

The Science Of Reading Comprehension Instruction

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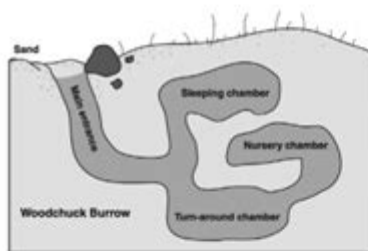
The Science of Reading Comprehension Instruction

Nell K. Duke, Alessandra E. Ward, P. David Pearson

What have decades of research told us about the nature of comprehension and how to develop students' comprehension in schools?

Consider the beginning of an article by Elizabeth C. McCarron (2000/2005) from California's third-grade English Language Arts Standards Test, originally published in *Highlights for Children* magazine:

Not Just a Hole in the Ground
by Elizabeth C. McCarron



The woodchuck sits up on its hind legs, chewing a strawberry. Looking around, the chuck freezes when it spies the farmer's dog. The dog sniffs the air, spots the chuck, and charges toward it. The woodchuck watches the enemy coming closer and closer, then POOF! The chuck disappears from sight, and the dog is left puzzled. The woodchuck has dropped into its burrow to escape.

A woodchuck burrow is more than just a hole in the ground. It is a complex system of entrances, tunnels,

and rooms called chambers. Burrows give woodchucks a place to sleep, raise young, and escape enemies. When a woodchuck hibernates (sleeps through the winter), it makes a simple burrow and plugs the entrance with sand.

A woodchuck uses its strong claws to dig its own burrow. In soft soil, a woodchuck can dig an entire burrow in one day.

Each summer burrow usually has several entrances. This lets the woodchuck roam and still have a safe hole nearby in case danger comes along. (p. 16)
(The text continues for five more paragraphs.)

How does a student learn to comprehend an article such as this? Researchers from many disciplines, such as developmental psychology, cognitive science, education, and linguistics, have been working on that question for decades (e.g., Pearson & Cervetti, 2017). Research has revealed a great deal about what goes on in the mind when readers comprehend oral and written text and how instruction and other experiences can affect that development. In this piece, we share some key findings from research on reading comprehension and instructional practices that positively impact its development.

A mind-set to bring to this piece is that fostering reading comprehension development across a wide range of readers requires a multifaceted

Nell K. Duke is a professor in the School of Education at the University of Michigan, Ann Arbor, USA; email nkduke@umich.edu.

Alessandra E. Ward is a postdoctoral research fellow in the School of Education at the University of Michigan, Ann Arbor, USA; email wardgold@umich.edu.

P. David Pearson is a professor emeritus in the Graduate School of Education at the University of California, Berkeley, USA; email ppearson@berkeley.edu.

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The science of reading comprehension instruction is an evolving field that draws on decades of research in cognitive psychology, linguistics, and education. This body of knowledge seeks to understand how individuals make meaning from texts and what instructional practices can enhance reading comprehension skills across various age groups and abilities. In this article, we will explore the essential components of reading comprehension, effective instruction strategies, and the role of assessment in developing these crucial skills.

Understanding Reading Comprehension

Reading comprehension is the ability to understand, interpret, and derive meaning from written text. It is not a single skill but rather a complex cognitive process that involves several interrelated components:

Cognitive Processes Involved in Reading Comprehension

1. Decoding: The ability to convert written text into spoken language by recognizing letters and their corresponding sounds.
2. Vocabulary Knowledge: Understanding the meanings of words and the nuances of language that contribute to overall comprehension.
3. Background Knowledge: Prior knowledge about a topic that aids in understanding new information.
4. Inference Making: The ability to read between the lines and draw conclusions based on implicit information.
5. Monitoring Comprehension: The skill of self-assessing one's understanding of the text during and after reading.

The Importance of Reading Comprehension

Reading comprehension is foundational to academic success and lifelong learning. It impacts various areas, including:

- Academic achievement across subjects, particularly in literacy-related fields.
- Critical thinking and analytical skills necessary for problem-solving.
- Communication abilities that are essential in both personal and professional contexts.

The Science Behind Reading Comprehension Instruction

Research in cognitive science has yielded valuable insights into how reading comprehension can be effectively taught. These findings have been synthesized into instructional strategies that educators can employ to enhance comprehension skills among their students.

Effective Instructional Strategies

1. Explicit Instruction: This involves direct teaching of comprehension strategies, such as summarizing, predicting, questioning, and clarifying. Explicit instruction helps students understand what strategies to use and how to apply them.

2. **Modeling:** Teachers can model their thinking processes aloud as they read a text. This "think-aloud" technique demonstrates how to approach reading comprehensively and encourages students to engage in similar metacognitive practices.
3. **Graphic Organizers:** Visual aids that help students organize information from the text, such as Venn diagrams, story maps, or flowcharts, can enhance understanding and retention.
4. **Collaborative Learning:** Group activities that promote discussion and analysis of texts allow students to share insights and perspectives, fostering deeper comprehension through social interaction.
5. **Diverse Text Selection:** Exposure to a variety of genres and text types can enrich students' vocabulary and background knowledge, enhancing their ability to comprehend different texts.
6. **Questioning Techniques:** Teaching students to generate their own questions about the text can promote active engagement and deeper understanding. Effective questioning can lead to critical thinking and sustained inquiry.

