

Reading comprehension

This article is about human reading comprehension. For machine reading comprehension, see [natural language understanding](#).

Reading comprehension is the ability to read text, process it and understand its meaning. An individual's ability to comprehend text is influenced by their traits and skills, one of which is the ability to make inferences. If word recognition is difficult, students use too much of their processing capacity to read individual words, which interferes with their ability to comprehend what is read. There are a number of approaches to improve reading comprehension, including improving one's vocabulary and reading strategies.

1 Definition

Reading comprehension is defined as the level of understanding of a text/message. This understanding comes from the interaction between the words that are written and how they trigger knowledge outside the text/message.^{[1][2]} Comprehension is a “creative, multi-faceted process” dependent upon four [language skills](#): [phonology](#), [syntax](#), [semantics](#), and [pragmatics](#).^[3] Proficient reading depends on the ability to recognize words quickly and effortlessly.^[4] It is also determined by an individual's cognitive development, which is “the construction of thought processes”. Some people learn through education or instruction and others through direct experiences.^[5]

There are specific traits that determine how successfully an individual will comprehend text, including prior knowledge about the subject, well developed language, and the ability to make inferences. Having the skill to monitor comprehension is a factor: “Why is this important?” and “Do I need to read the entire text?” are examples. Lastly, is the ability to be self-correcting to solve comprehension problems as they arise.^[6]

1.1 Reading comprehension levels

Reading comprehension involves two levels of processing, shallow (low-level) processing and deep (high-level) processing. Deep processing involves semantic processing, which happens when we encode the meaning of a word and relate it to similar words. Shallow processing involves structural and phonemic recognition, the pro-

cessing of sentence and word structure and their associated sounds. This theory was first identified by [Fergus I. M. Craik](#) and [Robert S. Lockhart](#).^[7]

1.2 Brain region activation

Comprehension levels can now be observed through the use of a fMRI, functional magnetic resonance imaging. fMRIs' are used to determine the specific neural pathways of activation across two conditions, narrative-level comprehension and sentence-level comprehension. Images showed that there was less brain region activation during sentence-level comprehension, suggesting a shared reliance with comprehension pathways. The scans also showed an enhanced temporal activation during narrative levels tests indicating this approach activates situation and spatial processing.^[8]

2 History

Initially most comprehension teaching was based on imparting selected techniques that when taken together would allow students to be strategic readers however in 40 years of testing these methods never seemed to win support in empirical research. One such strategy for improving reading comprehension is the technique called [SQ3R](#): Survey, Question, Read, Recite, and Review that was introduced by Francis Pleasant Robinson in his 1946 book *Effective Study*.^[9]

Between 1969 and to about 2000 a number of “strategies” were devised for teaching students to employ self-guided methods for improving reading comprehension. In 1969 Anthony Manzo designed and found empirical support for the [ReQuest](#), or [Reciprocal Questioning Procedure](#), it was the first method to convert emerging theories of social and imitation learning into teaching methods through the use of a talk rotation between students and teacher called [cognitive modeling](#).

Since the turn of the 21st century, comprehension lessons usually consist of students answering teachers' questions, writing responses to questions on their own, or both.^[10] The whole group version of this practice also often included “Round-robin reading”, wherein teachers called on individual students to read a portion of the text. In the last quarter of the 20th century, evidence accumulated that the read-test methods were more successful assessing rather than teaching comprehension. Instead of using the

prior read-test method, research studies have concluded that there are much more effective ways to teach comprehension. Much work has been done in the area of teaching novice readers a bank of “reading strategies,” or tools to interpret and analyze text.^[11]

Instruction in comprehension strategy use often involves the gradual release of responsibility, wherein teachers initially explain and model strategies. Over time, they give students more and more responsibility for using the strategies until they can use them independently. This technique is generally associated with the idea of self-regulation and reflects social cognitive theory, originally conceptualized by Albert Bandura.

3 Teaching reading comprehension



2009 summer reading program for children ages 5 to 12. “One of our goals is to help the children maintain their reading comprehension skills during the summer,” said Belinda Pugh. “If they just read 15 minutes a day, it really will help them maintain that comprehension level.”

There are differing viewpoints about how to best teach reading comprehension in the United States. One, for instance, is based upon understanding the text through reading and other is learning first to decode the words, or phonics.

A very important aspect that seemed to have been neglected is the teaching and learning of reading comprehension in a context of a second or foreign language. And even more specifically in a context of an isolated habit which has been unfolding for years in some countries like Mexico in the National Autonomous University (UNAM) since the 1960’s and it is still taking place nowadays.

