed Wilbur.

[8]"Yes," said the sheep. "You will be bacon and ham. Fern's dad will help kill you. Lurvy will help kill you."[9]STOP!!! yelled Wilbur. "I don't want to die. Help me, help me!"

[10]"Be quiet, Wilbur," said Charlotte. "I don't want to die," said Wilbur. "You won't die," said Charlotte.[11]"Who will help me?" asked Wilbur. "I will," said Charlotte.[12]"What will you do?" asked Wilbur. "I don't know. I need to think. Stop crying and let me think."

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Adapted Stories for Read-Alouds

- Add visual supports and adapted text to storybooks to improve access during read-alouds
- Beneficial not only for students with autism and developmental disabilities, but students who have difficulty attending, are learning English, etc.
- Adaptations can be made to physical books or books can be adapted digitally

Adapted Story: *Caillou: Merry Christmas!*

Adapting Story Books and Novels

- Who?
  - Volunteers
  - Other students
    - Great comprehension and/or writing activity for upper elementary and secondary school students
- How?
  - Reduce content difficulty by changing text and/or adding symbols
  - Alter the way in which information is presented (e.g., less text per page)
  - Sticky note glue stick for altering physical books
  - Scanner and projector for altering books in a digital format

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Question and Answer Activities

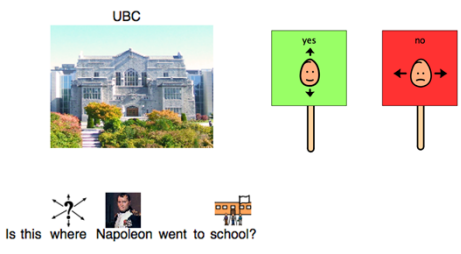
- Many students with ASD experience difficulty participating in question and answer activities during whole group instruction
  - Understanding the question
  - Identifying the answer
  - Conveying the answer

Question and Answer Activities

- General strategies
  - Represent questions visually
  - Predetermine specific questions appropriate for the target student
  - Provide the student with a closed set of answers
    - Yes/No
    - Multiple choice
    - Communication board

Yes and No Questions

- Questions can be posed in a Yes/No format



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Multiple Choice Questions

Pauline	Jerome	Maria Letizia Ramolino	Elisa

Multiple Choice Questions

Rideau Hall	White House

Communication Board

- Teacher shows picture of various people and asks student "Who is this?"
- Other examples of questions:
  - Who was Napoleon's mom?
  - Where did Napoleon go to school?
  - Name one of Napoleon's sisters

Napoleon	Maria Letizia Ramolino	Carlo Maria di Buonaparte	Casa Buonaparte
Ajaccio	Corsica	Ecole Militaire	
Joseph	Lucien	Louis	Jerome
Elisa	Pauline	Caroline	

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Brainstorming Supports

- Students with autism and other developmental disabilities may have difficulty
  - Understanding the topic of discussion and staying on topic
  - Understanding the contributions of their peers
  - Making contributions
- Brainstorming supports can be
  - Errorless (designed so that the student will contribute an appropriate idea)
  - Discrimination-based (designed so that the student needs to discriminate between items to identify an appropriate contribution)

Brainstorming for Poem Writing

- Grade 2 class of deaf students
  - One student also diagnosed with autism; ASL skills were just emerging, which would interfere with her ability to participate
    - Difficulty understanding the topic
    - Difficulty understanding other students' contributions
    - Difficulty making contributions

Brainstorming for Poem Writing

- Classroom and special education teacher created a list of appropriate words and phases for the brainstorming activity
  - Writing a Mother's Day cinquain to describe their mothers
- Special education teacher produced a grid of symbols with only appropriate contributions (errorless)
  - Adjectives (describe mom)
  - Verbs (things mom does)
- One copy of symbols cut out for placement on brainstorming chart
- One copy of symbols as communication boards
  - One board for adjectives
  - One board for verbs

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Brainstorming for Poem Writing

Adjectives

Verbs

Brainstorming for Poem Writing

- During class brainstorming:
  - SEA selected symbols of peers' contributions and taped to chart as teacher wrote words
    - Supported the student's understanding of peer contributions
  - Student used communication board to make contributions by pointing to individual symbols
    - Errorless set of symbols ensured student's contributions were 'correct'

Errorless Brainstorming Grid for Lesson on Healthy Eating

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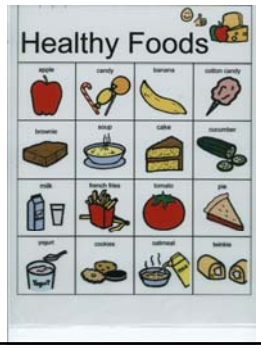
Discrimination-Based Brainstorming Grid for Lesson on Healthy Eating