Reading Comprehension Programs and Models

Several instructional programs and models have been developed based on research findings. Some prominent examples include:

- **The Reciprocal Teaching Model:** Involves teaching students to use four key strategies—predicting, questioning, clarifying, and summarizing—while they work in pairs or small groups.
- **The Gradual Release of Responsibility:** This framework emphasizes a gradual shift of responsibility from the teacher to the students. Initially, the teacher models a strategy, then guides the students, and eventually allows them to practice independently.
- **Reading Apprenticeship:** This model focuses on developing students' reading skills through content-area learning, emphasizing the importance of academic discourse and collaborative learning.

The Role of Assessment in Reading Comprehension

Assessment plays a crucial role in understanding and improving reading comprehension. It provides educators with valuable insights into students' skills and areas for growth.

Types of Assessments

1. **Formative Assessments:** These are ongoing assessments used to monitor student progress and inform instruction. Examples include quizzes, concept maps, and observational checklists.
2. **Summative Assessments:** These assessments evaluate student learning at the end of an instructional unit. Common summative assessments include standardized tests and end-of-unit projects.
3. **Diagnostic Assessments:** These assessments are used to identify students' specific strengths and weaknesses in reading comprehension. They help tailor instruction to meet individual needs.

Interpreting Assessment Data

Interpreting assessment data effectively is essential for making informed instructional decisions. Educators should consider:

- **Patterns of Performance:** Identifying trends in student performance can highlight areas that need more focus or different instructional strategies.
- **Individual Needs:** Understanding the unique needs of each student can lead to differentiated instruction, allowing for targeted interventions.

Challenges in Reading Comprehension Instruction

Despite the plethora of research and instructional strategies available, several challenges persist in reading comprehension instruction:

1. **Diverse Learner Needs:** Students come from varied backgrounds and possess different reading abilities, requiring differentiated approaches to instruction.
2. **Limited Resources:** Many educators face constraints such as insufficient materials, time, and training, which can hinder the implementation of effective strategies.
3. **Resistance to Change:** Educational institutions may be slow to adopt new research-based practices, creating a gap between theory and practice.
4. **Assessment Pressure:** High-stakes testing can lead to a narrow focus on test preparation rather than fostering a deeper understanding of reading comprehension.

Conclusion

The science of reading comprehension instruction is a dynamic and essential area of study that has significant implications for educational practice. By understanding the cognitive processes involved in reading comprehension and implementing research-backed instructional strategies, educators can enhance students' ability to engage with texts meaningfully. Moreover, effective assessment practices can inform instruction and support diverse learners. As we continue to deepen our understanding of reading comprehension, it is crucial to address the challenges faced by educators and remain committed to fostering a culture of literacy that empowers all students to become proficient, confident readers.

Frequently Asked Questions

What is the science of reading comprehension instruction?

The science of reading comprehension instruction refers to evidence-based practices and strategies that enhance students' ability to understand and interpret texts. It integrates cognitive psychology, linguistics, and educational research to improve reading skills.

Why is background knowledge important in reading comprehension?

Background knowledge is crucial because it helps readers connect new information to what they already know, making it easier to comprehend and retain the material. It provides context and frameworks for understanding complex texts.

How do questioning strategies improve reading comprehension?

Questioning strategies encourage active engagement with the text. They prompt readers to think critically, make predictions, and clarify their understanding, leading to deeper comprehension and retention of information.

What role does vocabulary play in reading comprehension?

Vocabulary knowledge is fundamental to reading comprehension. A robust vocabulary allows readers to decode and understand texts more effectively, as well as to engage with and analyze the material critically.

How can graphic organizers aid in comprehension

instruction?

Graphic organizers help students visually map out information, relationships, and concepts within a text. This visual representation aids in organizing thoughts, summarizing information, and enhancing overall comprehension.

What is the significance of teaching metacognitive strategies for reading?

Teaching metacognitive strategies empowers students to monitor and regulate their own reading processes. This self-awareness enables them to identify when they do not understand something and employ strategies to improve their comprehension.

How does explicit instruction in comprehension strategies differ from implicit instruction?

Explicit instruction involves directly teaching specific comprehension strategies and modeling their use, while implicit instruction relies on students discovering strategies through practice and experience. Explicit instruction is often more effective for struggling readers.

What are the best practices for assessing reading comprehension?

Best practices for assessing reading comprehension include using a variety of assessment methods, such as formative assessments, comprehension quizzes, think-aloud protocols, and discussions, to provide a comprehensive view of a student's understanding.

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