

times gone by.  
- ORIGIN C16: from  
**language** ● n. 1  
either spoken or  
in a structured



*cognitive*

# DISTANCE LEARNING: HELPING STUDENTS FIND MEANING, VALUE AND PURPOSE IN A DIGITAL WORLD

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DR BONNIE ROBB  
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## GOALS FOR THE NEXT HOUR...

Learn more about how to create conditions of learning that increase student engagement and learning.

Take away two strategies to use with students to help increase engagement and learning.

# HOW DO WE LEARN?

Neuroscience  
(brain)

Learning is brain-based

NsLLT: 4 Levels

Concepts are based on the types of patterns processed

Cognitive Psychology  
(mind)

Language Function  
(literacy)

Language Acquisition is Semantic, Semiotic, and Pragmatic

## THINK ABOUT IT...

- Can you remember a time when a learning experience at school really resonated with you? You felt connected to the experience and you felt you really learned something? What are some words that would describe that experience?



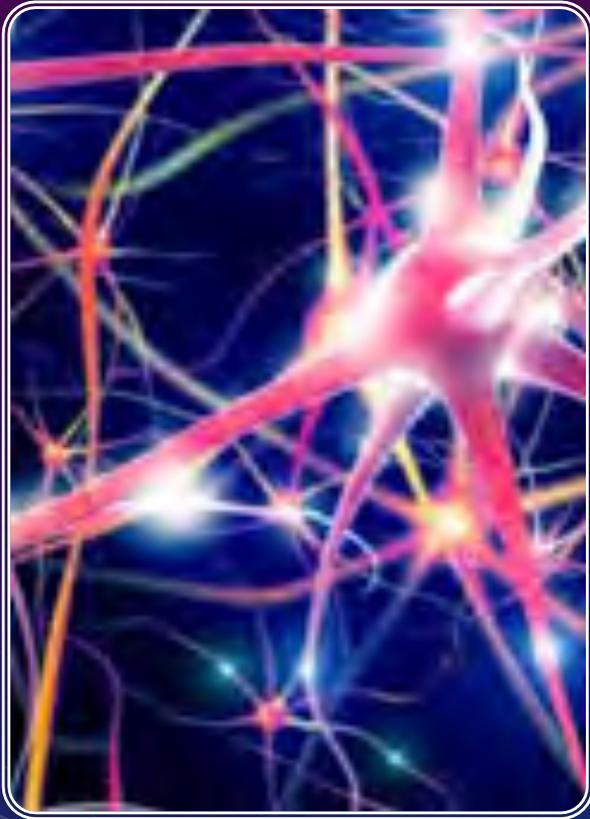
- Write one of those words in the chat!

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## HELPING STUDENT CREATE CONNECTIONS

- Connection to the neurobiological processes of the brain – **meaning**
- Connection to our own lives, experiences and culture – **value**
- Connection to the larger world through the process problem solving and through content focused learning – **purpose**



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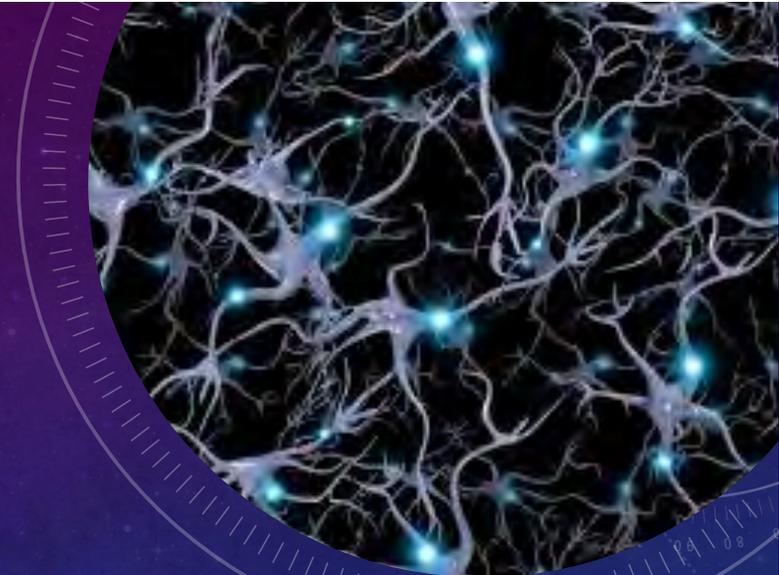
## MAKING MEANING IN THE BRAIN

- If we can't process the patterns we are given by the teacher, we cannot make meaning from them.
- We need multiple points of access to content so all learners have an opportunity to learn in their own best way.

## CONSIDER...

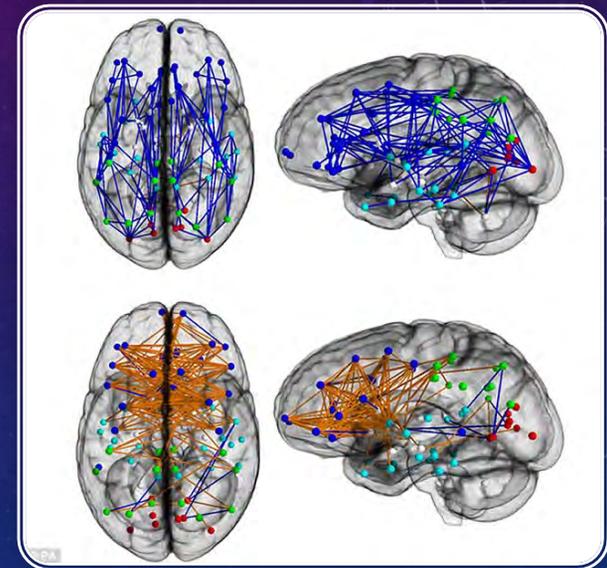
- Visual concepts - thinking in the graphics of what we think or see - 95% of learners
- Majority learn with visual concepts, so we must look at visual language properties and create visual methods
- Concepts or thinking occurs through the pathways of the brain as images

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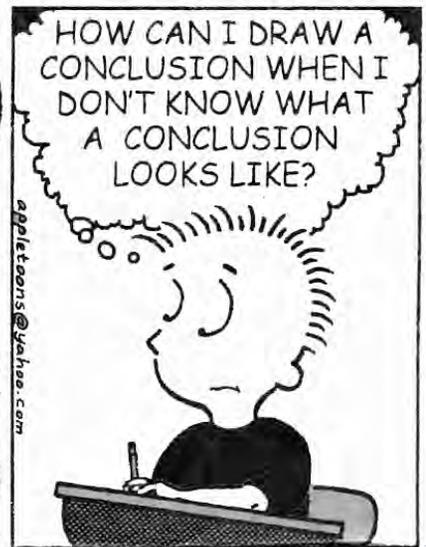
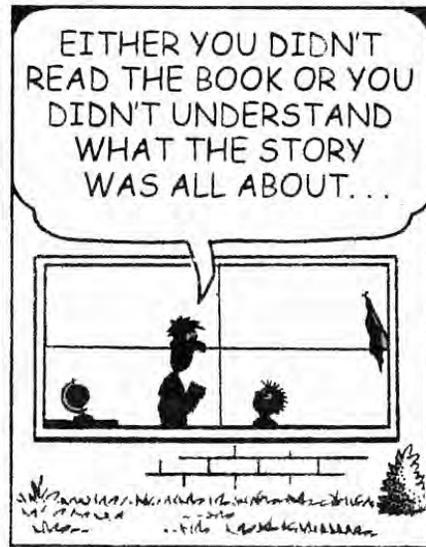
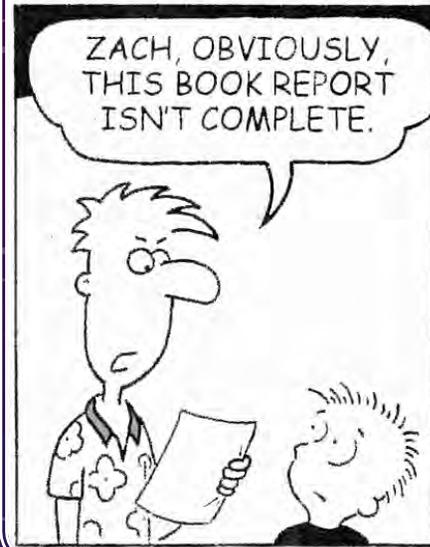


