

Going Forward by Thinking Backwards

**A goal oriented way of thinking to help students
become independent learners**

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What does it mean to learn or comprehend?

- As teachers we have seen many students who have a great deal of knowledge but have limited understanding as to what the knowledge means.
- We have seen those students that seem to be able to understand the underlying information but lack the knowledge.
- Knowing the knowledge does not necessarily mean that they know what the knowledge means
- Doing poorly on a test of factual knowledge does not necessarily mean that the student lacks insight into the key ideas of the topic.

Defining Learning and Comprehension

“Learning is the ability to use the knowledge you have learned in another unique environment.” -- Dr. Howard Gardner

In short....

Can you demonstrate understanding of what you have learned?

The Problem

- Over the years of teaching in both elementary and middle schools, I have heard countless teachers complain that the students do not *get it* even after spending a lot of time teaching a particular topic or concept.
- Many of the teachers would state that when they come back on Monday, after the weekend, their students have forgotten a lot of what they were taught.
- Many of the teachers are at wits end or have used up most of their bags of tricks and are frustrated in that many of their students are still not rising to a level of understanding they think they have the potential to achieve.

“Comprehension is critically important to the development of children’s reading skills and therefore to the ability to obtain an education. Indeed, reading comprehension has come to be the ‘essence of reading,’ essential not only to academic learning in all subject areas but to lifelong learning as well.”

-Report of the National Reading Panel, 1999

The Purpose

- Help teachers better understand how backward planning can help them to improve their students’ skill levels.
- Help teachers have a better understanding as to what the brain has to do in order for the student to learn.
- Help teachers utilize this information on how the brain is able to process and decode complex pieces of information to help them to better plan their lessons.
- Help close the learning gap which I define as the difference between the knowledge being taught and the skills required to understand it.

If the student does not possess the necessary skills to understand the knowledge being presented, you then have a **LEARNING GAP**.

Brain Research

Brain development and its relationship to learning

1. Learning produces a physical change to the brain as brains can recreate their own wiring according to the stimuli and environmental inputs.
2. Intelligence is not fixed at birth, but rather the learning of new concepts and skills can occur throughout a person's lifespan
3. Growing brains can customize themselves to their environment through organizing and reorganizing themselves.
4. Learning is the principle driver in increasing the brain cell weight, branching of dendrites and synaptic responses. The greater the exposure to the learning task, the thicker the myelin sheath, the more encapsulated is the learning and the recall of information is faster.
5. Learning occurs best when our brain makes connections with previous knowledge and experience.
6. The brain prefers multi-processing of a number of inputs rather than a slow linear pace of learning.

Taken from: Theorizing Habits of Mind
as a Framework for Learning
by John Campbell

What is Backward Planning?

The concept is based upon the design framework that was presented in a book entitled Understanding by Design by Wiggins and Mctighe, 1998.

The approach was intended to enhance the student's understanding of important concepts and skills in a way whereby the knowledge learned will endure over a long period of time.

The program is summarized as follows:

1. Identify desired results

What specifically do you want the student to learn?

2. Determine acceptable evidence

How do know if the student has achieved it?

3. Plan learning experiences, lessons, and instruction

How will you go about helping the student in achieving the goal?

Explicit Instruction is Effective in Teaching Skills

“Comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to understanding what they are reading. Readers acquire these strategies informally to some extent, but **explicit or formal instruction** in the application of comprehension strategies has been shown to be highly effective in enhancing understanding”

-The National Reading Panel, 2000

Taken from Teaching Comprehension: an overview by Diane Snowball, 2005

I want you to picture a pie....



What
makes a pie
-- a pie?



I want you to picture an independent problem solver, critical thinker and confident learner....



Who do you think it is?



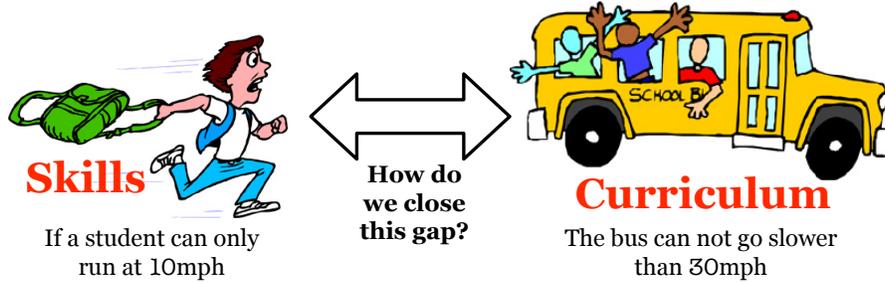
What are the characteristics of an independent and confident learner?

