

Vision

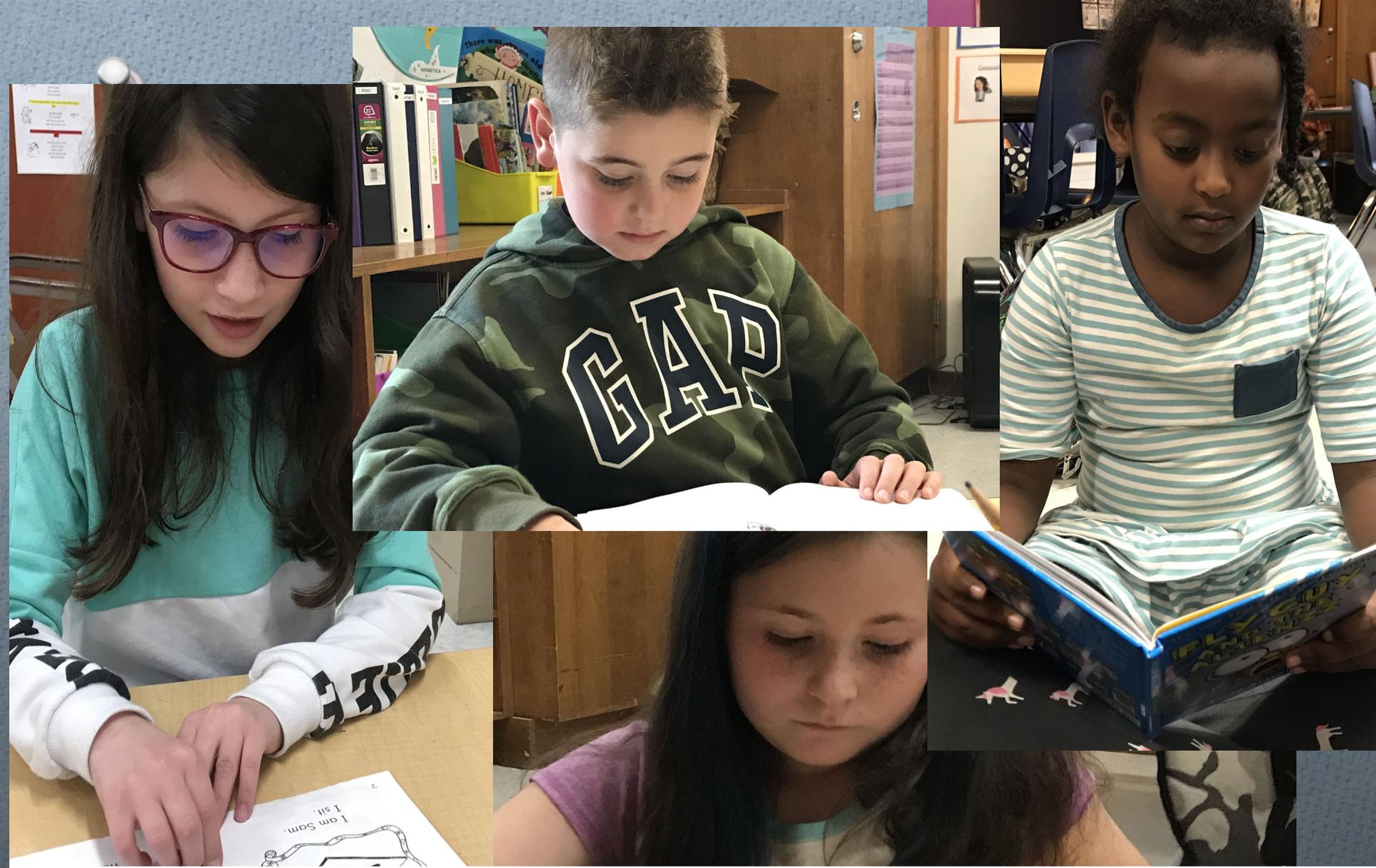
could it be a missing piece?



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Working Harder Does Not Help

Where is Reading Processed?