## CONSIDER....

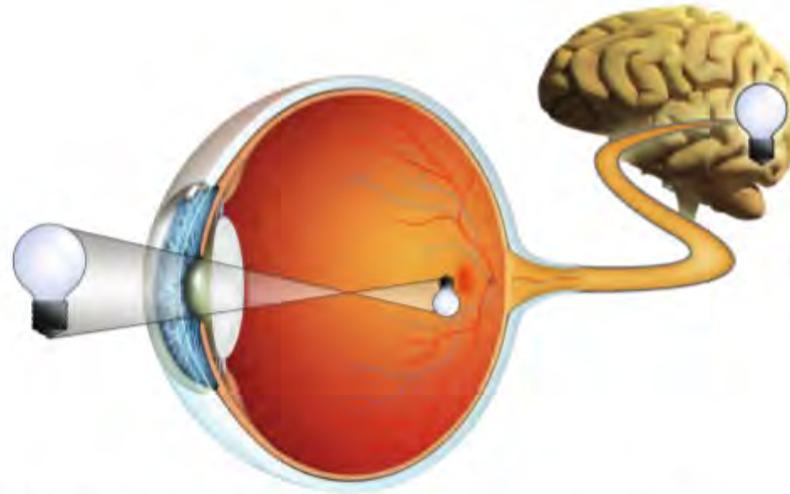
- We know that the visual system is cross-modal across and within hemispheres of the brain
- Not everyone forms concepts from the same types of patterns!
- Give all learners multiple points of access by provide multi-modal learning opportunities!



ADAMS' APPLES



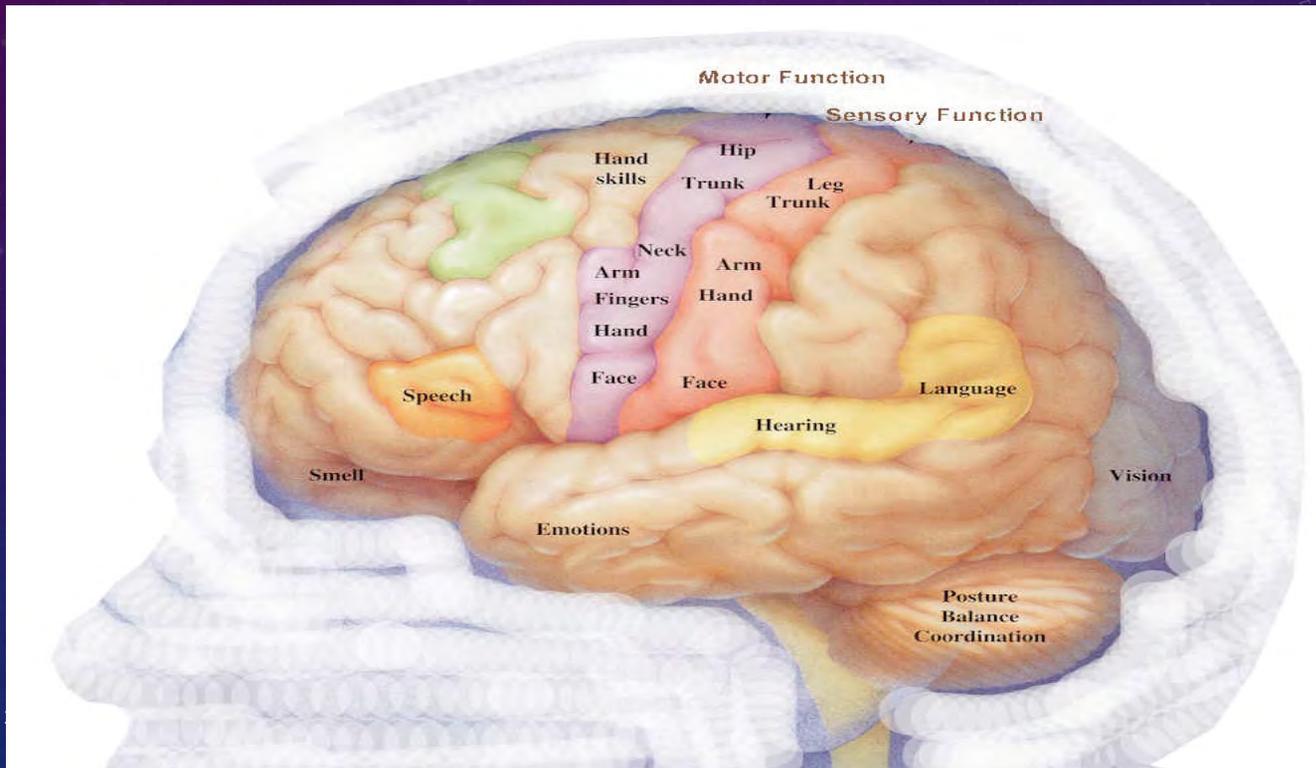
WE KNOW WHAT WE SEE...



The eyes are not the only organs that are involved in sight. At any given time, 75 – 90 % of the brain is working to help the eyes move and process visions.

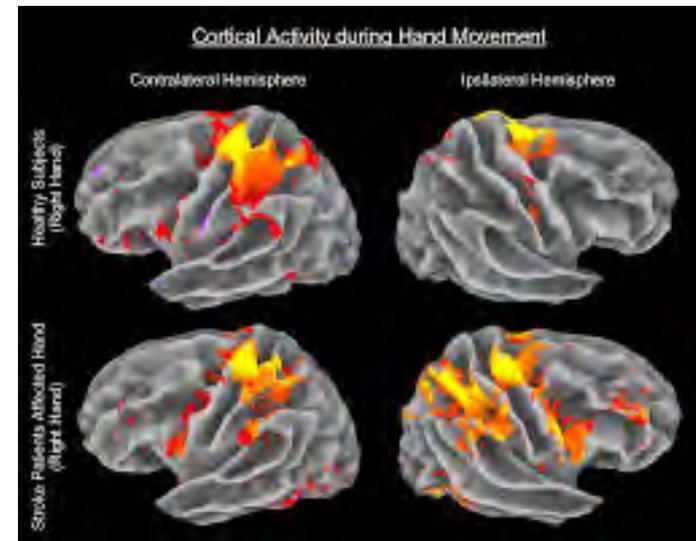


# THE POWER OF DRAWING AND WRITING FOR LEARNING



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# ELECTRICAL ACTIVITY IN THE BRAIN IS WIDESPREAD DURING DRAWING AND WRITING



# Homunculus

**WHAT THE  
BRAIN SEES**



**SENSORY**



**MOTOR**

## DR. MICHAEL MERZENICH

- “We know, from a neurological perspective, that multimodal sources of reference or affirmation actually directly impact semantic development and ideation.”
- “I associate an aural word with an object or action; the written word adds to my reliable sorting of the MEANING of that word—with all of its associative extensions—in my mind.”
- “Producing (writing) it ... adds again to the selectivity and reliability of my representation of the idea of that word. A pictograph of that word adds again.”

