# Strategies for improving reading comprehension skills

## Report (part 2) by Martina Giuliano

My second task consisted in developing a list of strategies to improve reading skills both for non-disabled pupils and for pupils with disabilities and/or learning disorders.

Reading is a skill which enables us to get a message; recognizing the written words (written symbols); getting (understanding) the meaning; used to teach pronunciation; grasping information from texts. Reading is a complex activity that involves both perception and thought. Reading consists of two related processes: word recognition and comprehension. Word recognition refers to the process of perceiving how written symbols correspond to one’s spoken language. Comprehension is the process of making sense of words, sentences and connected text. Readers typically make use of background knowledge, vocabulary, grammatical knowledge, experience with text and other strategies to help them understand written text.
Reading comprehension is the result of several processes: concentration, reading, conceptualization, integration of information with prior knowledge, memorization.

## Concentration

Before studying a text it is important to find out which are the 10/15 most frequently asked questions on the subject. This will allow you to direct and focus on the really important things. Look at any exercises or final summary sections because they show the core of the subject.

An essential ingredient for a good concentration is relaxation.

Create study sessions with a defined time and maybe with the specific tasks to be concluded at the end of each session. After a certain number of hours of study the brain needs time to assimilate all the received information.

Therefore it is important that each cycle of study is structured as follows:

1. 40/50 minutes study (max 70)
2. 10/15 minutes break
3. 10 minutes to rehearse

Read quickly. Reading quickly increases the attention of the brain on that task, leaving no "room" for distraction. Quick reading is very useful especially in two phases:

1. Initial reading: at this stage you can identify the key points which you will then study deeply;

2. Review: at this stage (after studying) you already know a lot about the subject so you can read quickly.

## Reading

Before starting with a list of strategies for improving the reading comprehension it is worth to point out that there are different types of reading. Each type of reading has got its own goal and strategies.

| Type of reading | Goal | Strategies |
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| **Selective reading** | Finding immediately a piece of information | You just look at the order of information, at the structure of the text. |
| **General reading** | Reading for general understanding | • **Read introductions, conclusions, and summary paragraphs.** These paragraphs usually outline the most important points covered in the text. Look for “summary paragraphs.” These are paragraphs within the text that summarize smaller sections of the text rather than the whole thing. Be on the lookout for terms such as, “in conclusion,” “to sum up,” and “therefore,” that indicate the author is summarizing various points.<br>• **Read first and last lines of paragraphs.** If you go through a text and read just the first and last line of each paragraph, you will actually get an adequate concept of what the text covers. The first line of many paragraphs will introduce the topic covered, while the last line will often summarize the contents of the paragraph or serve as a transition to the |

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| | | next paragraph. As you read first and last sentences, you might come across a line that indicates a paragraph is particularly important or intriguing. If that happens, go ahead and read the entire paragraph.<br><br>• **Look at illustrations.** Just as first and last sentences of paragraphs often sum up key points, pictures, charts, and diagrams usually correspond to key information conveyed in the text. Look over all of these and read the captions that explain them.<br><br>• **Read all words and phrases that are set in boldface or italics.** If the term is unfamiliar to you and seems significant, read the entire sentence as well.<br><br>**However, don't fool yourself into thinking scanning is a thorough reading. Scanning is just that: lightly going over an assignment and gaining a general overview. It's what to do if you're in a pinch and should not be your overall strategy.** |
| **Close reading** | Close reading is reading for complete understanding; reading for detailed comprehension (information; function and discourse). | The act of reading involves a communication between author and reader. Skilled readers use a lot of strategies:<br><br>• **Activating and Using Background Knowledge**<br>• **Generating and Asking Questions**<br>• **Making inferences**<br>• **Predicting**<br>• **Summarizing**<br>• **Visualizing**<br>• **Monitoring** |

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| **Expressive reading** | Enhancing the content and the formal aspects of the text | Expressive readers change:<br>• **Pitch** (they make their voice go up and down)<br>• **Rhythm** (they slow down and speed up when necessary)<br>• **Volume** (expressive readers say some words louder than others)<br>• **Tone** (Sometimes readers use a soft, warm voice; sometimes their voice is cold and hard) |

## Close Reading

Close reading is the most important skill you need for any form of literary studies. It means paying especially close attention to what is printed on the page. Close reading means not only reading and understanding the meanings of the individual printed words, but also involves making yourself sensitive to all the nuances and connotations of language as it is used by skilled writers.

| Before-Reading | | While-Reading | | After-Reading | |
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| Goal | How to work | Goal | How to work | Goal | How to work |
| Getting focused and orientated in the text | Browse the book and Look at its structure. Read indexes, titles and summaries Sharpen "thing you already know " on the subject and what you expect from the text. Focus on the underlined words. | Understanding information and selecting useful pieces of information | Read carefully Check in the dictionary the terms that you do not know Underline or highlight the main concepts and keywords. | Rework in order to memorize | Make use of diagrams, maps, doodles, graphs, tables, ... Make a summaries take notes, make annotations, repeat aloud, make up personal strategies to memorize. |
| This stage is useful to make things clearer and to organize well the second phase: the detailed reading. | | At the end of the reading you will be able to say: "now I know more ". Do not underline too much, otherwise it will be useless!! | | You need this stage to get a good grade in your tests! | |

The act of reading involves a communication between author and reader. Skilled readers use their prior knowledge of concepts and experiences to ask how they can make sense of the content they are reading (Bacon, 1983). Skilled readers also make connections between texts, from the text to the outside world, and from the text to their own experience while reading. They tend to make mental

pictures of what they read, and they ask questions of themselves and of their instructors to enhance their understanding of the text (Keene & Zimmerman, 1997; Tovani, 2000).

