Betty Garner *Going from Get It to Got It.* ASCD 2009

Metability is the ongoing dynamic of learning, creating, and changing.

The best way to make sure that students are hearing and seeing what you present in class is to ask them:

1. What sense do you make of this?
2. What do you wonder about?
3. What part do you know for sure?
4. What do you notice?
5. What kind of pattern do you see?
6. What do you wish was easier?
7. Why?
8. What did you understand by the question?
9. How would you explain this to someone?
10. If you did know, what would you say?

<u>Sensory Input :</u> What do you do when you encounter something unfamiliar?

Students need to learn how to gather sensory input. Students with ADD and ADHD use blurred and sweeping perception. Every time is like the first time.

Reflective awareness is the ability to “Notice” using conscious, thoughtful, attentive consideration.

Before explaining a lesson:

- Students explore-notice as they gather sensory input
- Students describe-verbalize their ‘notices’ and what they wonder about
- Students apply-use information to demonstrate understanding
- Students and teachers evaluate evidence of learning, creating, and changing.
- Don’t tell students what to notice, let them do the work.

Visualization: Without visualization, students can only process information that is within sensory range.

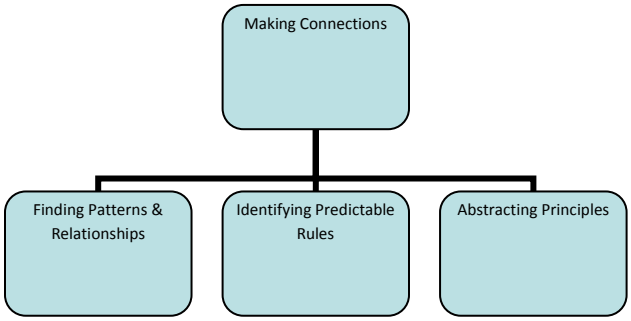
- Reflective awareness and visualization are the "touch point" between the physical (outside world) and the immaterial (inside world).

Cognitive Structures: are basic psychological systems (mental tools) to gather, organize, and process information for meaning.

Two things to remember about cognitive structures:

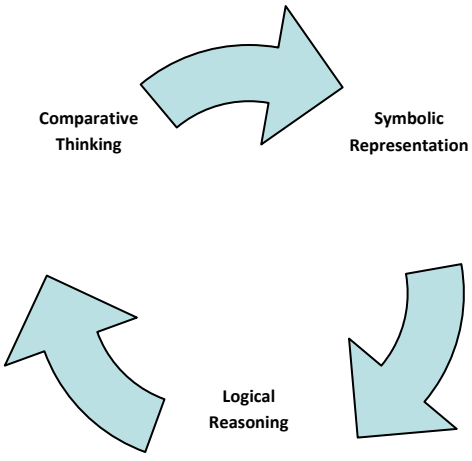
1. It is never too late to develop them.
2. Each person has to personally develop them.

Cognitive structures process information by:



Cognitive structures develop **Metability (the process of Learning-Creating-Changing)**

Three categories of Cognitive Structures:



All three categories are interdependent.

1. **Comparative Thinking: prerequisite for symbolic and logical cognitive structures. Recognition is essential for survival and learning. Students often confuse recognition with knowing.**

Memorization **stores information for access.** *Memory* **is more than recall-it is re-creation. The more connections we make through classification, logical clustering, patterns and relationships, the more opportunities we have for access.** *Imitation* **is the preliminary form of memorization.**

Questions to ask so we don't steal the locus of control from the student: How would you figure this out if I wasn't here?

What tricks to you use to help you remember?

What structures help you recall and process information?

Memory Strategies

1. Acrostics
2. Application
3. Cartooning
4. Chunking
5. Classification
6. Context-setting, time, space
7. Dance
8. Designs
9. Emotions
10. Graphics-drawing
11. Hand movements
12. Integration of content
13. Kind & quality of data
14. Mnemonics
15. Multi-sensory input
16. Music
17. Patterns
18. Reflection
19. Relevance
20. Repetition
21. Rhythm
22. Sequencing
23. Signals
24. Tactile-hands-on
25. Values & beliefs
26. Visualization

Conservation of Constancy-When a student can compare what changes and what stays the same. If a student has challenges with this on a physical level, they usually have difficulty processing what changes and what stays the same on an abstract level. Without conservation of constancy, students perceive information as disconnected bits of data.

Students need conservation of constancy in language: i.e. build, building, rebuild, builds, built.

Two questions to ask when designing a lesson:

1. When do I assume students have conservation of constancies?
2. How can I use this lesson to help students develop their conservation of constancies?

Classification: Identifies, compares, and orders information in terms of relationships of parts to each other and parts to the whole. To develop the cognitive structure of classification, students have to identify criteria to explain why something is a member or non-member of a set.

Spatial Orientation: If students have difficulty seeing spatial relationships in their real (physical) world, they usually have difficulty understanding representational, abstract, and virtual spatial relationships. Characteristics of space: location (placement or position in space), distance (intervals of separation), direction (orientation toward a point of reference), perspective (point of view).

Use tic-tac-toe place names:

Top Left	Top Middle	Top Right
Middle Left	Middle Middle	Middle Right
Bottom Left	Bottom Middle	Bottom Right

Temporal Orientation: Compress events in terms of WHEN they occur. Time is more than reading a clock.

Allow students time to process. The myth that the fastest is the smartest is not true.

Metaphorical Thinking: Uses figurative language to compare bits of information. Geniuses and poets often use metaphors to express original insights.

When designing a lesson ask:

- Which cognitive structures are needed to make sense of this information?
- How can I use this lesson to help students develop their cognitive structures?

Instead of starting by telling, start by questioning.