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## VISUAL LANGUAGE METHODS

Since most children think in pictures and create new ideas through seeing shape and movement, we need to draw and teach them to draw!

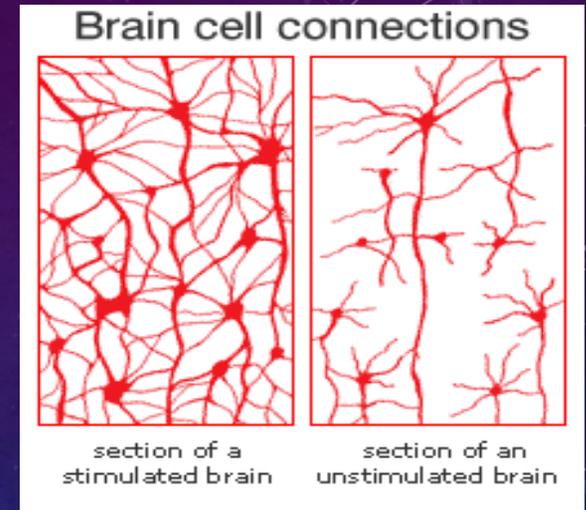


Drawing is a visual representation of thinking- this is not art. We draw before we write in order to organize our thoughts and refine our thinking.

## WHEN TO DRAW?

- Teachers- we can draw to explain new learning.
- Students- draw to explain their thinking (cognition)
- “Using pictograph-drawing and word writing in parallel with – or even BEFORE – reading. That makes lots of neurobiological sense.”

Dr. Michael Merzenich



- Visual and Visual overlapping patterns form visual patterns
- So, are you presenting material that has visual patterns overlapping with visual patterns?
- Equal access to content is critical to reach all learners in both distance and live instruction.
- Giving multiple overlapping patterns provides more access to all learners –even more so in distance learning.



# WE CAN HELP ALL LEARNERS SEE THE IDEAS... WHAT CAN YOU DRAW?



DIRECTIONS,  
EXPECTATIONS



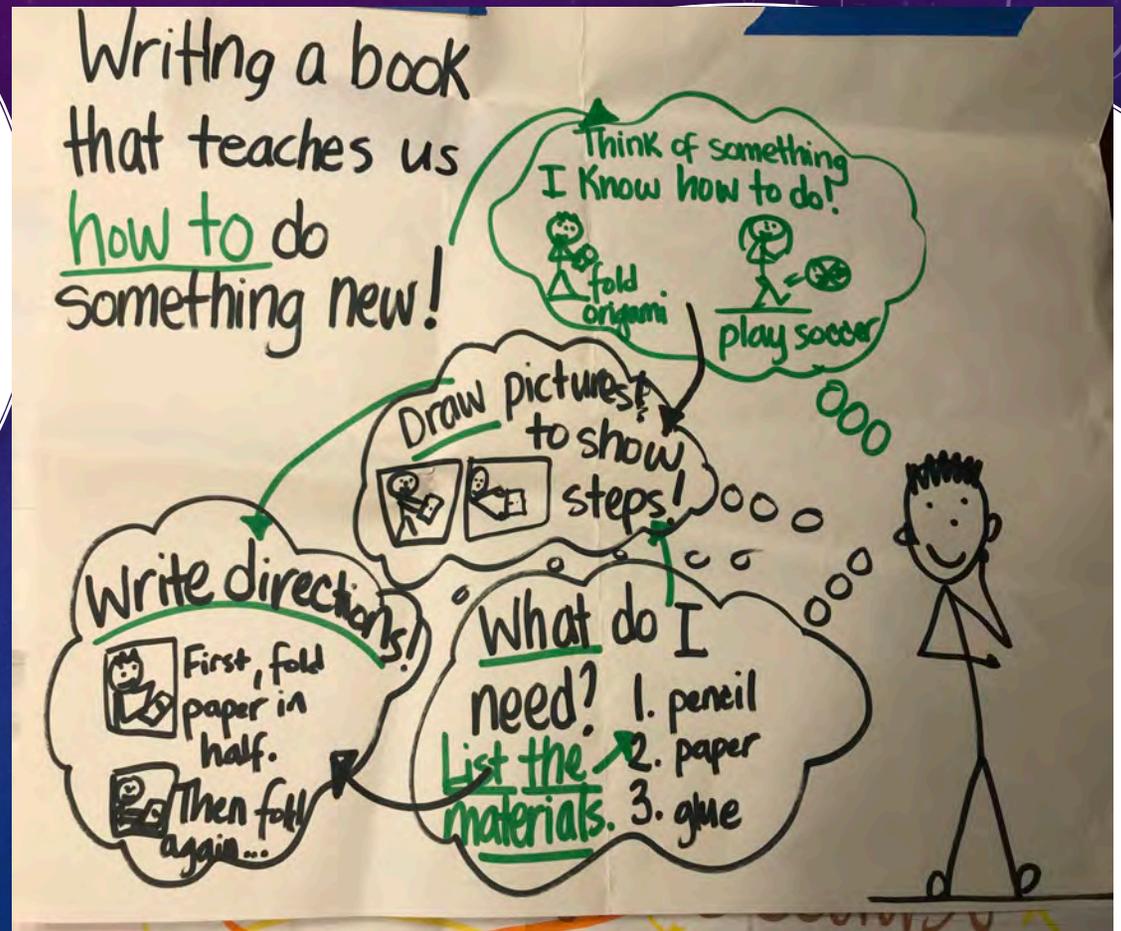
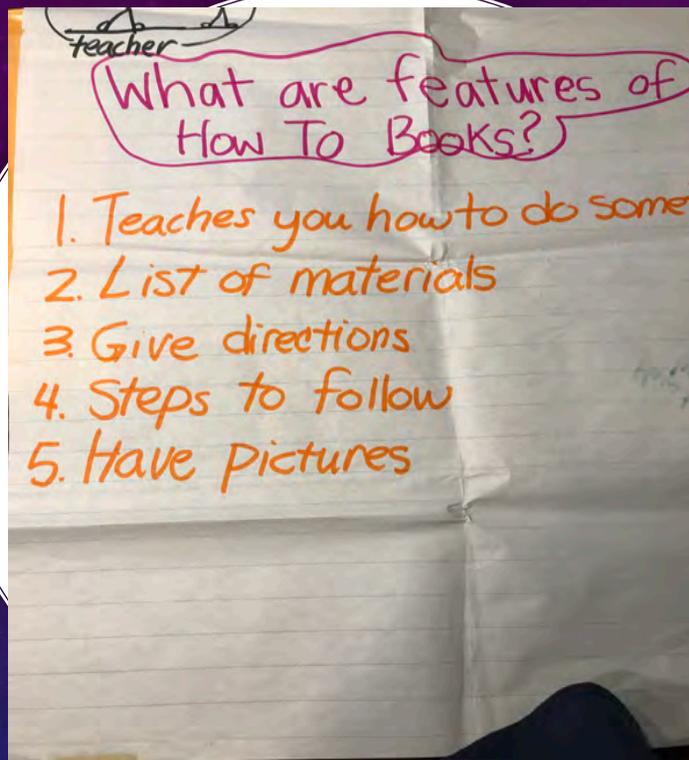
STORIES