The only author who has discussed this matter in the field of applied linguistics is Christine Nutall (Nutall, C. (1996). TEACHING READING SKILLS IN A FOREIGN LANGUAGE: NEW EDITION. London: Heinemann.) whose work should be included in this chapter.

4 Vocabulary=

Reading comprehension and vocabulary are inextricably linked. The ability to decode or identify and pronounce words is self-evidently important, but knowing what the words mean has a major and direct effect on knowing what any specific passage means. Students with a smaller vocabulary than other students comprehend less of what they read and it has been suggested that the most impactful way to improve comprehension is to improve vocabulary.^[12]

Most words are learned gradually through a wide variety of environments: television, books, and conversations. Some words are more complex and difficult to learn, such as homonyms, words that have multiple meanings and those with figurative meanings, like idioms, similes, and metaphors.^[13]

4.1 Three tier vocabulary words

Several theories of vocabulary instruction exist, namely, one focused on intensive instruction of a few high value words, one focused on broad instruction of many useful words, and a third focused on strategies for learning new word etc...

4.2 Broad vocabulary approach

The method of focusing of broad instruction on many words was developed by Andrew Biemiller who argued that more words would benefit students more, even if the instruction was short and teacher-directed. He suggested that teachers teach a large number of words before reading a book to students, by merely giving short definitions, such as synonyms, and then pointing out the words and their meaning while reading the book to students.^[14] The method contrasts with the approach by emphasizing quantity versus quality. There is no evidence to suggest the primacy of either approach.^[15]

4.3 Morphemic instruction

The final vocabulary technique, strategies for learning new words, can be further subdivided into instruction on using context and instruction on using morphemes, or meaningful units within words to learn their meaning. Morphemic instruction has been shown to produce positive outcomes for students reading and vocabulary knowledge, but context has proved unreliable as a strategy and it is no longer considered a useful strategy to teach students. This conclusion does not disqualify the value in “learning” morphemic analysis - prefixes, suffixes and roots - but rather suggests that it be imparted incidentally and in context. Accordingly, there are methods designed to achieve this, such as Incidental Morpheme Analysis.^[16]

4.4 Reading strategies



A U.S. Marine helps a student with reading comprehension as part of a Partnership in Education program sponsored by Park Street Elementary School and Navy /Marine Corps Reserve Center Atlanta. The program is a community out-reach program for sailors and Marines to visit the school and help students with class work.

4.4.1 Reciprocal teaching

In the 1980s Annemarie Sullivan Palincsar and Ann L. Brown developed a technique called **reciprocal teaching** that taught students to predict, summarize, clarify, and ask questions for sections of a text. The use of strategies like summarizing after each paragraph have come to be seen as effective strategies for building students' comprehension. The idea is that students will develop stronger reading comprehension skills on their own if the teacher gives them explicit mental tools for unpacking text.^[11]

4.4.2 Instructional conversations

"Instructional conversations", or comprehension through discussion, create higher-level thinking opportunities for students by promoting **critical** and **aesthetic** thinking about the text. According to Vivian Thayer, class discussions help students to generate ideas and new questions. (Goldenberg, p. 317). Dr. Neil Postman has said, "All our knowledge results from questions, which is another way of saying that question-asking is our most important intellectual tool" (Response to Intervention). There are several types of questions that a teacher should focus on: remembering; testing understanding; application or solving; invite synthesis or creating; and evaluation and judging. Teachers should model these types of questions through "think-alouds" before, during, and after reading a text. When a student can relate a passage to an experience, another book, or other facts about the world, they are "making a connection." Making connections help students understand the author's purpose and fiction or non-fiction story.^[17]

4.4.3 Text factors

There are factors, that once discerned, make it easier for the reader to understand the written text. One is the **genre**, like folktales, historical fiction, biographies or poetry. Each genre has its own characteristics for text structure, that once understood help the reader comprehend it. A story is composed of a plot, characters, setting, point of view, and theme. Informational books provide real world knowledge for students and have unique features such as: headings, maps, vocabulary, and an index. Poems are written in different forms and the most commonly used are: rhymed verse, haikus, free verse, and narratives. Poetry uses devices such as: alliteration, repetition, rhyme, metaphors, and similes. "When children are familiar with genres, organizational patterns, and text features in books they're reading, they're better able to create those text factors in their own writing."^[18]

4.4.4 Visualization

Visualization is a "mental image" created in a person's mind while reading text, which "brings words to life" and helps improve reading comprehension. Asking sensory questions will help students become better visualizers.^[19]

4.4.5 Multiple reading strategies

There are a wide range of reading strategies suggested by reading programs and educators. The **National Reading Panel** identified positive effects only for a subset, particularly summarizing, asking questions, answering questions, comprehension monitoring, graphic organizers, and cooperative learning. The Panel also emphasized that a combination of strategies, as used in Reciprocal Teaching, can be effective.^[20] The use of effective comprehension strategies that provide specific instructions for developing and retaining comprehension skills, with intermittent feedback, has been found to improve reading comprehension across all ages, specifically those affected by mental disabilities.^[21]

