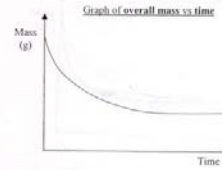


Better Learning Through Structured Teaching

Douglas Fisher



1. Explain the shape of the graph.
 Its curve, with a higher bit at the end and a rather, awkward, pleasing slope downwards towards a pretty flat 'straight bit'. The actual graph itself consists of 2 straight lines meeting at the lower left hand corner of the graph and moving away at a 90° angle. Each line has an arrow head on the end.

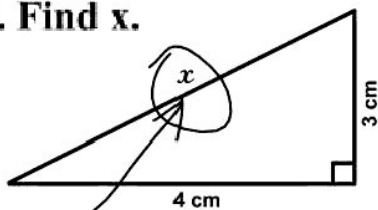
2. A 3-kg object is released from rest at a height of 5m on a curved frictionless ramp. At the foot of the ramp is a spring of force constant $k = 100 \text{ N/m}$. The object slides down the ramp and into the spring, compressing it a distance x before coming to rest.
 10 (a) Find x .
 5 (b) Does the object continue to move after it comes to rest? If yes, how high will it go up the slope before it comes to rest?

$U = 3(9.8)(5) = 147.15$
 $U_s = \frac{1}{2}(100)x^2 = 50x^2$
 NO, there is an elephant in the way.
 0

PETER
 1.21

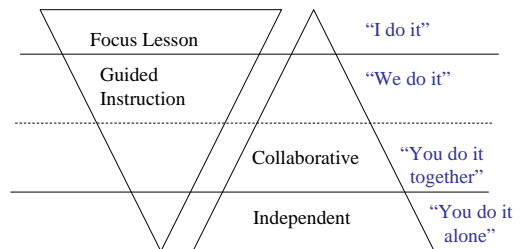
(b) Expand
 $(a+b)^n$
 $= (a+b)^n$
 $= (a+b)^n$
 $= (a+b)^n$
 etc.

3. Find x .



Here it is

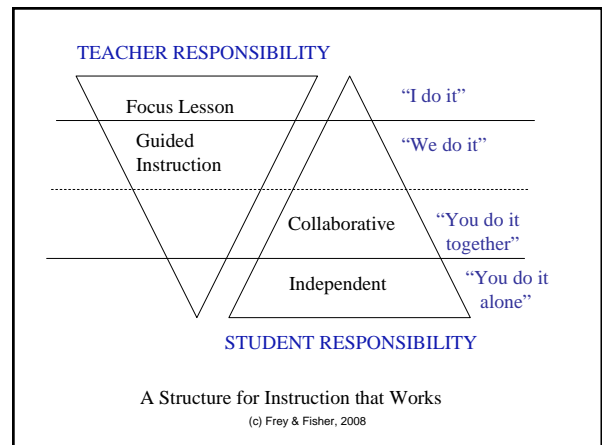
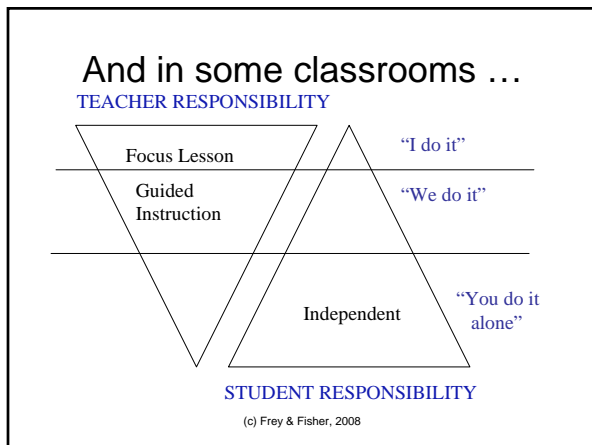
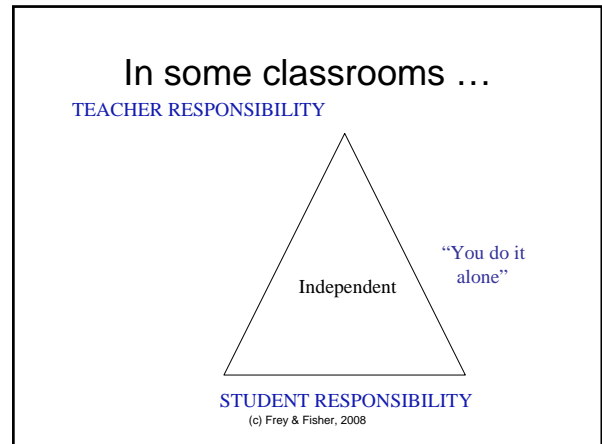
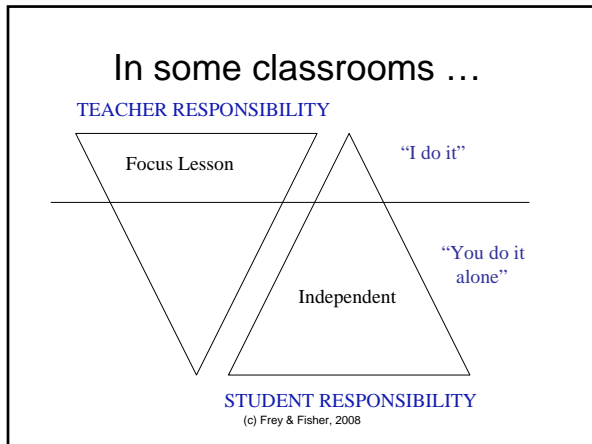
TEACHER RESPONSIBILITY