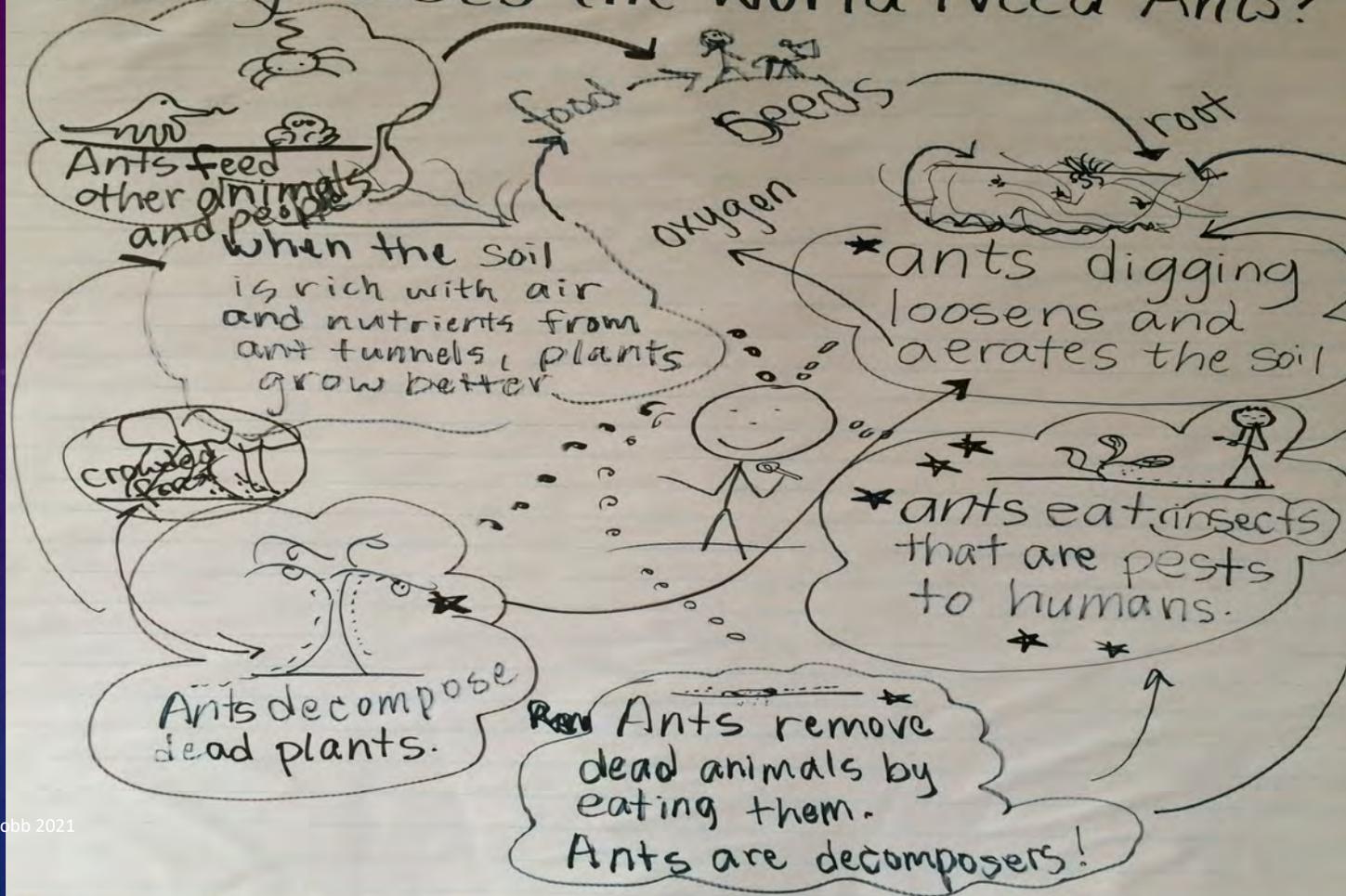
TEXT MATERIAL

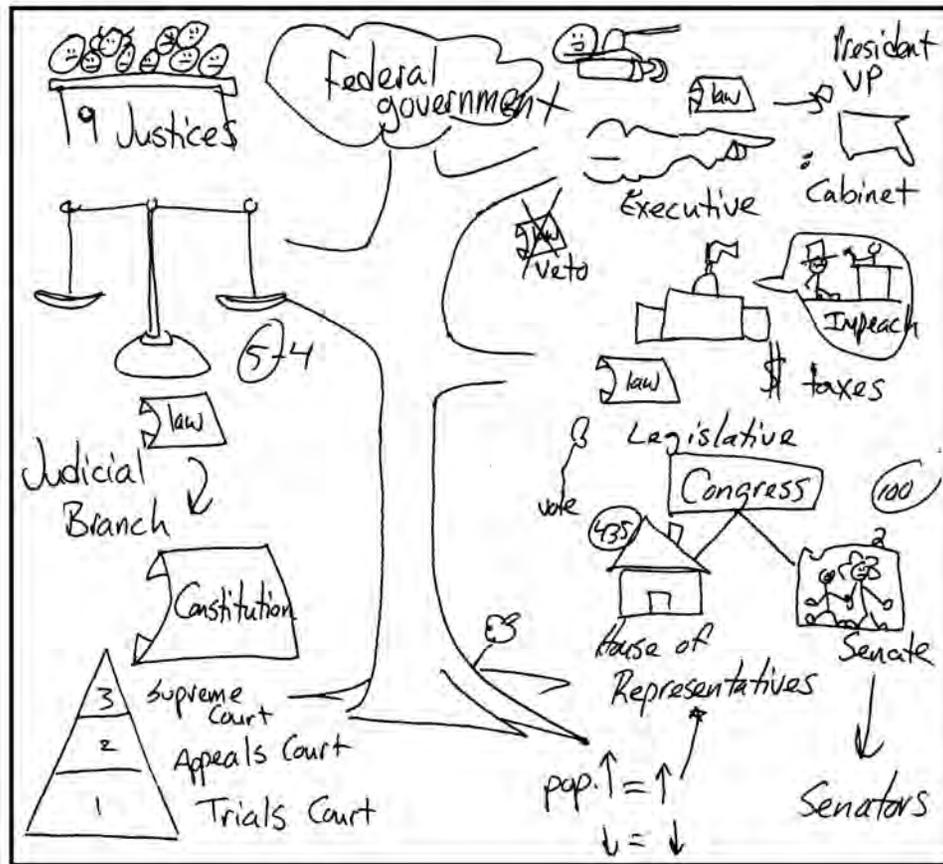


ACADEMIC IDEAS,  
BEFORE WRITING

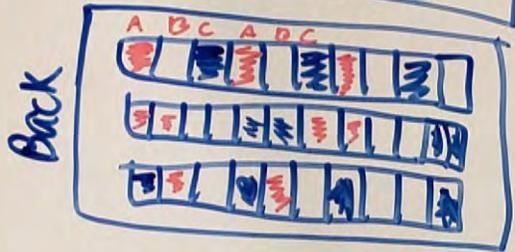
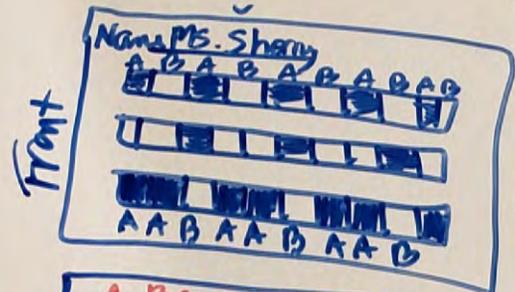


# Why Does the World Need Ants?



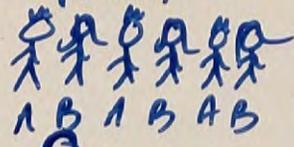


# Evaluative Criteria



ADVANCED

↳ task involves skills/knowledge taught  
 ↳ ex: pattern



→ work time

Qualities

↳ formal formative (patterns w/ icons)

objective

① SW

purpose



Analysis ③

✓ = advanced (got it)

0 = proficient (meeting)

X = emerging (not get)



In a formative assessment the teacher has an objective which is formatted like SCUBAT.

application (ii)

# YOUR TURN TO DRAW

- Think about a time that weather affected you – for better or worse.
- Draw about that time. This is an idea drawing – quick, stick figures.
- Make sure there is a person (who), place (where), action (what happened) and when this happened in your picture story.
- Save this picture – we will use it later!