Visual Supports for Whole Group, Small Group, and Individual Activities

Graphic Organizers

- Support students to understand content and demonstrate knowledge through
  - Sorting/classifying
  - Comparing/contrasting
  - Sequencing
  - Describing

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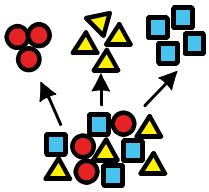
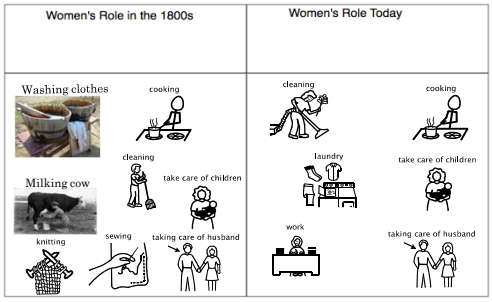
Graphic Organizers to Sort & Classify

- Attributes
  - Characters
  - Settings
- Factual information



Sort & Classify: Snakes

Sort & Classify: History



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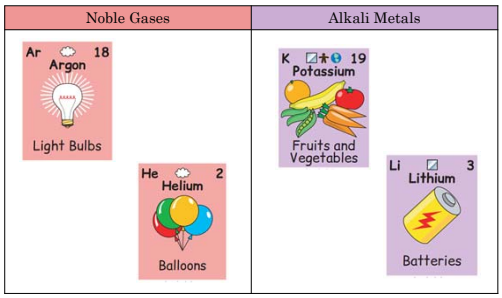
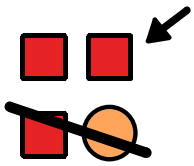
Sort & Classify: Elements

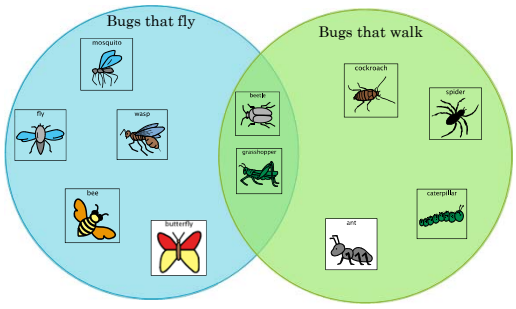


Graphic Organizers to Compare & Contrast

- Characters from books
  - Actions
  - Attributes
- Historical figures
  - Actions
  - Attributes
- Settings, Places
  - Qualities
  - Natural resources
- Factual information



Compare & Contrast: Bugs



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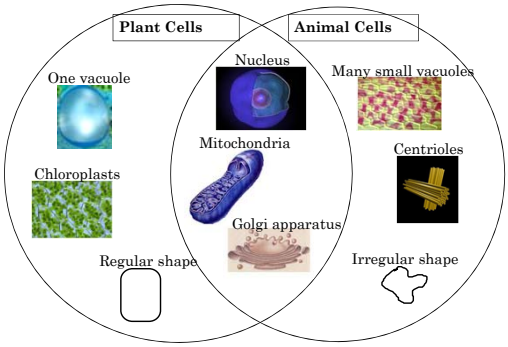
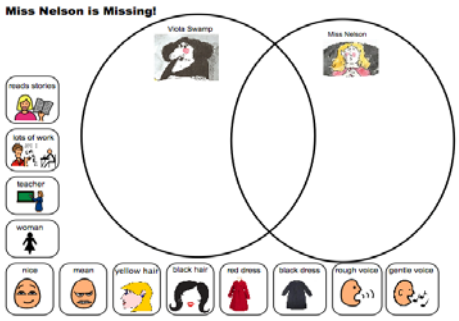
Compare & Contrast: Cells



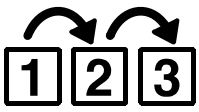
Compare & Contrast: *Miss Nelson is Missing!*



Developed by Dana Walt and Anne Stewart, Victoria, BC

Graphic Organizers for Sequencing

- Plot summaries
- Historical summaries
- Description of processes (e.g., science experiments)



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Sequencing: Romeo & Juliet

Sequencing: Turtle Hatching

Sequencing: *The Little Red Hen*

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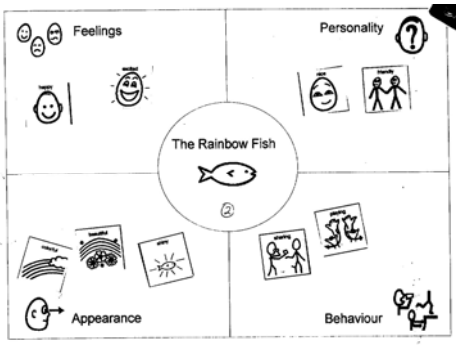
SEQUENCING: *THE MITTEN*

Developed by Laurie Alm and Kate Evans, Victoria, BC

GRAPHIC ORGANIZERS FOR DESCRIBING

- Characters
- Settings, geographical locations
- Factual characteristics
  - Historical characters
  - Animals, plants, etc.