STUDENT RESPONSIBILITY

A Structure for Instruction that Works

(c) Frey & Fisher, 2008



Aimee Chen: First year geometry teacher

- How does she use “literacy” in her instruction?
- How does the classroom structure facilitate understanding?
- How might she improve her instruction?

Establishing Purpose

- * Why?
 - Focuses attention
 - Alerts learner to key ideas
 - Prevents “birdwalking” and maximizes learning time
 - Can be used in formative assessment
- * Types
 - Content goal (based on the standards)
 - Language goal (vocabulary, language structure, and language function)
 - Social goal (classroom needs or school priorities)

Three Types of Language Purposes

- * **Vocabulary:** (specialized, technical)
- * **Structure:** (the way the vocabulary is used in sentences to express ideas)
- * **Function:** (the intended use of those ideas)

These language purposes build upon one another over a series of lessons.

Vocabulary



- * **Specialized**
 - Words whose meaning changes depending on the context (problem, simplify, value)
 - Multiple meaning words (run, place)
These can be “brick” or “mortar” words
- * **Technical**
 - Words that represent one concept only (denominator, photosynthesis)
These are the “bricks” of language

Language Structure



- * **Grammar/syntax:** rules for language use (e.g., plurals, noun/verb agreement)
- * **Signal words:** guideposts to support understanding of listener/reader (e.g., *if/then, first, last, compared to*)
- * **Frames and templates:** scaffolds for apprentice language users (“On the one hand, _____. But on the other hand, _____.”)

Language Function



- * Halliday identified 7 language functions (Instrumental, regulatory, interactional, personal, imaginative, heuristic, representational)
- * These are translated into classroom interactions (express an opinion, summarize, persuade, question, entertain, inform, sequence, disagree, debate, evaluate, justify)



The “big a-ha”

- * The same content objective can have many different language purposes!

CO: Identify the phases of the moon.

LP #1: Name the phases of the moon. (*vocabulary*)

LP #2: Use sequence words (first, next, last) to describe the phases of the moon. (*structure*)

LP #3: Explain how the moon, earth, and sun move through the phases. (*function*)

Modeling

- * Why?
 - Humans mimic or imitate
 - Students need examples of the type of thinking required
 - Facilitates the use of academic language

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

QuickTime™ and a
H.264/AVC decompressor
are needed to see this picture.