Frontal Lobe

Thinking, planning
emotional control, speech
articulation

Temporal Lobe

Sound processing,
receptive language,
vision memory

Parietal Lobe

Visuospatial Processing,
orienting in space, body
and visual imagery

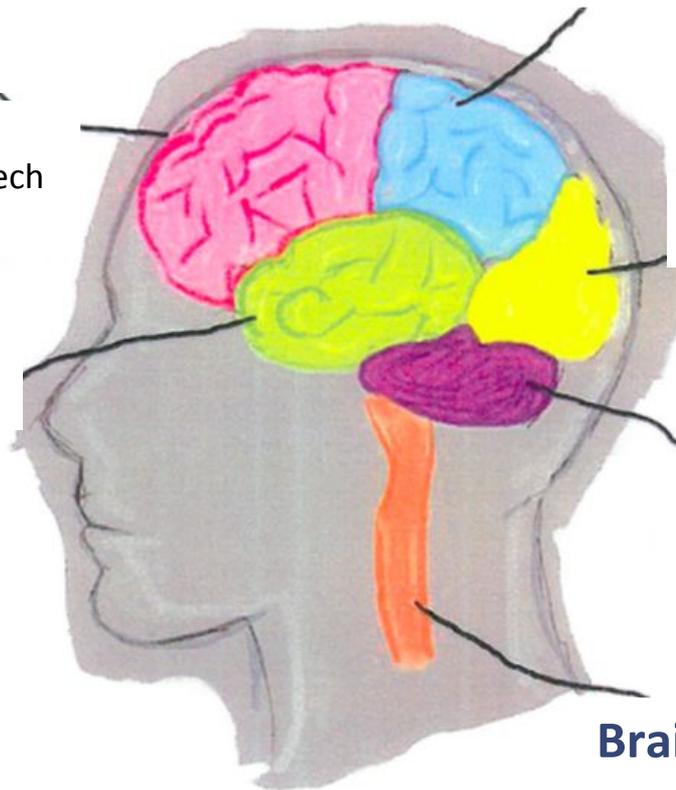
Occipital Lobe

Vision, visual
processing

Cerebellum

Gross and Fine Motor,
eye hand coordination,
balance

Brain Stem



Sensory Processing Lobes

- ❖ **Temporal Lobe** – Located behind the ears
Processes sounds including receptive language
- ❖ **Parietal Lobe** – Located top center, processes sensory input from throughout the body including touch, and orienting objects in space, including both the body and visual imagery
- ❖ **Occipital Lobe** – Located at back of brain, Processes visual input

Role of Vision in Reading

- ✧ When a child reads a word, the visual image of the word is projected to the primary visual cortex of the **occipital lobe**
- ✧ Information about the visual features of the word (e.g., the lines and curves that make up the letters) is processed within the **occipital lobe**.

Phonological Loop (reading decoding)

- ✦ **Visual information** projected to primary visual cortex in right occipital lobe
- ✦ Travels via corpus callosum to left temporal lobe for **phonemic coding**
- ✦ Verbal memory to **retrieve sounds**
Interconnections with parietal lobes for **sequencing the sounds**
- ✦ Working memory for **multiple phonemes**
Sounds travel to Broca's area for **articulation**

Orthographic Loop

(sight word recognition)