DESCRIBING: *THE RAINBOW FISH*



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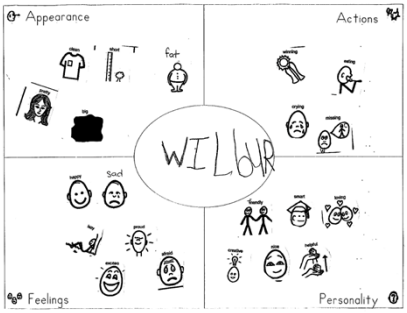
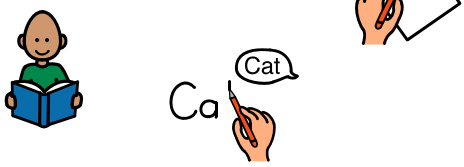
Describing: *Charlotte's Web*



Visual Supports for Literacy Development

Skills for Literacy Development

- Vocabulary and sight word reading
- Reading comprehension
- Writing/Composition



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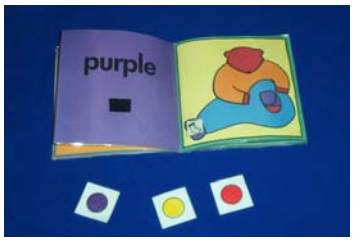
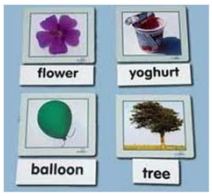
Vocabulary and Basic Concepts

- Match symbols to illustrations



Sight Word Reading

- Matching pictures/symbols to text
  - Structured teaching activities
  - Games
- Worksheets
  - Draw line from picture/symbol to text
  - Cut and paste text to picture/symbol



Match Symbols to Text

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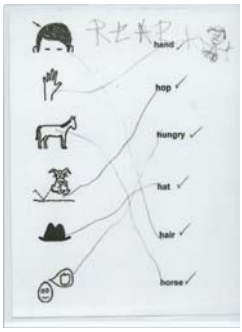

Sight Word Reading…A Caution

- The ability to read sight words does not mean that students will be able to decode unknown words
  - This requires direct instruction related to sound-symbol relationships, blending sounds together, segmenting words into component sounds, etc.
- The ability to read sight words does not guarantee that students will develop the ability to comprehend written sentences, paragraphs, etc.
  - This requires direct instruction
  - We need to teach students to create 'mental pictures' of what they read
    - Perfect for visual supports!

Teaching Comprehension of Text

- Matching
  - Single sentence to illustration
  - Several sentences to an illustration that depicts the general content
- Drawing or comic stripping
  - Students draw their interpretation of what they read

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Matching for Comprehension

Matching for Comprehension

Drawing to Show Comprehension: *Charlotte's Web*

Chapter 8

Bad News

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Visual Supports for Writing

- Matching sentences to illustrations to 'write'
- Cloze
  - Fill in the blank activities
- Color coded writing supports
- Writing grids

Matching to 'Write'

Matching to 'Write'

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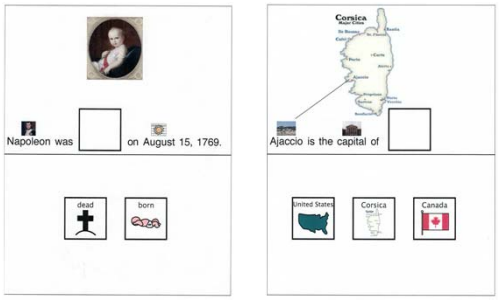
Cloze Activities for Writing

Cloze Activities for Writing

Cloze Activities for Writing



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Color Coded Writing Supports

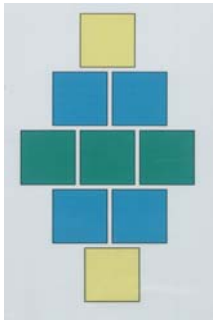
- Errorless approach to writing
  - Color coding supports students in sequencing symbols/words
- Can be used in conjunction with cloze supports

Color Coded Cinquain Writing

Adjectives

Verbs

Color Coded Cinquain Writing



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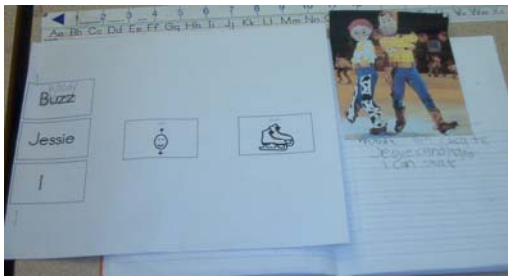
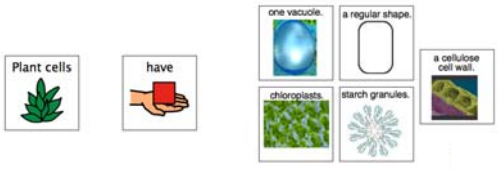
Writing Grids