# Meaningful (Semantic) Based Learning

A Learning environment that is meaningful and strength based

Language Theory: Language is a product of deep semantic structure

Cognitive Psychology:  
Uses meaning to interpret observable behavior (ToM)

Neuroscience: Learning is based upon meaningful (semantic) input

VALUE –  
HOW DOES  
THIS  
CONNECT  
TO MY LIFE?

Without a connection to our lives, it is very hard to connect to school learning.

We help them connect with storytelling – we connect school content to our lives by telling stories.

Stories provide context to school learning.

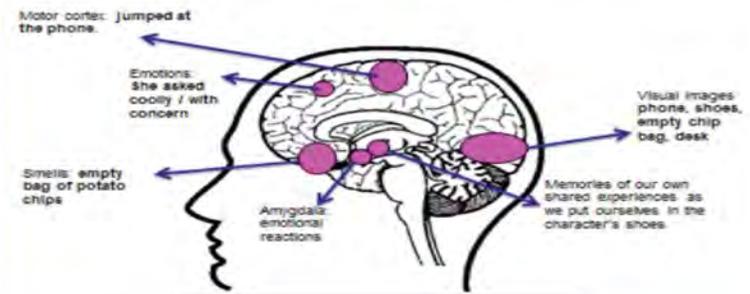
Stories give us the opportunity to share our lived experiences and unique cultures.

Hearing the stories of others allows us to see and begin to understand multiple perspectives.

# THE NEUROSCIENCE OF STORYTELLING

- Neuroscience – our brains are “hardwired” for story telling – strong neural transmitters at work AND brain waves “synch” during a story.
- New information needs to connect to previously acquired patterns and concepts in order to “stick”.
- We open the door to new learning by storytelling.

Figure Two: The multiple brain regions activated when we listen to stories.



Stories put the whole brain to work.



## RESPECTING THE LIVED EXPERIENCES OF ALL STUDENTS.

- Storytelling provides multiple points of access to content – and multiple viewpoints
- Culturally responsive learning opportunity

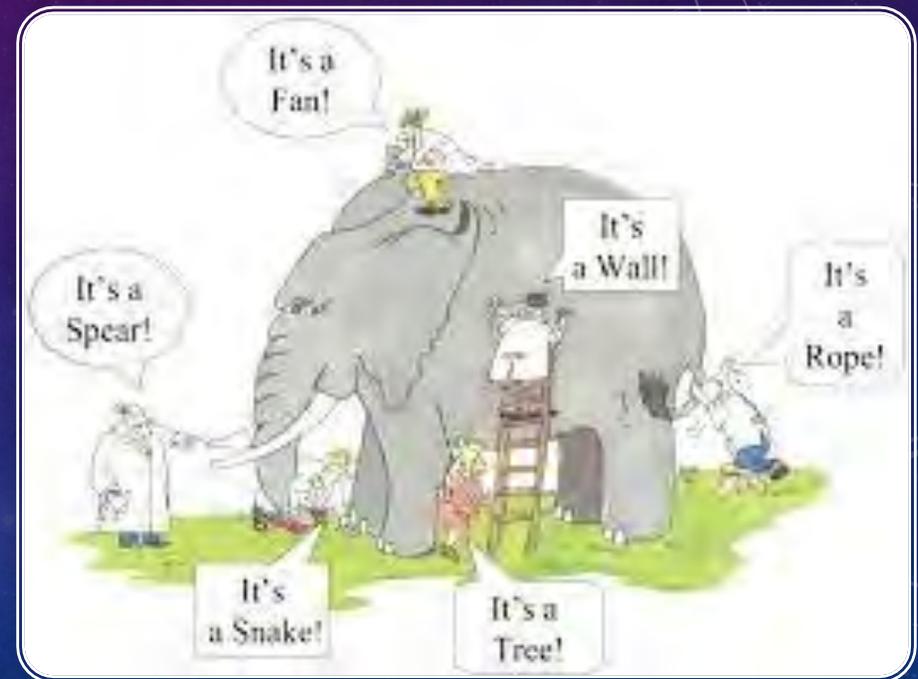


INCREASES CONCEPT KNOWLEDGE  
AS WE LAYER DIFFERENT IDEAS  
ONTO OUR OWN. INCREASES  
LANGUAGE FUNCTION AND  
OVERALL COGNITION.



# LEARNING TO SEE OTHERS AND THEIR PERSPECTIVES

- Social – storytelling involves all learners – and allows all learners to have a “voice”
- Social – helps grow and understanding of “we” as we hear others’ stories



# CREATING CONTEXT — PUT A PERSON IN THE PICTURE



Stories provide real world context to school learning.



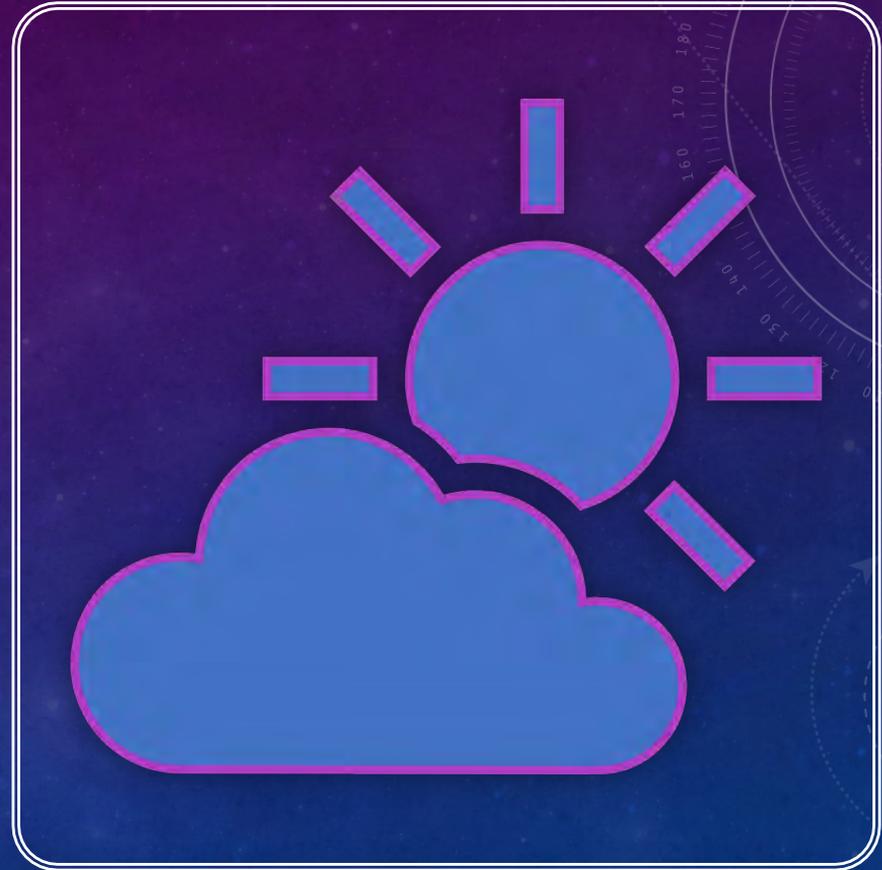
Context provides the who, what, where, when, and why to any subject or content



This gives the learner the whole picture!

