UTILIZING TECHNOLOGY TO PROVIDE ACCESS FOR LEARNERS WITH CVI

CVICONNECT

Stephanie Steffer - STEPHANIES@CVICONNECT.CO

Objectives

* When given an activity to be accessed visually by a learner with CVI, participants will locate digital images that meet the learner’s need for complexity of a target and array.
* When given an activity to be accessed visually by a learner with CVI, participants will utilize
* technology to create an activity while applying the visual and behavioral characteristics of CVI as outlined by Christine Roman-Lantzy, Ph.D.
* When given an activity to be accessed visually by a learner with CVI, participants will utilize
* technology to align the user’s CVI Range Score to align the modifications to meet the unique needs of the learner’s visual and behavioral characteristics of CVI as outlined by Christine Roman-Lantzy, Ph.D.

CVI IS THE LEADING CAUSE OF VISUAL IMPAIRMENT IN YOUNG CHILDREN LIVING IN THE WESTERN HEMISPHERE – Roman 2018

Three Elements:

* An eye exam that does not explain the individual’s functional use of vision
* A history of a brain condition, trauma, or damage associated with CVI
* The presence of certain visual and behavioral characteristics

Three Elements of Identification for CVI from Roman-Lantzy (2018)

10 Visual and Behavioral Characteristics of CVI

* Color Preference • Need for Light
* Need for Movement
* Visual Latency
* Visual Field Preference
* Difficulty with Visual Complexity
* Difficulty with Distance Viewing
* Atypical Visual Reflexes - This is the only characteristic that will not require an accommodation.
* Difficulty with Visual Novelty
* Absence of Visually Guided Reach

Visual and Behavioral CVI Characteristics from Roman-Lantzy

The CVI Range

* Functional Vision Evaluation
* 3 parts
* Observation
* Parent Interview
* Direct assessment

The Phases of CVI

* Phase I (Range 0-3): the goal is to build consistent visual behavior
* Phase II (Range 3+-7): the goal is to integrate vision with function
* Phase III (Range 7+-10): the goal is to facilitate refinement of the characteristics

ASSIGNED TASK

* Align Content to meet student need by modifying curriculum
	+ Align Visual Input to meet student need by accommodating images and text

Sensory Balance

Consider how the 10 characteristics impact the students ability to access materials at different parts of the day

* CVI Sensory Balance: Learning Media Profile
* Visual Learning Media
* Approximations for each Phase
* Compensatory Learning Media
* Multi-Sensory Input
* Technology
* Learning Media Goals

Roman-Lantzy, C. and Tietjen, M. (2020). Sensory Balance: An Approach to Learning Media Planning for Students with CVI. Watertown, MA: Perkins School for the Blind.

“What’s the Complexity” Framework from Matt Tietjen

ASSIGNED TASK

* Align Content to meet student need by modifying curriculum
	+ Align Visual Input to meet student need by accommodating images and text
		- Instruction
			* ACCESS FOR CVI LEARNER

INSTRUCTION

EXPLICIT Instruction

Specialized instruction to learn how to utilize the accessible materials

Salient Features and Comparative Thought from Roman-Lantzy Mediated learner from Judy Endicott

Considering Light

* Position child with their back to primary light sources
* Pair visual targets with light
* Light source from behind the student shining on target
* Present material on a backlit device (Lightbox or tablet)
* Consider contrast
* Utilize animation/effects with lights or properties of light
* Visual and Behavioral CVI Characteristics from Roman-Lantzy
* Considering Novelty
* Utilize 3D targets that are more familiar or visually similar to items that are familiar for the child
* Utilize realistic photographs of the familiar or visually similar items
* Use known fonts or those with similar letter formations
* Avoid teaching new concepts or targets that are too visually similar

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Utilizing Technology to Consider Novelty - Visual and Behavioral CVI Characteristics from Roman-Lantzy

Considering Complexity of Object

* Keep input simple. Limit number of colors.
* Images: Start with pictures of familiar items.
* Pair the photograph with the real item.
* Gradually add to complexity of the objects, or number in the array. Not both at once.

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Considering Complexity of Array

* Preferable black background
* Limit the number of visual targets available
* Pair words with accessible images or real items when possible

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Considering Distance

* Preview a new space to help the child understand what is within the space
* Preferential Seating
* Provide instruction at the learner’s preferred distance (typically near work is preferred)
	+ Individual presentation of notes and materials
	+ Screen sharing technology
	+ CCTV

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Utilizing Technology to Consider Distance and Complexity

Utilizing Technology to Consider Accessible Images

* Search for png files
* Remove.bg
* Background Eraser apps

Search PNG files

To find a visual target without background (transparent background)

Remove.bg

If the background has the checkers or other colors you need removed, try this

Background Eraser Apps

* Utilize eraser apps on your tablet
* Background eraser on Powerpoint

Considering Color

* Use color only when needed to bring attention
* Color patterns
* Organize information

Visual and Behavioral CVI Characteristics and Salient Features from Roman-Lantzy

SAMPLE CVI OVERLAY

Considering Novelty

* When targets are new, provide the child with specialized explicit instruction to help the child interpret novel targets and concepts
* Salient feature instruction

Visual and Behavioral CVI Characteristics from Roman-Lantzy

WHAT DO YOU SEE? 2-Dimensional Image Assessment

Matt Tiejten presents this visual and explains the progression:

* Color Photograph
* Realistic Color
* Abstract Color
* Realistic Black and White
* Abstract Black and White

