Informational Text
Teaching Students to Work Effectively With Informational Text
Background for the Science Teacher

Teacher Note: Challenge students to determine the purpose of the informational text they are reading. Informational text is written with a variety of structures. Author's intent can easily be clarified by identifying core vocabulary words that make the author's intent transparent. Is the author's intent to explicate cause/effect, comparison/contrast, problem/solution/ question/answer, or sequence?

Our challenge, as science teachers, is to support students in recognizing patterns in informational text and to further challenge our students to apply those patterns in their own writing. The core vocabulary words associated with structures of informational text writing will be helpful in scaffolding our teaching process.

TEXT CUES

Cause/Effect	Comparison/Contrast	Problem/Solution	Question/Answer	Sequence
Since	In like manner	One reason for that……	How	Until
Because	Likewise	A solution	When	Before
Accordingly	Similarly	A problem	What	Initially
As a result of	The difference between		Where	After
This lead to	As opposed to		Why	Afterward
On account of……	Although		Who	As soon as
Due to	As well as		How many	During
May be due to……	After all		The best estimate	Next
For this reason…..	However		It could be that	Finally
Consequently	And yet		One may conclude……	Lastly
Is caused by…..	But			First/last
Leads/lead to	Nevertheless			Then
If/then	Instead of			On (date)
Then, so				At (time)
Therefore				Following
Thus				Later
When…..then				Meanwhile
In common				Steps involved
On the other hand				When…then…
Similar to				

Lists from *Strategies That Work* (Harvey & Goudvis, 2000)

Please Note: Once students determine the author's intent have them select the appropriate graphic organizer to organize their thinking. A few sample organizers appear below. Full page organizers can be made by simply placing the cursor inside the box and then "return".

CAUSE	EFFECT

Item 1 – What is different?	What is the same? (Items 1 &2)	Item 2 – What is different?

PROBLEM
SOLUTION

WHO
WHAT
WHERE
WHEN
WHY
HOW

Quote, Picture, Graph, Chart or Table from the Text (Evidence)
My inference
My explanation of my inference supported by evidence
Connections to my own observations/investigations/questions

Links to Organizers:

http://www.everythingesl.net/inservices/graphic_organizers.php

http://www.cast.org/publications/ncac/ncac_go.html

http://www.readinga-z.com/more/graphic_org.html

ICE

Ideas My beginning ideas… What I think might happen	**Claims** What I found out	**Evidence** Data and/or observations that support my claim
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Individual student organizer

The Classroom Chart is developed after the "Science Community" holds a Symposium to discuss claims and evidence. Claims and evidence are only added to the chart after the community comes to consensus. Claims are always subject to change if new evidence is presented. This is the dynamic nature of science

Claims Our community claims	**Evidence** Data and/or observations that support our claims
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Our Science Community Chart

Please see a description of the inquiry process for ICE below:
Inquiry Process For "ICE"

- Wonder (Ask questions..)
- Plan to Investigate
- Do (Carry out plan)
- Observe and Record
- Think About Data
- Make "Claims"
- Support "Claims" With "Evidence"
- Revisit "Ideas" (Confirm or Discard)
- Wonder again…..

Dynamic Conversation Questions For "ICE"

- What are you wondering about?
- How could we find out?
- What "ideas" do you have?
- Does this remind you of anything else? (making connections)
- What do you think will happen? (making predictions…. can they support the prediction with something else they have seen or done?)
- What are your claims?
- What evidence do you have to support them?
- Has the evidence changed your thinking? (initial ideas)
- Do you see a pattern or relationship?
- How is this like or different from other "changes" you have observed?
- What new questions do you have?

The Role of Informational Text in the Learning Cycle

The following excerpt is from Educational Leadership March 2010
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Title: Making Science Real
Authors: Joanne K. Olson & Kouider Mokhtari

Decades of research in science education indicate that students learn better when teachers begin instructional sequences with more concrete representations, scaffold toward more abstract representations, and then return to concrete experiences (Brown & Abell, 2007; Lawson, 1995). A powerful instructional model that follows this concrete/abstract/concrete sequence is called the learning cycle. Also known as guided inquiry (Colburn, 2000), the learning cycle has a long history and is superior to other models in helping students understand science concepts. (Brown & Abell, 2007)

(*Note from AGR)* The learning cycle has been presented in many forms. A simplified version presented in *Educational Leadership* appears below.

EXPLORATION
Students are presented with a challenge question to explore, a phenomenon to observe, or some other guided experience. For example, the teacher might give students a battery, a bulb, and a wire and ask them to find as many ways possible to light the bulbs with the materials. The purpose of this phase is to provide the students with focused, concrete experiences with the phenomenon.

CONCEPT DEVELOPMENT
Students discuss with one another and with the teacher their observations, questions, and possible explanations. The teacher uses student ideas to pose additional challenges to clarify their thinking, moves students thinking from the concrete to the abstract through discussion and introduction to concepts, and provides appropriate terminology for concepts. For example, after lighting the bulbs, students could draw the configurations they worked on the board. The teacher could help them identify points of contact and introduce the concept of a circuit. *(Informational text plays a critical role here in solidifying concepts with experiences. AGR)*

APPLICATION
Students use their new ideas in a more complex setting – to solve a new challenge – test ideas and so forth. This phase helps students see the utility of the new concepts, reinforces the concept and expands the concept beyond the initial application.

The learning cycle is appropriately called a "cycle" because the application phase may become a new exploration phase, and an instructional unit may consist of multiple cycles, progressively more complex.