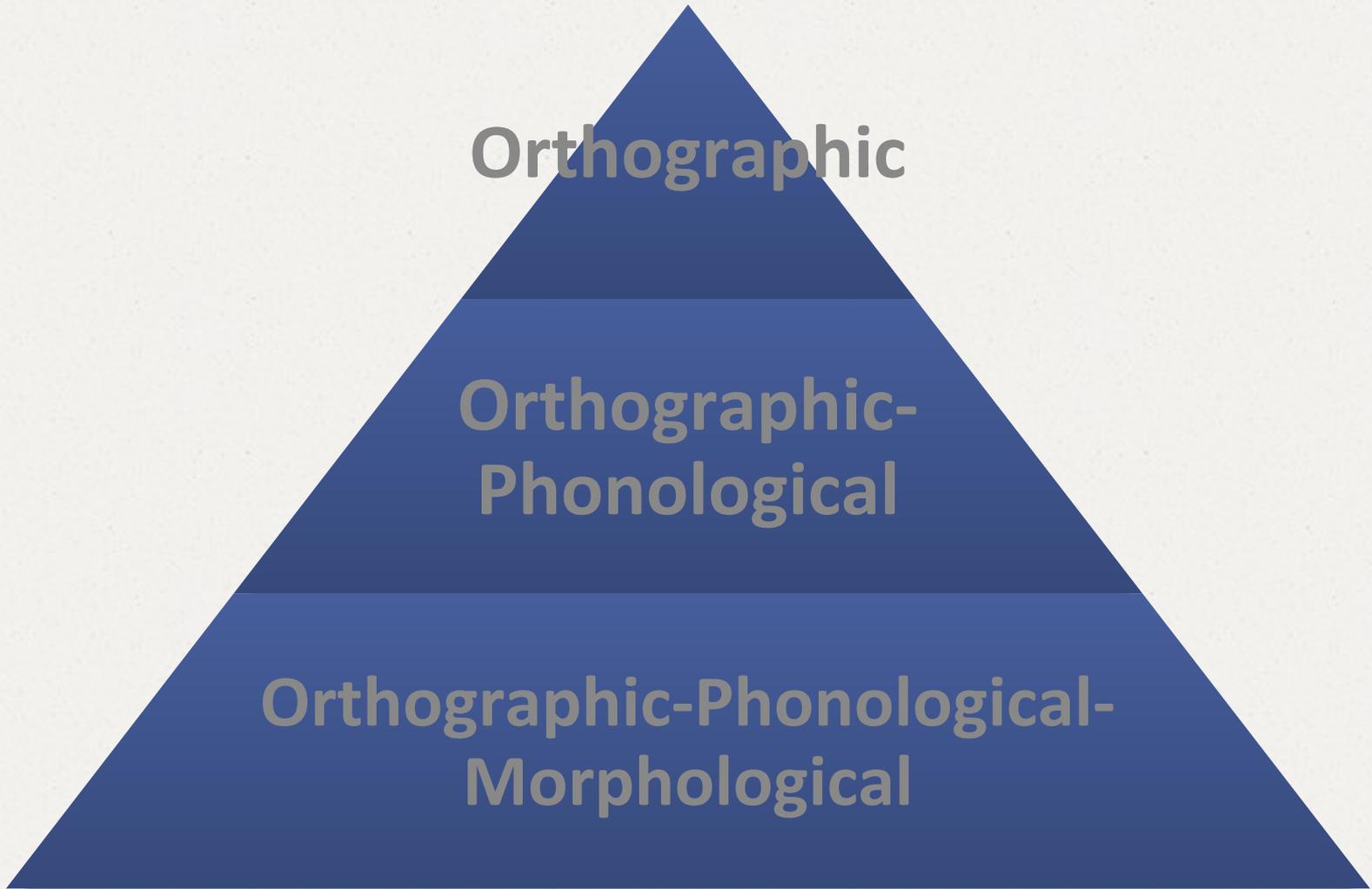
- ✧ Visual information projected to primary visual cortex in **Occipital Lobe**
- ✧ Travels to **Parietal Lobe** to orient letters in space & sequence them
- ✧ Whole word forms are stored in **visual memory**
- ✧ Associated with language in the **Temporal Lobes**
- ✧ Whole word travels to Broca's area in **Frontal Lobe** for articulation