Salient Features

* It’s an elephant
* Why?
* How do you know?
* Create a team script/dictionary with salient features for consistency

Salient Features from Roman-Lantzy

Utilizing Technology to Consider

Salient Features

* Shared
	+ Document
	+ Presentation
* CViConnect Activity
* Instructions in the Activity

Salient Features from Roman-Lantzy

Utilizing Technology to Consider Salient Features

Accommodate this Activity for Phase III (graphic of phases of the moon activity)

Utilizing iPad’s Markup Feature

Considering Novelty

* When targets are new, provide the child with specialized explicit instruction to help the child interpret novel targets and concepts
	+ Salient feature instruction
	+ Comparative language

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Comparative Thought

* Compare and contrast familiar targets for the child
* Build on the child’s thought
* Venn diagram

Visual and Behavioral CVI Characteristics and Comparative Thought from Roman-Lantzy CVI Overlay from Judy Endicott

Utilizing Technology to Consider Comparative Thought

Considering Movement

* Move the visual target for visual attention
* Utilize shiny or reflective materials that provide movement like properties to the brain
* Position the child to limit movement at a distance becoming a distractor
* Interact with pieces, both 2D and 3D.
* Point to each word while reading
* Videos for concepts

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Utilizing Technology to Consider Movement

Utilizing Technology to Consider Color, Light, and Movement

Accommodate this Activity for Phase I

Utilizing Technology

* Visual latency
* Color preference
* Need for light
* Difficulty with visual complexity
* Need for movement

Utilizing Technology

* Color preference
* Need for light
* Difficulty with visual complexity
* Difficulty with visual novelty
* Need for movement

Considering Latency

* Provide the child with ample wait time without additional prompting
* Using the ‘What’s the Complexity’ Framework and Sensory Balance, create a balanced schedule to avoid visual fatigue
* Provide instruction verbally, followed by needed wait time without additional prompting (verbal or physical)

Visual and Behavioral CVI Characteristics from Roman-Lantzy, ‘What’s the Complexity’ Framework from Tietjen, Sensory Balance from Roman-Lantzy and Tietjen

Utilizing Technology to Consider Color, Light, Latency, and Movement

Utilizing iPad’s Screen Recording

* Settings
* Control Center
* Included Controls: Screen Recording
* Open any app to record
* One finger pull down at the top right hand corner of iPad

Considering Complexity of the Sensory Environment

* Balance your task and environment
* Reduce the number of toys that make noise
* Encourage look before sound
* Don’t talk while the student is reading
* Consider other sensory inputs

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Considering Complexity of the Sensory Environment

* System sound- cheer, horn, success, whistle, etc.
* System speaks (Siri voice)
* Recorded file

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Utilizing Technology to Consider Complexity of the Environment

IF… Then…

Touched Appearance

Landed on Target Motion

Missed Target Audio/Visual

Caught Item Color

Item Collision Background

Dragged over Activity

Considering Visually Guided Reach

* Support a visually guided reach by decreasing complexity of object, array, and sensory environment
* Encourage the child to look first before reaching

Visual and Behavioral CVI Characteristics from Roman-Lantzy

Accommodate this Activity for Phase II (graphic of create a constellation activity)

Sample CVI Overlay for Writing

DATA DRIVEN INSTRUCTION: Ensuring Meaningful Access for Students with CVI

PURPOSE

* What is the goal of the activity?
* Utilize the data collected

CONTINUED DATA COLLECTION

* Look detection data:
	+ Which accommodations meet the goal of the Phase of CVI?
	+ Is the accommodation improving visual attention or a distraction?

LOOK DETECTION DATA

Implementation

Have you considered:

* Does the activity require modifications?
* What are the goals of your student’s CVI Phase?
* What are your student’s IEP goals?
* What learning media is most appropriate?
* Does the accommodation match the CVI Range score?
* “What’s The Complexity” of the environment and the task?
* Who on the team is responsible for accommodating materials?
* Is specialized instruction (pre-teaching) needed:
	+ Who is responsible?
	+ When will it take place?
* What does the environment look like where the instruction will take place? (Noises, textures, lights,etc)
* Where is your student sitting in regard to presentation of material?
* Does positioning impact the student?

Resources

* Activity Creation:
	+ CViConnect (website and iPad software) CViConnect.co
	+ Powerpoint, Keynote, Google slides
* Salient Features: These can be used to edit an image and use color to highlight salient features.
	+ CViConnect (website and iPad software) CViConnect.co
	+ Roman Word bubbling [https://roman-wordbubbling.appspot.com](https://roman-wordbubbling.appspot.com/)
	+ iPad Markup
* Complexity of the object: These can be used to reduce background complexity making images more accessible.
	+ Eraser iPad App
	+ Remove.bg
	+ Search png images
* Training
	+ Bridge School- CVI: [https://cvi.bridgeschool.org](https://cvi.bridgeschool.org/)
		- Offers training for CVI and children with complex communication needs
	+ Perkins; CVI for the TVI <https://www.pathstoliteracy.org/resources/cvi-tviwebinar-series>
		- Offers monthly webinars of a wide variety for providers (not just TVIs)
* Knowledge is Power:
* These sites offer great supports from the families perspective
* Everyday CVI https://everydaycvi.com
* Is a blog written by a mother of a child with CVI full of excellent information
* Pediatric Cortical Visual Impairment Society https://pcvis.vision
* Medical, educational and family advocates come together to share new research for the field

References

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THANK YOU!