Modeling Comprehension

- * Inference
- * Summarize
- * Predict
- * Clarify
- * Question
- * Visualize
- * Monitor
- * Synthesize
- * Evaluate
- * Connect

Word Solving

- * Context clues
- * Word parts (prefix, suffix, root, base, cognates)
- * Resources (others, Internet, dictionary)

Using Text Structure

- * Informational Texts
 - Problem/Solution, Compare/Contrast, Sequence, Cause/Effect, Description
- * Narrative Texts
 - Story grammar (plot, setting, character)
 - Dialogue
 - Literary devices

Using Text Features

- * Headings
- * Captions
- * Illustrations
- * Charts
- * Graphs
- * Bold words
- * Table of contents
- * Glossary
- * Index
- * Tables
- * Margin notes
- * Italicized words

What Happened to Phineas?

Attend the tale of Phineas Gage. Honest, well liked by friends and fellow workers on the Rutland and Burlington Railroads, Gage was a young man of exemplary character and promise until one day in September 1848. While tamping down the blasting powder for a dynamite charge, Gage inadvertently sparked an explosion. The inch thick tamping rod rocketed through his cheek, obliterating his left eye, on it's way through his brain and out the top of his skull.

Discover Magazine

The rod landed several yards away, and Gage fell back in a convulsive heap. Yet a moment later he stood up and spoke. His fellow workers watched, aghast, then drove him by oxcart to a hotel where a local doctor, one John Harlow, dressed his wounds. As Harlow stuck his index fingers in the holes in Gage's face and head until their tips met, the young man inquired when he would be able to return to work.

QuickTime™ and a TIFF (Uncompressed) decompressor are needed to see this picture.

Discover Magazine

Within two months the physical organism that was Phineas Gage had completely recovered - he could walk, speak, and demonstrate normal awareness of his surroundings. But the character of the man did not survive the tamping rod's journey through his brain. In place of the diligent, dependable worker stood a foul-mouthed and ill-mannered liar given to extravagant schemes that were never followed through. "Gage," said his friends, "was no longer Gage."

Discover Magazine

Questions

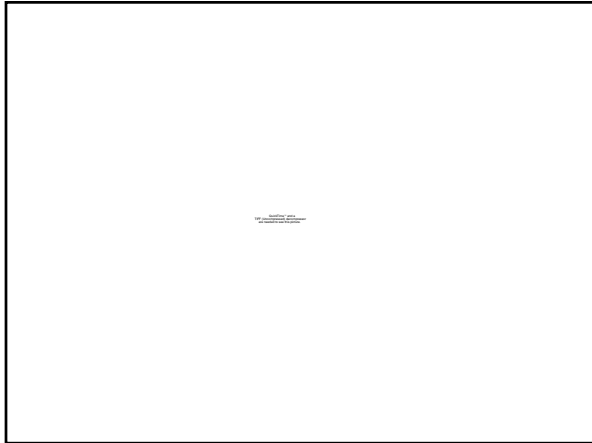
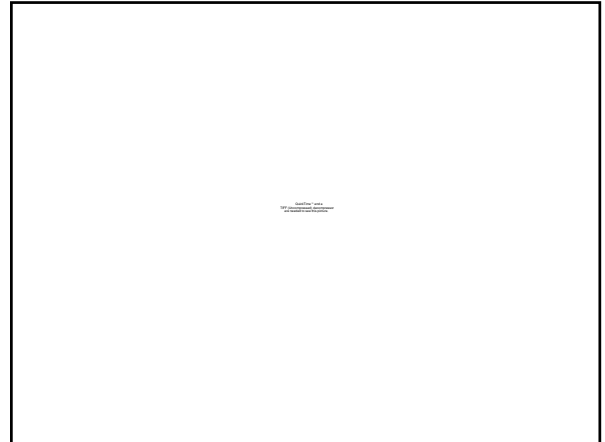
- How did Phineas survive this penetrating brain injury?
- For how much longer did he live?

QuickTime™ and a TIFF (Uncompressed) decompressor are needed to see this picture.

A dentist found the source of the toothache Patrick Lawler was complaining about on the roof of his mouth: a four-inch nail the construction worker had unknowingly embedded in his skull six days earlier.

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

A teenager in India has miraculously survived being skewered through the head by a
metal pole in a bus crash. November, 2007



Can We Improve Student Achievement?

- * We can!
- * To do this, we must increase precision teaching (*Breakthrough* - Fullan, Hill, & Crevola, 2006).
- * Precision requires access to assessment information, consistent instructional routines, and an understanding of the role language plays in learning.

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