

Empowering Schools  
in Self-Regulation of  
Media and Information  
Literacy processes

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# **Education Brief**





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## How do Children make Inferences? Print and Digital Reading

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**Inference generation involves the reader's ability to work out the implicit meaning of the text read.**

### How is the meaning inferred from the text?

Inferences refer to information that is not explicitly stated in the text, but which is implied and must be worked out by the reader (Kintsch, 1998). It is important for children to understand the main points of the text (e.g. main characters, main events, etc) that are explicitly mentioned in the text and allow them to get sense of what the story is about. However, understanding at this point is relatively shallow as these ideas are not necessarily connected with each other. To get a deeper understanding of the text children should combine information that is directly mentioned in the text with information from their previous knowledge (van den Broek, 1997). If we look at the example from Oakhill, Cain and Elbro (2014):

Yasmine adored her new pet. Her little puppy was very cute and loveable.

In order to understand the connection between these two sentences, the reader needs to infer that they refer to the same thing, even though they use different labels: the little puppy was Yasmine's new pet. This is achieved by the reader first activating his/her general knowledge about pets to note that puppies can be kept as pets, and then to integrate that information with the first sentence (that Yasmine adored her little puppy).

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## What is the theory behind inference making and comprehension?

The Construction-Integration Model of Kintsch (1988) allows us to understand how a reader accomplishes the task of reading comprehension, both at shallow and deep level. According to this model the comprehension happens in two main phases: the construction phase and the integration phase. In the construction phase the reader identifies the meaning of words and their syntactic function in a sentence. As a result by the end of this phase the reader is able to connect ideas between different sentences and paragraphs. This level of understanding may not be always sufficient to achieve successful comprehension as it is mainly based on information directly mentioned in the text. In the integration phase the reader integrates the information from the construction phase with information, either from their background or from earlier in the text. By doing so they build a broader narrative context, known as a *mental model* for the text.

## How do children use working memory to make inferences?

Thanks to the mental model, children are able to understand not only 'what' happened but also 'why' it happened. However, to successfully build this mental model children should ultimately rely on their working memory. Working memory is the ability to hold and manipulate information in mind (Baddeley and Hitch, 1974). It plays a crucial role in helping children make inferences from the text. It allows readers to store and process information that is directly mentioned in the text. Working memory also provides the means that allow the readers to retrieve information from their long-term memory. Difficulties in using any of this type of information may result in failure to infer the meaning from the text read.

The important role of working memory in inference making has been demonstrated in a significant number of studies (e.g. Currie and Cain, 2015).

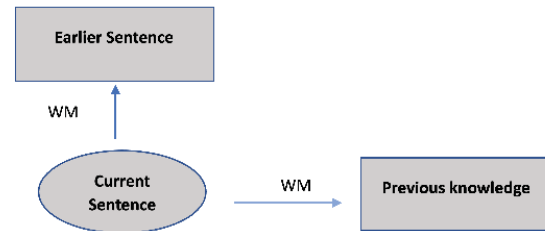


Figure 1 adapted from McNamara & Magliano, 2009.

## What happens in digital text comprehension?

Working memory as a means to make inferences may be even more important in digital text reading. Digital text is defined as a document written in electronic form and different from print reading, entails some specific characteristics which may affect comprehension in young children. Digital reading requires additional time from readers and increased navigation skills to search for information within the document. While reading a text on screen children also need to scroll down the page which may occur as an interference to the construction of their mental model (Mangen *et al.*, 2012). Some studies have shown that children read text more slowly on computers than on paper, and are more efficient at comprehending the texts when reading from paper than from screen (Kerr and Symons, 2006). Children are also reported to rely on their working memory to comprehend hypertext (Hahnel *et al.*, 2017). This issue is even more compelling for younger children who haven't mastered their reading skills yet and who would need extra time to process the information they read and integrate it with their long-term memory.

### Practical tips

- Children's problems with reading comprehension can be due to their working memory skills.
- Children must be encouraged to make inferences, and teachers can ask them questions that require an inference to be made after they have read the text.
- Digital reading occurs more slowly and requires more cognitive resources than reading the same texts on paper.
- Scrolling down the page on the screen can interfere with children's ability to integrate information from the text with information from long term memory.
- Teachers can help children in digital reading by identifying and writing down key details, and using resources in print to assist with unknown vocabulary words.

### Reference list:

- Baddeley, A.D., and Hitch, G. (1974). "Working memory." *Psychology of Learning and Motivation*, 8, 47-89.
- Currie, N. K., and; Cain, K. (2015). "Children's Inference Generation: The Role of Vocabulary and Working Memory." *Journal of Experimental Children Psychology*, 137, 57-75.
- Hahnel, C., Goldhammer, F., Kröhne, U., and Naumann, J. (2017). "Reading Digital Text involves Working Memory Updating based on Task Characteristics and Reader Behavior." *Learning and Individual Differences*, 59, 149-157.
- Kerr, M.A., and Symons, S.E. (2006). "Computerized Presentation of Text: Effects on Children's Reading of Informational Material." *Reading and Writing*, 19, 1-19.
- Kintsch, W. (1988). "The Role of Knowledge in Discourse Comprehension: A Construction-Integration Model." *Psychological Review*, 95 (2), 163.
- Mangen, A., Walgermo, B. R., and Brønnick, K. (2013). "Reading Linear Texts on Paper versus Computer Screen: Effects on Reading Comprehension." *International Journal of Educational Research*, 58, 61-68.
- McNamara, D.S., and Magliano, J. (2009). "Toward a comprehensive model of comprehension." *Psychology of Learning and motivation*, 51, 297-384.
- Oakhill, J., Cain, K., and Elbro, C. (2014). *Understanding and Teaching Reading Comprehension: A Handbook*. Routledge.
- Van den Broek, P. (1989). "Causal Reasoning and Inference making in Judging the Importance of Story Statements." *Children Development*, 286-297.