- Symbols/text are arranged on the page to support sentence writing
  - Word order
  - Subject/verb agreement
  - Plurals
- Students can write by
  - Cutting and pasting symbols/text
  - Printing/writing
  - Typing (computer, tablet, label maker)

Writing Grids



Writing Grids



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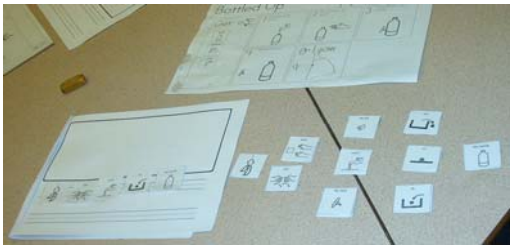
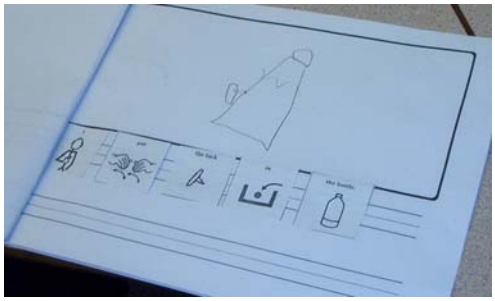
Writing Grids



Writing Grids



Visual Supports for a Science Lesson

- Visual supports for:
  - Small group science lesson/activity
  - Making prediction
  - Conveying outcomes

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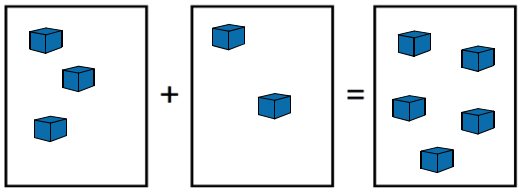
Visual Supports for Math

- Visual supports can be used to
  - Convey math concepts
  - Sequence steps for completing math problems
- Many of the visual supports used for language and literacy activities can be applied to math activities
  - Sorting
  - Compare/contrast

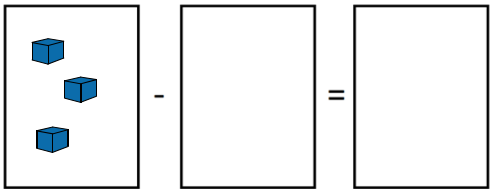
Visual Supports for Addition



3 + 2 = 5

1	2	3	4	5	6	7	8	9	10

Visual Supports for Subtraction



3 - 2 = 1

1	2	3	4	5	6	7	8	9	10

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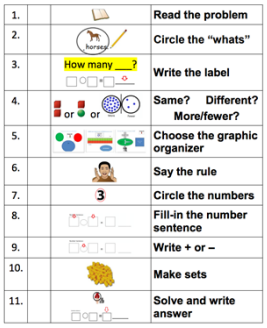
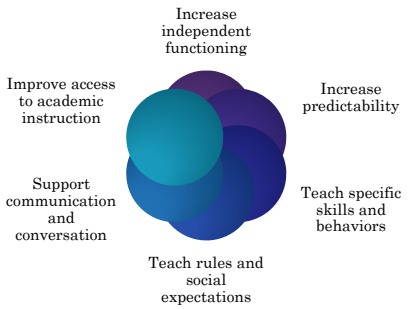
Visual Support for Solving Word Problems

- From *The Solutions Project* (Browder et al.)
- Structured, behavior analytic program to teach students to solve word problems
  - Addition only
  - Subtraction only
  - Either addition or subtraction
- All materials and instructions available online: https://access.uncc.edu/solutions-project/project-resources



Considerations and Planning

Consider Your Purpose



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Determine the Necessary Representation and Type of Visual Support Needed

- Select a representation appropriate for the individual
  - Objects
  - Photographs
  - Symbols
  - Text
- Determine what type of visual support is most appropriate
  - Visual schedule
  - Contingency map
  - Social narrative
  - Academic adaptation
  - Etc.

Create Your Visual Supports

- Software
  - Boardmaker
  - Symbolstix Prime
- Laminate, velcro, etc.
  - Consider where the visual supports will be used, if they need to be portable, etc.
- Need help making visuals?
  - School volunteers
  - Student volunteers
  - Peers
  - Online resources
    - Boardmaker Share

Slow & Steady Wins the Race

- The number of ways in which visual support strategies can be used is *overwhelming!*
  - Start small – identify one thing to implement first
  - Gradually add visual supports over time

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"I'm a visual thinker, not a language-based thinker. My brain is like Google Images."

~ Temple Grandin

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