- Are they just smarter?
- Are they better at reading?
- Are they better test takers?
- Are they from more supportive and educated families?
- Are they the ones who can read fluently?
- Are they the ones who always raise their hand to answer a question?
- Are they the ones who always do their homework?

What skills are required to become an independent and confident learner?

What is the problem?

Try to picture this...



What would we expect as an outcome?

.....The student would never be able to catch the bus.

How do we close this gap?

Do we slow down the curriculum?

-OR-

Do we teach the **skills** required for the students to become independent and confident learners who can successfully learn the curriculum?

- What is our goal for our students?
- What is our role as teachers?
- Is it important to understand how the brain learns?
- Do we need to think backwards to move forward?

Method of Research

A survey was developed to find out if the ELA classes in 6th, 7th and 8th grades knew the concept of a paragraph.

The two questions posed on the survey were:

1. What is the definition of a paragraph?
2. Why do we need to use paragraphs when we write?

- The survey was to filled out by the students without any assistance from the teachers. A letter was given to each teacher whose classes took the survey which stated as to the purpose of the survey and that it was to be completed by the student and only by the student.

- Teachers were then interviewed to determine the methods and instructional models that were being used to teach the concept of a paragraph to their students.

Why use a paragraph as a model to help teach comprehension skills?

A paragraph is a culmination of many skills and strategies that a student needs to master in order to become more of an independent reader and writer.

“A well-formed paragraph that includes a clear topic, well ordered sentences that present given information before new information, causal connections and references back to the important concepts all help the reader correctly comprehend the ideas from the paragraphs and put those ideas into high-level understanding that, in turn, helps the reader make the most of his or her working memory capacity in order to remember the text.”

--Paragraph Comprehension: The Connection to Reading Skills, May 2001

The Complexity of Reading and Comprehending

Reading is a very complex process that requires the simultaneous activation of many different brain processes.

The student needs to be able to....

- Process words
- Recognize the visual representation of the letter
- Learn the connections between the 26 letters of the alphabet and approximately 44 English language phonemes
- Learn the order of the letters (spelling)
- Break the word into their individual sounds (phonemes)
- Synthesize and blend the sounds into recognizable words
- Independently read the words in the sentences fluently with at least a 90% accuracy rate otherwise there will be a decrease in comprehension

The Complexity of Reading and Comprehending (cont.)

“Laborious application of decoding and word recognition skills while reading text reduces attentional and memory resources, thus impeding reading comprehension.”

-- R. Lyon, NICHD Research Program in Reading Development

The Role of Working Memory in Paragraph Comprehension

- In order to comprehend text, the student needs to use working memory to store semantic, syntactic, and pragmatic information.
- This information is then used to help clarify and synthesize the material to form an idea about the text as the student continues to read and process more text.
- As the student is working on the present information s/he might retrieve information from long term memory to help better understand the material.

The Role of Working Memory in Paragraph Comprehension (cont.)

The student's ability to temporarily **store words** in working memory will depend on:

1. Age
2. Experience
3. Language proficiency

The way a reader stores these words is by **phonological coding**

*A student who has **good phonological decoding** skills will be able to retain the words themselves as well as the order in which they occur in the sentence.*

From Brain Connection: The Brain and Learning
Paragraph Comprehension: The connection to reading skills
May 2001

In order to comprehend a paragraph many more skills are necessary...

Students need to be able to:

- Understand syntax (the sequence of words)
- Use contextual or semantic cues to help find meaning
- Infer underlying meaning or meaning not stated directly
- Use appropriate vocabulary skills, prior knowledge, or schema
- Hold the sentence in working memory as they read the next sentence for integration of meaning
- Continue the process of reading and integrating each of the subsequent sentences needed to process an entire paragraph
- Locate and process the main ideas and hold them in working memory
- Tie the information together in a meaningful manner
- Store the information into long term memory

This process of reading a paragraph...

