ALERT

ADOLESCENT LITERACY: ENGAGING RESEARCH AND TEACHING

Make room for
INFERRING DURING READING

Literacy GAINS

"Students should be able to use a variety of texts to distinguish fact from opinion, make inferences, draw conclusions, and collect evidence to test hypotheses and build arguments. Successful development of these skills requires explicit opportunities to develop literacy skills and knowledge."

Carnegie Council, 2010

DID YOU KNOW?

Writers (and other creators of texts) do not often spell out every bit of meaning in a text. Readers are told they need to "read between the lines" to fully comprehend the meaning of a text.

So what exactly does "reading between the lines" or inferring mean? When readers infer, they may need to (1) figure out what the pronouns are referring to, (2) sort out the connotations of words and phrases, and (3) figure out the meanings from words they don't know or are unfamiliar using context clues. They may also need to (4) figure out the purpose of the text, (5) suss out the intentions of an author, and (6) decide on any biases an author has. In addition, they may also need to (7) make interpretations of the text, (8) determine key ideas from a text by possibly noting any repetition of key words or phrases or their equivalents, and (9) use any patterns in the text as well as its overall structure to guide how they piece together the information. As they continue to read, and encounter more information, readers need to decide (10) if the additional information fits with what they are pulling together as the key ideas, or if they need to (11) make adjustments to those interpretations (Pressley and Gaskins, 2006).

Effective readers infer in dynamic and fluid ways that allow them to make meaning from implicit information within the text itself. Effective readers also combine the implicit information from the text with their knowledge about other ideas, concepts and social and cultural norms, and with the thoughts of others (including other writers) (Beers, 2003).

WHY IS IT IMPORTANT FOR ADOLESCENT LEARNERS?

Adolescents infer everyday, from piecing together why their best friends are acting in certain ways to making decisions about advertisements which suggest particular messages. In their learning, students make inferences to develop understanding in their subject areas. For example, students in science develop models based on inferences made from experimental observation or by applying scientific knowledge

and procedures to issues, such as those related to the environment. In history, students infer cause and consequence based on primary sources and what they understand about particular time periods. In mathematics, students infer based on data collected to explain trends, patterns and relationships that are observed.

In their academic reading, the need for making skilled inferences becomes critical as students derive understanding from texts that tend to be longer, in forms that are more specialized across subjects, and that are dense with highly abstract ideas and concepts that demand greater degrees of prior knowledge to access their meaning. Through inference, readers not only see what the text says but also what the text means. "Expert readers go beyond the directly stated facts of a story and make inferences – they connect separate pieces of information, make guesses about missing scenes and data, and elaborate on story facts to make a more complete story" (Wilhelm, 2001).

IN THE CLASSROOM

GETTING STARTED

- Make connections between inferences students make in their lives everyday, and the inferences they make in reading. In making the connections, point out the benefits of making inferences in reading, for example, understanding an author's intent (e.g., to persuade) or sharing inside information with the author (e.g., in satire).

- Rewrite a short, complex text (e.g., through shared writing) to attempt to exclude inferences by providing extensive details and explanation. Use the rewritten text to show how inference allows both writers and readers to be efficient.

- Use think alouds to explicitly show what is required to make inferences. Highlight different types of inferences. Different types of inferences include: inferring the meaning of a word from the context of the sentence(s) it is used in, inferring meaning about key ideas by combining information across parts of the text, and inferring meaning by combining information in the text with prior knowledge and experiences.

- Use a variety of types of texts, including media and graphic texts (e.g., bar graphs, infographics) and draw inferences from them.

- Have students underline the words and phrases (or other elements of a text) that helped them make inferences.

TRY IT OUT: MAKING INFERENCES VISIBLE

Using think alouds is a highly effective way to make the expert skills of reading comprehension, such as inferring, evident to students who are developing those expert skills themselves. However, hearing the think aloud may not be enough (Beers, 2003). The instructional strategy Syntax Surgery is a way to visually point out in the text where the comprehension skill is being applied.

As the example indicates, it is also a way to show how making inferences may require drawing information from a number of places in the text and outside the text in order to make meaning of the whole.

Plastics in the Ocean

This pronoun looks like it refers to 'ocean'

Massive amounts of plastics end up in the ocean, and these plastics are changing it and the health of animals that live there.

Since plastic is not a natural material, I'm inferring that the change to the ocean is negative, even though it doesn't explicitly say that

I'm not familiar with this word, but when I read what follows, it looks like a gyre is a large swirling ocean current

This plastic is forming huge floating garbage dumps in the ocean. In fact, there is about 33.5 million kilograms of plastic spread throughout the world's five major ocean gyres. Gyres are rotating current systems that are thousands of kilometers across. Because of the circular motion, large amounts of plastic garbage collect, continually swirl around, and remain trapped there. It has been determined that the microplastic material in the North Pacific Gyre alone has increased 100 times in the past 40 years.