Components of Reading

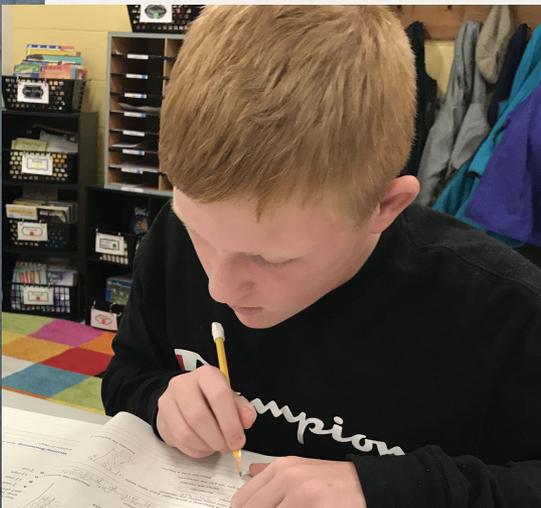
Orthographic

Orthographic-
Phonological

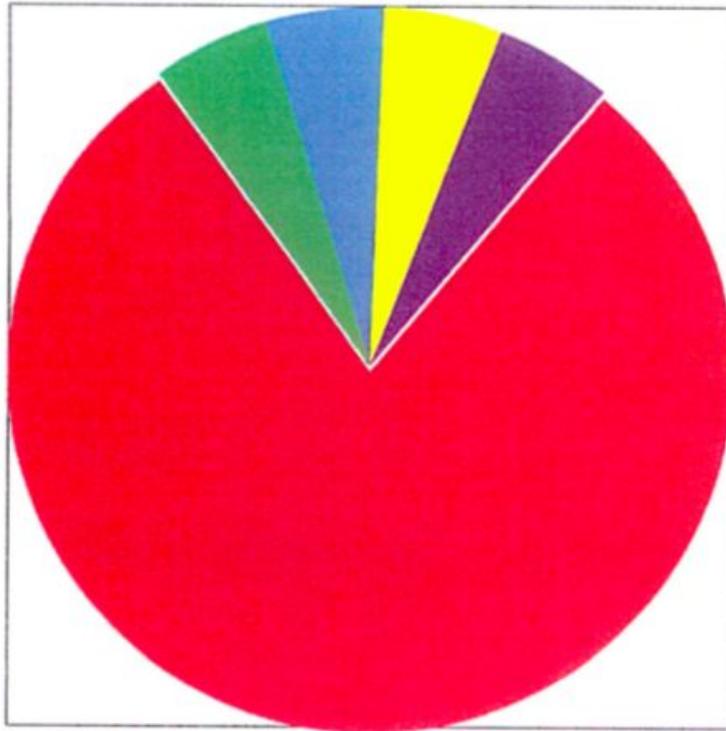
Orthographic-Phonological-
Morphological



Vision is not
in the eye, the eye
in an *instrument* of
vision



VISION = 80%



SMELL
HEARING
TASTE
TOUCH

Visual Pathways

- ✧ **Ambient** - big picture, the **WHERE** of visual processing, detection of motion and spatial awareness
- ✧ **Focal** - the **WHAT** of visual processing



Vision...

- ✦ Is a product of our **inherited potentials**, our past experiences and current information.
- ✦ Efficient visual functioning enables us to **understand the world around us** better and to guide our actions accurately and quickly.
- ✦ Is a **dominant sense** and is composed of three areas of function:
 - ✦ **visual pathway integrity**
 - ✦ **visual skills**
 - ✦ **visual information processing**

Important Questions...

1. **What do you see ?** (visual acuity)

2. **Refractive state ?** (near sighted, far sighted, astigmatism)

3. **Eye health?** (dry eye, glaucoma)