## YOUR TURN...

- In small group, tell your story about a time that you remember weather affecting you! You can even show your picture to the group to help them see your story.
- How does it feel to tell your story?





## JOHN DEWEY – HOW WE THINK - 1910

- “The pupil labeled hopeless may react in quick and lively fashion when the thing-in-hand seems to him worthwhile...indeed, the school subject might move him, were it set in a different context and treated by a different method.” p. 35

# Learning is the function of the whole

A Learning environment that is focused on acquiring the meaning of the whole

Language Theory: Language is based on deep meaning of concepts, not products  
The whole is greater than the sum of its parts

Cognitive Psychology:  
Literacy is more than reading and writing

Neuroscience: Learning is processed in the cortex, requiring synergistic function throughout the whole brain

# PURPOSE – CONNECTING SCHOOL TO THE WORLD



Emphasize concepts acquisition  
over individual patterns (skills)



See the big picture of where this  
idea fits in the world



Access to rich learning  
experiences covers multiple  
standards and literacy processes

**65%**  
of today's  
**12-year-olds**  
will have jobs  
that don't yet exist.

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# BRINGING LANGUAGE THEORY AND NEUROSCIENCE TO THE CLASSROOM

- ❖ Use reading, writing, speaking, listening, viewing, thinking, and calculating as the processes to learn new concepts.
- ❖ Provide multiple points of access to all content for inclusive and differentiated learning.

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LITERACY IS MORE  
THAN READING....  
THE SEVEN  
PSYCHOLOGICAL  
PROCESSES OF  
LITERACY ARE:  
(COOPER, 2006)



READING



WRITING



CALCULATING



SPEAKING



THINKING



VIEWING



LISTENING

# WE ARE THE AGENTS IN OUR STORY



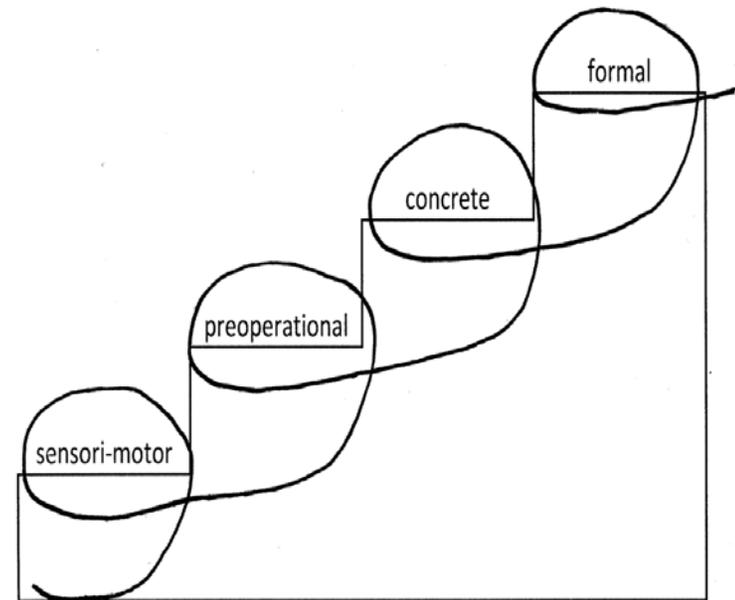
- We become agents acting upon objects in the classroom...
- We are entomologists studying ants to find out why they are important to our world, why they have a queen, why they have antennae, why why why
- Classroom events, such as researching, become part of the language acquisition process!

# BRINGING PRINCIPLES OF LANGUAGE ACQUISITION AND NEUROSCIENCE INTO THE CLASSROOM.

We move from Preoperational to concrete to formal thinking through scaffolding

Remember, when we can see another point of view, or see a picture of an event that we did not experience, we have a concrete level of conceptual understanding.

Multiple concrete experiences layer to form networks of neurons- LANGUAGE





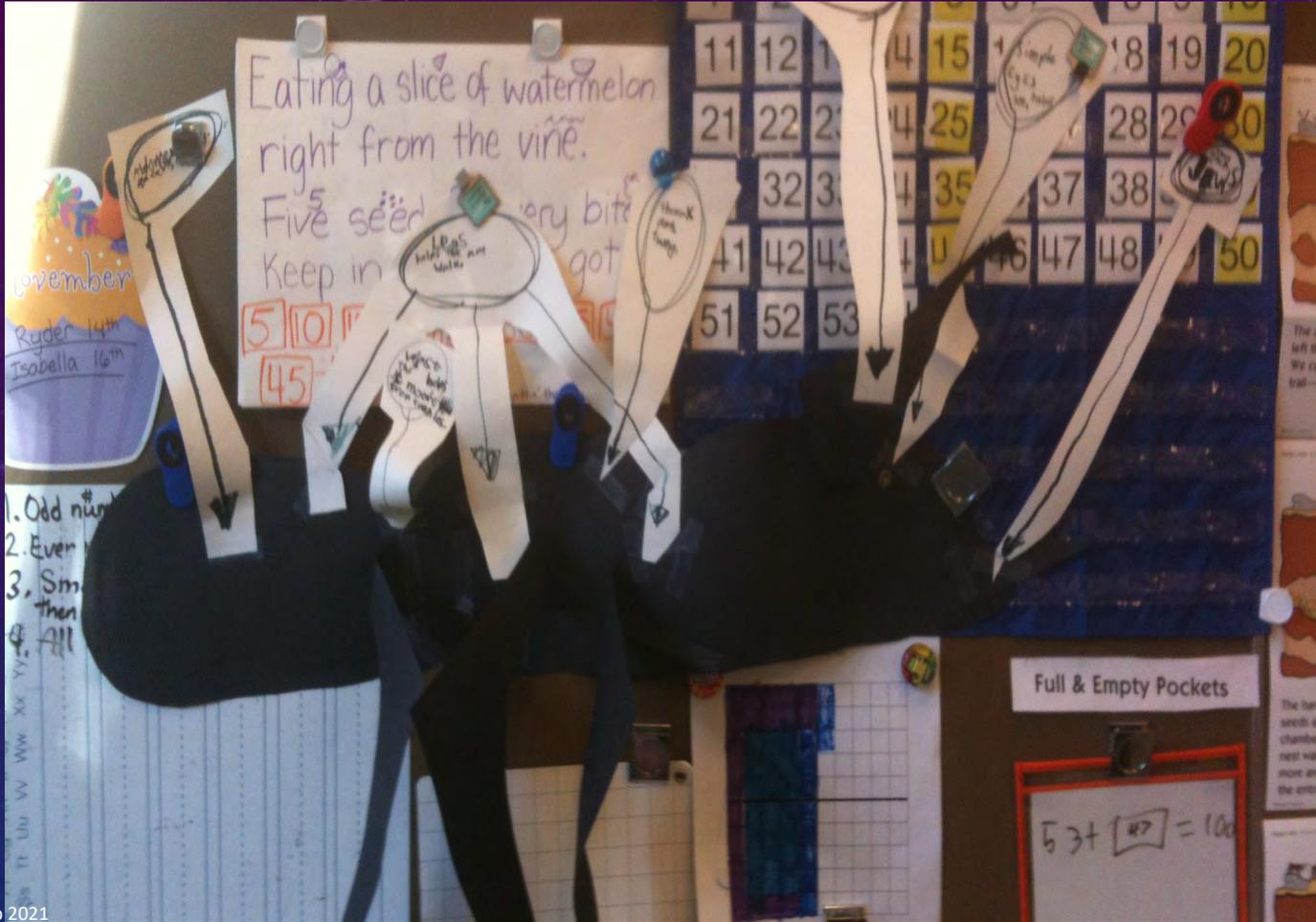
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## PROCESS MORE IMPORTANT THAN PRODUCTS!