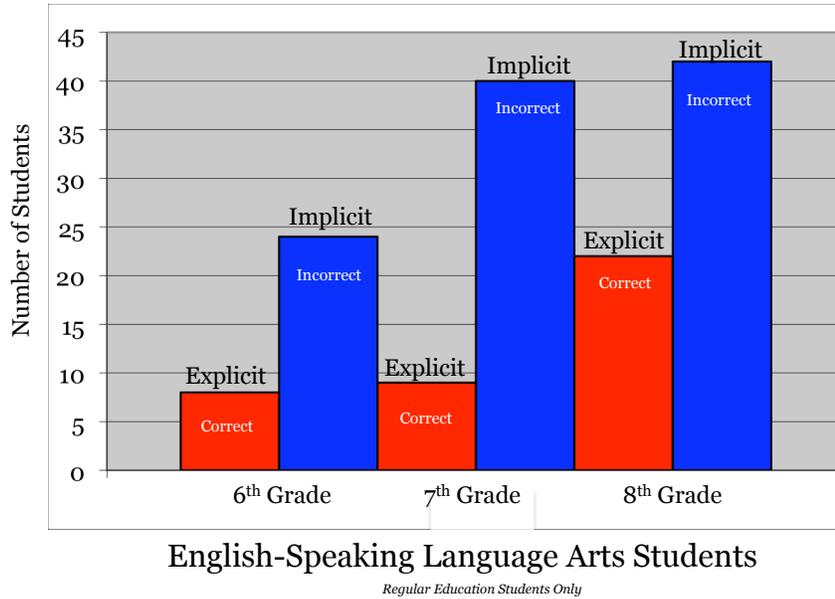
- Seeing the words
- Decoding the words into a recognizable sequence of sounds
- Reading the words in the sentence quickly and accurately
- Looking for contextual and semantic cues
- Finding inferences
- Looking for meaning and main ideas
- Interpreting new information based upon prior knowledge or schema
- Using working memory to integrate information
- Synthesizing the information into a meaningful sequence

...is supposed to take just a few seconds, continue on to the next sentence and start the process over again.

--OR ELSE--

YOUR STUDENT WILL CONTINUE TO MISS THE BUS!

Results of Paragraph Survey



Results of the Survey (cont.)

“Merely telling students to stay on task, concentrate on main ideas, pay attention, produced less improvement than did direct instruction in using the specific rules, which in turn was less successful than a combined package that involved both practice using task-appropriate rules and direct instruction in monitoring and overseeing their application.”

Instructing Comprehension-Fostering Activities
By Brown, Palincsar, & Armbruster, 1984

The results of the survey demonstrated the following:

1. There was a direct relationship between explicit and implicit teaching and student learning.
2. Students whose teachers who used explicit instruction scored higher on the survey than those who taught the concept implicitly or who just presented many opportunities for the students to write paragraphs in their daily lessons but did not explicitly teach the how and why in writing a paragraph.
3. The students who were not able to correctly define the paragraph were also the ones who were unable to write a cohesive and meaningful paragraph.
4. The students who have not grasped the understanding and complexity of what comprises a paragraph, were shown not able to define it as well.

Explicit Teaching of Strategies

Explicit Teaching is **Active Teaching**

The teacher has a definite outcome to achieve a particular purpose.

When we teach a strategy we are teaching for a purpose to instruct the students so they will be able to become more independent when they read or write and they are able to do it well.

Six Steps for Explicit Instruction

Explicit instruction can move students to become independent learners by internalizing the strategies and so requiring less intervention from the teacher.

The Teacher:

- 1. Explains what** the strategy includes.
- 2. Explains why** this strategy is important.
- 3. Models how** to perform the strategy in a context that is meaningful and connected to what the class is presently working on.
- 4. Explains when** to use the strategy and also models it in another situation or problem.
- 5. Reinforces** the teaching with guided practice activities.
- 6. Reminds** the students to make good use of the strategy and to choose to use it often so as to become independent in its usage.

Based on Jeffrey D.
Wilhelm's Model

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