Reading different types of texts requires the use of different reading strategies and approaches. Making reading an active, observable process can be very beneficial to struggling readers. A good reader interacts with the text in order to develop an understanding of the information before them. Some good reader strategies are predicting, connecting, inferring, summarizing, analyzing and critiquing. There are many resources and activities educators and instructors of reading can use to help with reading strategies in specific content areas and disciplines. Some examples are graphic organizers, talking to the text, anticipation guides, double entry journals, interactive reading and note taking guides, chunking, and summarizing.

The use of effective comprehension strategies is highly

important when learning to improve reading comprehension. These strategies provide specific instructions for developing and retaining comprehension skills. Implementing the following instructions with intermittent feedback has been found to improve reading comprehension across all ages, specifically those affected by mental disabilities.^[7]

4.5 Assessment

There are informal and formal assessments to monitor an individual's comprehension ability and use of comprehension strategies.^[22] Informal assessments are generally through observation and the use of tools, like story boards, word sorts, interactive writing, and shared reading. Formal assessments are district or state assessments that evaluates all students on important skills and concepts. Two examples are the *Florida Standards Assessment (FSA)* and *Accelerated Reader* programs.

5 Difficult or complex content

5.1 Reading difficult texts

Some texts, like in philosophy, literature or scientific research, may appear more difficult to read because of the prior knowledge they assume, the tradition from which they come, or the tone, such as criticizing or parodizing. Philosopher Jacques Derrida, explained his opinion about complicated text: "In order to unfold what is implicit in so many discourses, one would have each time to make a pedagogical outlay that is just not reasonable to expect from every book. Here the responsibility has to be shared out, mediated; the reading has to do its work and the work has to make its reader."^[23] Other philosophers, however, believe that if you have something to say, you should be able to make the message readable to a wide audience.

5.2 Hyperlinks

Embedded *hyperlinks* in documents or Internet pages have been found to make different demands on the reader than traditional text. Authors, such as Nicholas Carr, and psychologists, such as Maryanne Wolf, contend that the internet may have a negative impact on attention and reading comprehension.^[24] Some studies report increased demands of reading hyperlinked text in terms of cognitive load, or the amount of information actively maintained in one's mind (also see working memory).^[25] One study showed that going from about 5 hyperlinks per page to about 11 per page reduced college students' understanding (assessed by multiple choice tests) of articles about alternative energy.^[26] This can be attributed to the decision-making process (deciding whether to click on it)

required by each hyperlink,^[25] which may reduce comprehension of surrounding text.

On the other hand, other studies have shown that if a short summary of the link's content is provided when the mouse pointer hovers over it, then comprehension of the text is improved.^[27] "Navigation hints" about which links are most relevant improved comprehension.^[28] Finally, the background knowledge of the reader can partially determine the effect hyperlinks have on comprehension. In a study of reading comprehension with subjects who were familiar or unfamiliar with art history, texts which were hyperlinked to one another hierarchically were easier for novices to understand than texts which were hyperlinked semantically. In contrast, those already familiar with the topic understood the content equally well with both types of organization.^[25]

In interpreting these results, it may be useful to note that the studies mentioned were all performed in closed content environments, not on the internet. That is, the texts used only linked to a predetermined set of other texts which was offline. Furthermore, the participants were explicitly instructed to read on a certain topic in a limited amount of time. Reading text on the internet may not have these constraints.

6 Professional development

The National Reading Panel noted that comprehension strategy instruction is difficult for many teachers as well as for students, particularly because they were not taught this way and because it is a very cognitively demanding task. They suggested that professional development can increase teachers/students willingness to use reading strategies but admitted that much remains to be done in this area. The *directed listening and thinking activity* is a technique available to teachers to aid students in learning *how to un-read* and reading comprehension. It is also difficult for students that are new. There is often some debate when considering the relationship between reading fluency and reading comprehension. There is evidence of a direct correlation that fluency and comprehension lead to better understanding of the written material, across all ages. However, it is unclear if fluency is a result of the comprehension or if this a separate learned task.

7 See also

- Directed listening and thinking activity
- English as a second or foreign language
- Fluency
- Levels-of-processing
- Readability

- Reading for special needs

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9 Further reading

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10 External links


- Test your English Reading Comprehension Skills
- Vocabulary Instruction and Reading comprehension - From the ERIC Clearinghouse on Reading English and Communication.
- ReadWorks.org | The Solution to Reading Comprehension

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