- Products are the outcome of learning – they are not the goal of learning
- A focus on products often devalues the processes of learning – which are often messy, busy, go in other directions, based off the needs of the students, don't all look the same

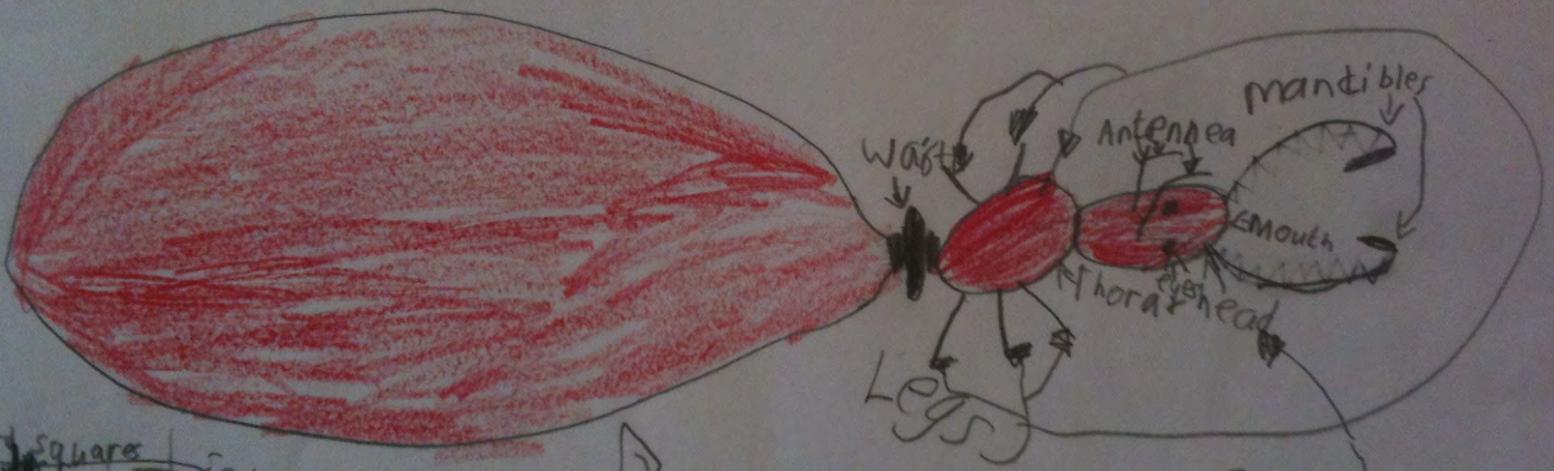






Army ants  
make a part  
out of themselves  
to escape the  
rain!

A fun fact  
ants walk  
through tight  
spaces!  
it squeeze



(army) ants are not this  
size.

Abdomen

### Life cycle of a ant

The queen lays eggs.	The eggs hatch into larvae.	The larvae hatch into a pupa.	Pupa hatches into a adult.	The adult ant dies.
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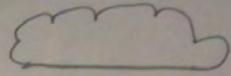
# Honey pot ant by Dab

Some honey pot ants store a juice called honeydew.

When a honey pot ant is hungry, it taps its antennae on a fat ant. The fat honey pot ant spits honeydew into the mouth of the hungry ant.



Cassidy



Do not kill ants we need them. Animals need to eat them.

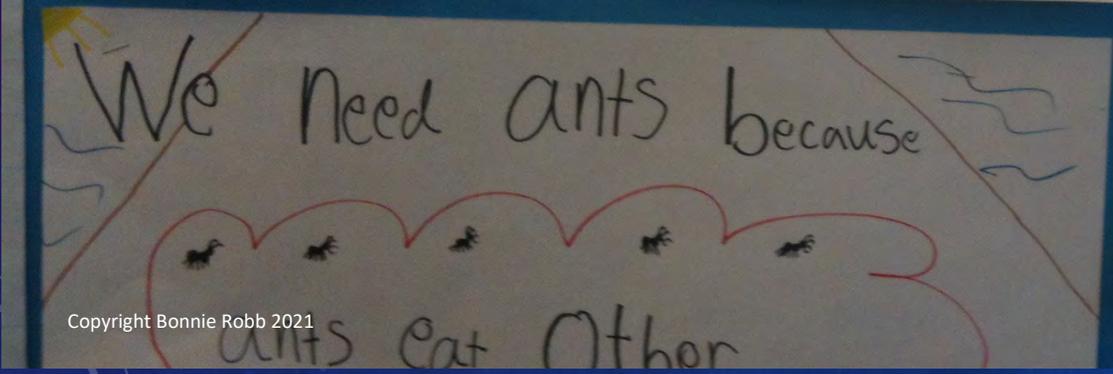
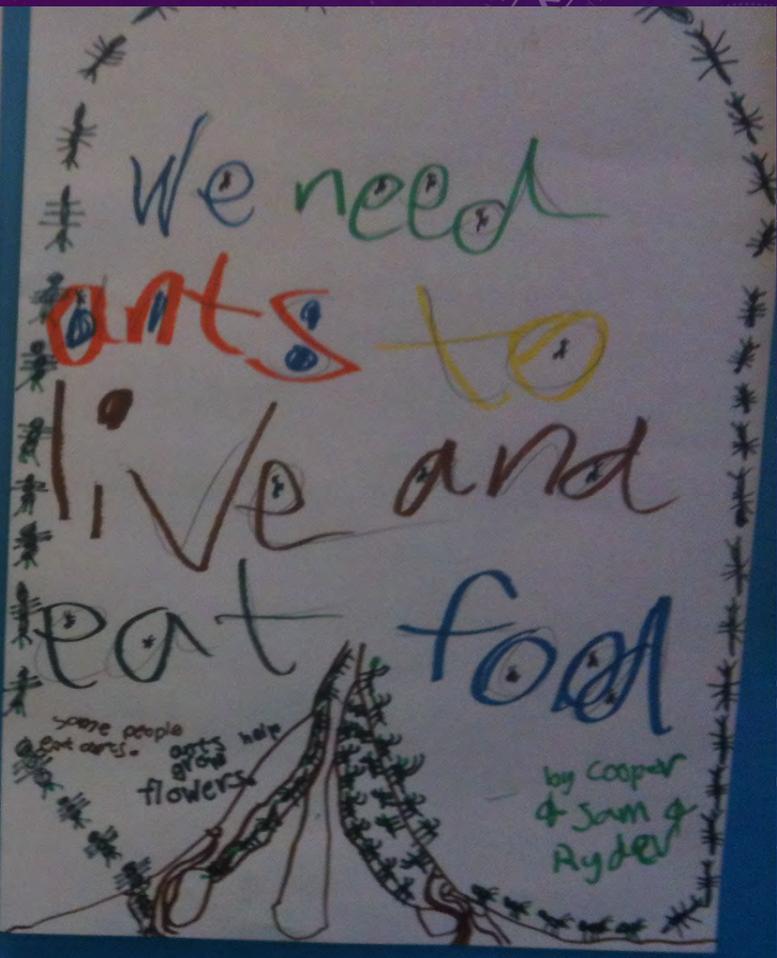
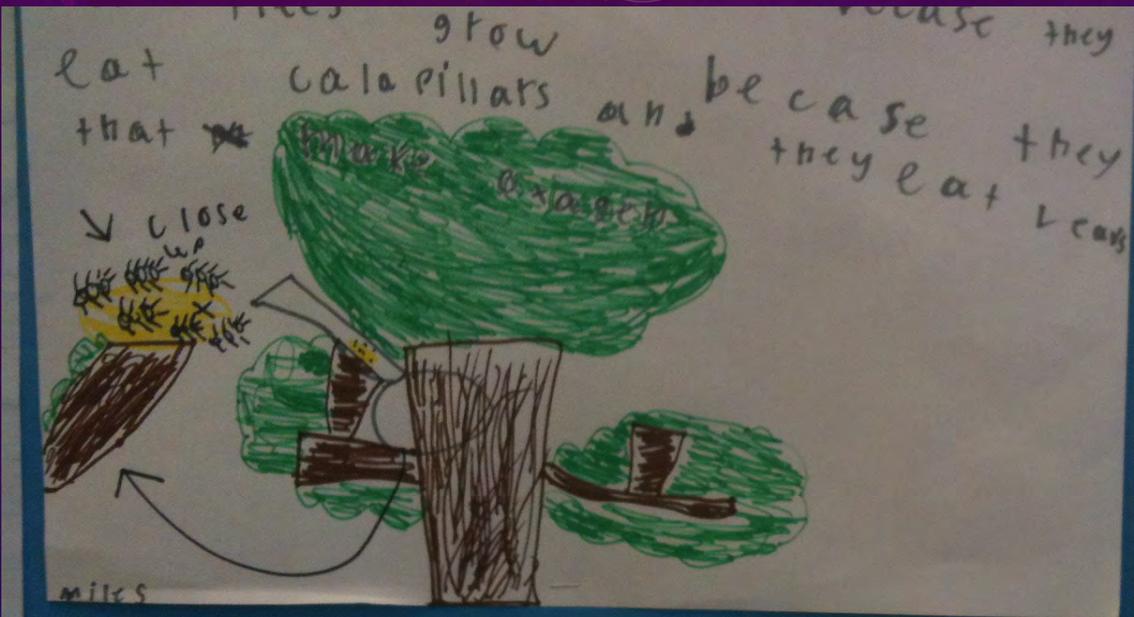