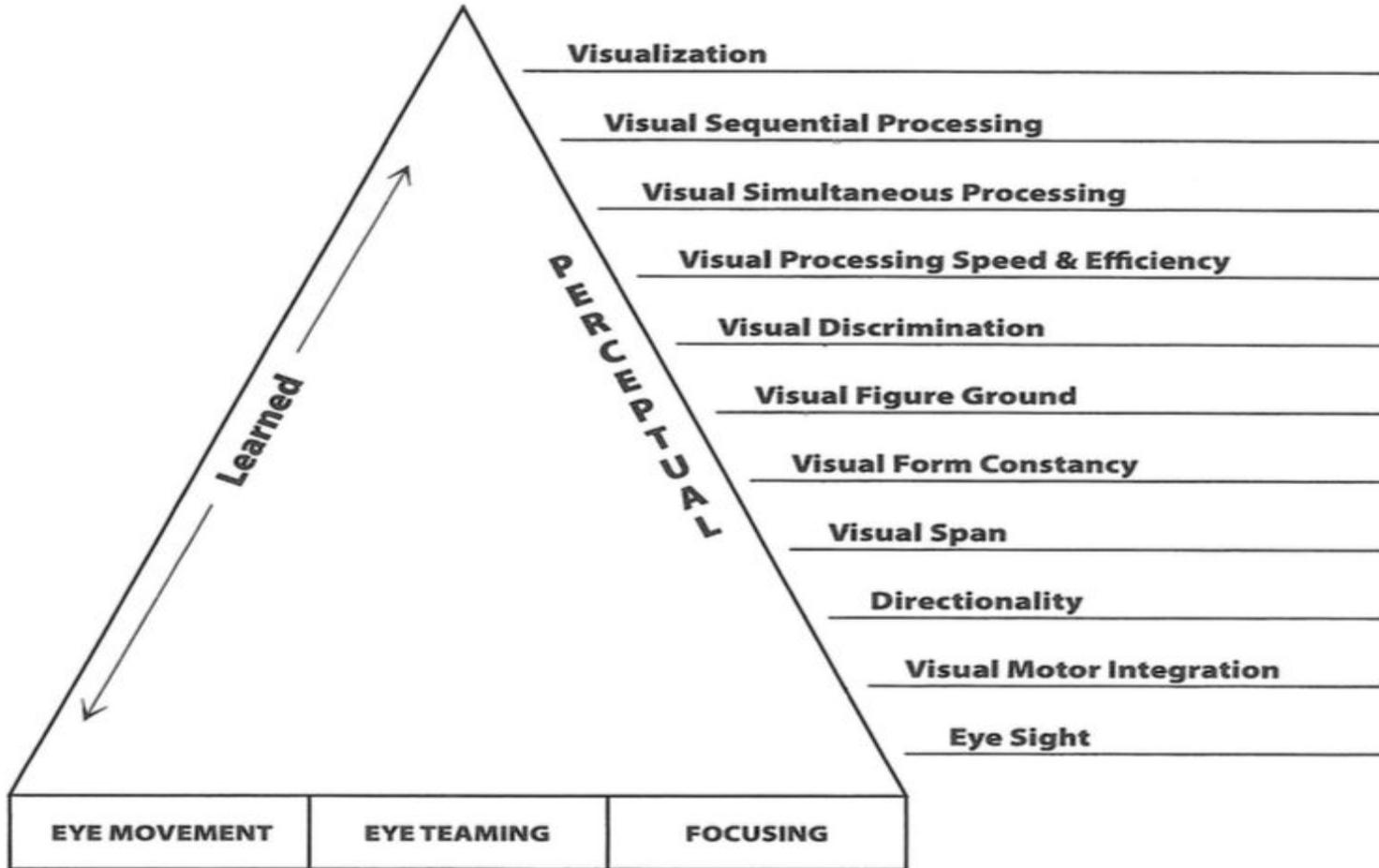
* These 3 questions give *baseline* information

The Most Important Question *(that is often not asked)*

**How does your child (your student)
process visual information?**



VISION



Eyesight is **not** vision

- ✧ There is no such thing as 20/20 vision
- ✧ Eye care is about eyes
- ✧ **Vision care is about how we use those eyes**
- ✧ **The brain requires single, clear and comfortable vision**
- ✧ Eyes do not tell people what to see, people tell the eyes what to look for! (Larry Macdonald, OD, FCOVD)

The Importance of Vision

Visual Skills

Eye Teaming

Eye Movements

Eye Focusing

What do visual distortions look like?

Unequal sized print

All aboard the train

Words moving or letters running together

All aboard the train.

Words take off and leave the page

All aboard the train.

Double print

All aboard the train.

Reversed letters

All aboard the train.

Words squished together

All aboard the train.

Words appear as splotches or streaks

All aboard the train.

Words are shaky

All aboard the train.

This is what we are doing at present

- ◆ Consider visual skills efficiency for students brought up for RTI concerns
 - ◆ OT or trained staff perform basic visual screening
 - ◆ Conversation with school nurse and parent
 - ◆ Strategies for classroom teacher
- ◆ Visual Screening Component of K Screening
- ◆ Carry over of KJS visual skills exercises in the classroom
- ◆ 10 week Pilot Program in the learning lab and Alt Ed class

What can you do with this information?

- ✦ Consider the role that vision (not eye sight) plays in learning when thinking about students
- ✦ Question the visual skills efficiency of students receiving Special Education Support – is there a missing piece?

Time to check your own eye teaming skills

❖ Brock String Exercise:

1. Hold the string at the end of your nose using your thumb and pointer finger.
2. Position the bead at the halfway point with of your string so your partner can do the same on the other end.
3. What do you see when you focus your eyes on the bead?

Thank you!

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