Plastics are endangering marine life in many ways. Of the 120 marine mammals on the threatened species list, 54% of them have been observed entangled in or have ingested plastic. The chemicals used in plastics have been found in fish, mollusks, sea mammals, and other sea life. Floating toxic microplastics are often ingested by marine life which is in turn consumed by us.

Earlier in the paragraph it says that millions of kgs of plastic are in the gyres, so this seems like a very significant increase

Adapted from *Plastics Breakdown*, www.oneworldoneocean.com/initiatives/PlasticsBreakdown
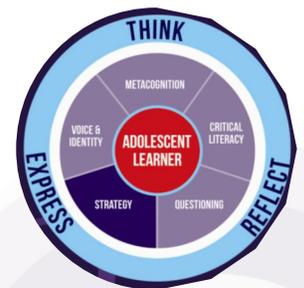
Syntax Surgery

Syntax surgery is a way to make inferring in a text visual for learners. This can be done by using low tech tools (e.g., projecting the text on chart paper) or more tech tools (e.g., using interactive white boards or tablets) and marking it during a think aloud.

HELPING STUDENTS KNOW TYPES OF INFERENCES

The graphic organizer "It Says, I Say, And So" helps students organize key points from a text and prompts them to infer based on that information. In this version of the organizer, students can also identify the type of inference they are making, for example, an inference about a word or phrase (i.e., isolated in a small part of the text), an inference drawn by combining points from across a text, or an inference made by combining information in the text with prior knowledge (See page 1 for more ways inferences are made).

Question	It Says	I Say	And So	Type of Inference
What is the meaning of the word 'gyre' as it is used in the article?	- gyres are rotating current systems	- I've heard of ocean currents, these must be the currents the text is referring to	- gyres must be ocean currents that move in a circle	- inferred the meaning of a word
How is plastic affecting animal life in the ocean?	- there are millions of kgs of plastic in the ocean - marine mammals are getting entangled in the plastic - sea animals are eating the plastic	- with millions of kgs of plastic, it must be easy for animals to find it, and there are animals that think it's food	- as plastics build up in the ocean, there will be an even greater danger to sea animals	- inferred meaning by combining information from across the text
Do you think this problem would be easy to solve? Explain why or why not.	- there are millions of kgs of plastic in the ocean	- I know plastic is hard to break down and it doesn't dissolve in water, and it floats easily - we use so much plastic in what we buy	- this will be a difficult problem because the plastic that is there will not just disappear, and we keep using so much of it	- inferred meaning by combining information from the text with prior knowledge

THINK — METACOGNITION — VOICE & IDENTITY — ADOLESCENT LEARNER — CRITICAL LITERACY — EXPRESS — STRATEGY — QUESTIONING — REFLECT

The *Adolescent Literacy Guide* outlines components which support students' abilities to think, express and reflect. Strategy is one of the components to which this ALERT connects.

ANALYZING QUESTION ANSWER RELATIONSHIPS

One instructional strategy that supports students to make inferences is to analyse Question-Answer Relationships or QARs (Raphael & Au, 2005). This strategy prompts students to examine questions to determine what kind of answers they require.

The four categories of QAR are outlined below. Inferences are likely required when formulating answers to Think and Search and Author and Me types of questions.

In the text		In my head	
Right there question	The answer to the question is explicitly stated, and the reader can point to the answer in the text. Often the question contains the key words that also appear in the text. The answer does not require the reader to make an inference.	**Author and me question**	The answer is not found in the text, but may be based on ideas from the text. Here, the reader needs to combine the information from the text with prior knowledge related to the topic in order to answer the question.
Think and search question	The answer is in the text, but it is not explicitly stated. An inference is required to answer the question. It may require piecing key points from a number of places in the text.	**On my own question**	The answer is not found in the text. In fact, it is based on the reader's prior knowledge completely independent of the text. This answer may rely on the reader making connections more than making inferences.

IN BRIEF

When readers are skilled at inferring meaning during reading, they get so much out of texts. Since inferred meaning lies 'below the surface' of texts, adolescents need a number of opportunities to 'see' how and why inferences work.

REFERENCES

Beers, K. (2003). *When Kids Can't Read, What Teachers Can Do: A Guide for Teachers 6-12*. Portsmouth, NH: Heinemann.

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Pressley, M. & Gaskins, I. (2006). Metacognitively competent reading comprehension is constructively responsive reading: how can such reading be developed? *Metacognition and Learning.* 1 (1), 99-113.

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Wilhelm, J. (2001). *Improving Comprehension with Think-Aloud Strategies: Modeling What Good Readers Do.* Toronto: Scholastic Professional Books.

FOR MORE ON...

Adolescent Literacy

Literacy GAINS (2012). *Adolescent Literacy Guide: A Professional Learning Resource for Literacy, Grades 7-12*

Background Knowledge

Literacy GAINS (Spring 2013). ALERT: Make Room for Building Background Knowledge

Text Structures

Literacy GAINS (Spring 2014). ALERT: Make Room for Building Knowledge of Text Structures