ants are very important

Did you know that we wouldn't be able to live without ants?



WE NEED ANTS BECAUSE THEY HELP THE SOIL





if cows and chickens we  
could eat cause they eat  
plants and there would be no plants  
so they would die.

Ants help us by:  
making the soil clean and when the  
soil is clean plants can grow and if  
plants didnt grow then we wouldnt have  
Oxygen!



Do not Kill ants

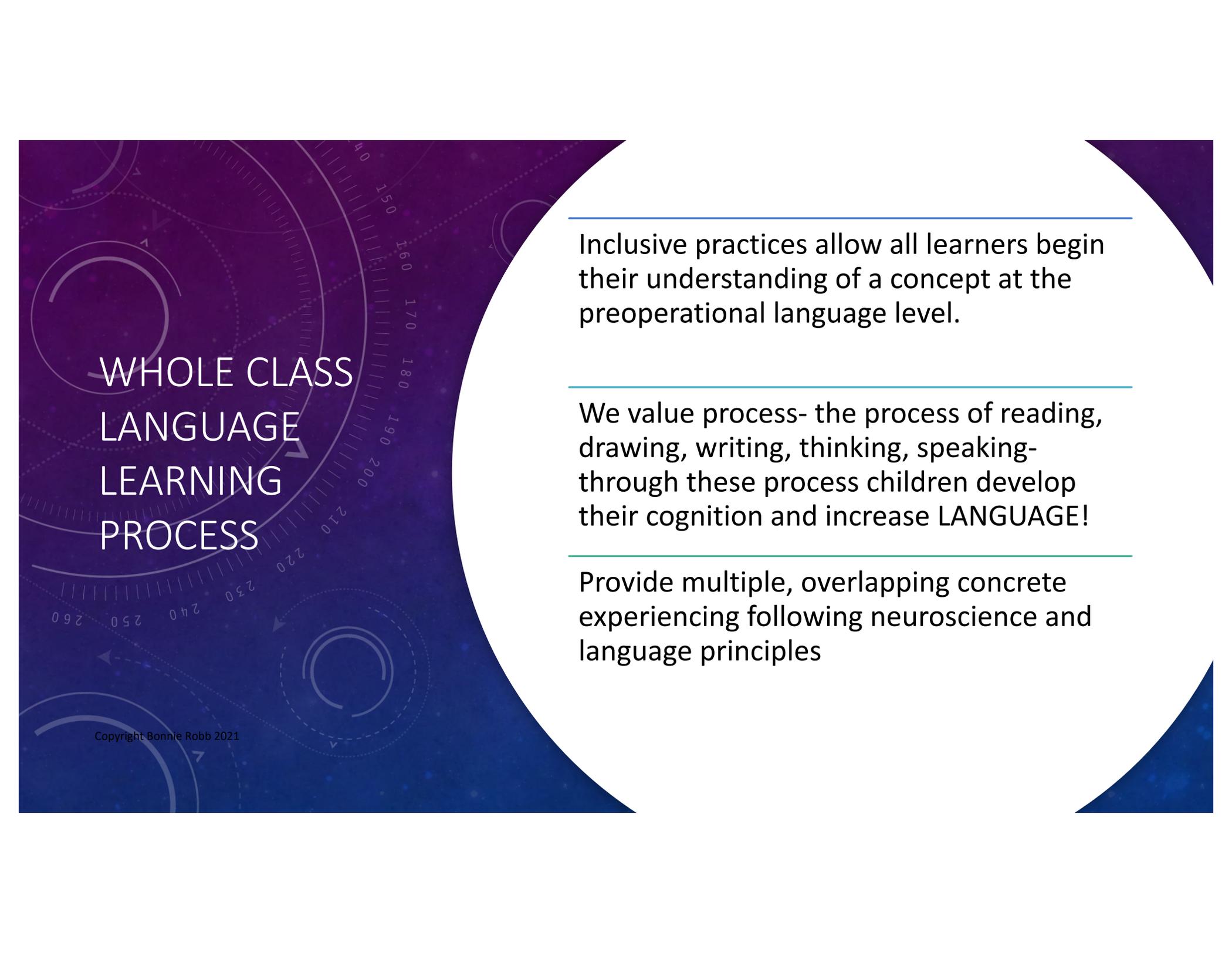
We need ants

We need ants!

we need ants  
because they help  
the soil.



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# WHOLE CLASS LANGUAGE LEARNING PROCESS

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Inclusive practices allow all learners begin their understanding of a concept at the preoperational language level.

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We value process- the process of reading, drawing, writing, thinking, speaking- through these process children develop their cognition and increase LANGUAGE!

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Provide multiple, overlapping concrete experiencing following neuroscience and language principles

# DISSEMINATION

- All learning needs purpose- if we are agents who are thinking, reading, writing, listening, we need a purpose for our projects.
- The process of deciding how we will share our learning with others puts another person into our picture. When another person is in your picture, your language grows from preoperational language to concrete language.

## JOHN DEWEY – HOW WE THINK - 1910

- “With respect then to curiosity, the teacher has usually more to learn than to teach....(the) task is to keep alive the sacred spark of wonder and to fan the flame that already glows.”

p. 34

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# Process Based Learning

A Learning environment that is conceptually based and process focused

Cognitive Psychology:  
Learning is more than the habituation of skills

Language Theory: Language learning is the process by which literacy is acquired

Neuroscience: Learning occurs at multiple levels

# REMEMBER YOUR “MVP” OF LEARNING...



- **Meaning:**

Perceptual patterns match the way students learn and connect them neurobiologically to the content...so DRAW!

- **Value:**

There is an inherent, understandable benefit in the learning opportunities as they connect to a student’s life...so TELL YOUR STORIES!

- **Purpose:**

There is reason for the learning that connects the student to the larger world while increasing conceptual knowledge...so learn CONCEPTS about the real world!