Strategies that have been demonstrated to help less-skilled readers improve their comprehension include: **determining importance** while reading, **self-monitoring** comprehension; **making predictions and inferences** about the text, and **questioning** while reading (Dole et al., 1991; Irwin & Baker, 1989; Pearson, 1985; Pressley et al., 1990).

| Before Reading | Before/While Reading | While Reading | While/After Reading | After Reading | Always |
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| **Activating and Using Background Knowledge** | **Question-Generation Strategy** | **Generating and Asking Questions** | **Visualizing** | **Summarizing** | **Experience-Text Relationship (ETR)** |
| **Listening-Thinking Activity (LTA) and Directed Reading-Thinking Activity (DR-TA)** | **K-W-L (What I Know, What I Want to Know, What I Learned)** | **Reciprocal Questioning (ReQuest)** | | **Comprehension Monitoring** | |
| | **Making Inferences** | | | **Visual Structures or Graphic Representations** | |
| | **Predicting** | | | **Self-Assessment** | |

**Activating and Using Background Knowledge**

This strategy requires readers to activate their background knowledge and to use that knowledge to help them understand what they are reading. Background knowledge is made up of a person's experiences with the world (including what he or she has read), along with his or her concepts for how written text works, including word identification, print concepts, word meaning, and how text is organized. Research has established that readers' existing knowledge is critical in determining their ability to comprehend what they read.

One of the most important contributions made by cognitive scientists to the understanding of how comprehension works is schema theory. This theory is based on how people organize and activate their knowledge.

According to schema theory, as people learn about the world, they develop a large network of knowledge structures, or schemas, with each schema connected to many others. These schemas grow and change as a person acquires new information through experience and reading. For example, a very young child's schema for dog might contain only her or his understanding of the family pet — something white, furry, and fun to play with. As the child gains more experiences with a variety of dogs in a variety of settings, the dog schema will expand and be refined. It may connect to other schema — types of dogs; colors of dogs; foods dogs eat; places where dogs stay when the family is on vacation; dangerous dogs; who veterinarians are; and locations of important dog shows.

When they applied schema theory to reading comprehension, cognitive scientists found that good readers constantly connect their background knowledge to the new knowledge they encounter in a text. In fact, they appear to activate a schema as soon they begin to read. The initial schema then activates others, thus directly affecting how readers understand and react to a text.[4]

Schemas that are related to text organization are especially important to comprehension. Having knowledge of a text's organization improves students' understanding of that text.

**Listening-Thinking Activity (LTA) and Directed Reading-Thinking Activity (DR-TA)**

These strategies help students develop background knowledge and establish a purpose while reading (Walker, 2000). In LTA and DR-TA, the teacher develops students’ predictive comprehension by asking them what they think a certain text is about based on the title. The teacher then reads aloud a section of the text (LTA) or directs the students to read a specific section (DR-TA). Students then revise their predictions; this process is repeated until the entire text is discussed as a whole (Bacon, 1983; Dowhower, 1999; Irwin & Baker, 1989; Walker, 2000).

**Question-Generation Strategy**

Teaching students how to formulate questions about a text can help them identify the most important information (Dole et al, 1991; Walker, 2000). In this strategy, students take a more active role as readers by generating their own questions. Students can be introduced to self-questioning by developing pre-reading questions with the instructor and then by formulating questions about main ideas while reading (Long & Long, 1987). Studies in reading comprehension have shown that students who were taught to generate questions from the main ideas of paragraphs outperformed students who were not taught to use self-questioning strategies (Long & Long, 1987). When students ask themselves questions before and/or during reading, they tend to read the text in search of answers, engaging in active comprehension (Underwood, 1997). When they revisit questions that were generated at the start of a reading task, they can reflect on the sense they made of the text and are able to assess their own comprehension (Underwood, 1997).

**K-W-L (What I Know, What I Want to Know, What I Learned)**

This strategy is widely used to help students tap into prior knowledge, set purposes for reading by determining what they want to know about the topic, and identify what they learned while reading (Dowhower, 1999; Walker, 2000). For the first two steps, the instructor leads a discussion in which students brainstorm what they already know about a topic, and then the instructor helps them think of more general categories of information that they might encounter or want to learn about while reading a given text. In the third step, students check their questions to determine whether or not the text addressed them and how further reading might help them answer any unanswered questions (Ogle, 1986). Similarly, the *K-W-L Plus*strategy adds a writing component that consists of mapping and summarizing after answering questions in these three areas (Dowhower, 1999).

**Making Inferences**

This strategy requires readers to evaluate or draw conclusions from information in a text. Authors do not always provide complete descriptions of, or explicit information about a topic, setting, character, or event. However, they often provide clues that readers can use to "read between the lines"-by making inferences that combine information in the text with their background knowledge.

It has been shown that when readers are taught how to make inferences, they improve their abilities to construct meaning. Indeed, research indicates that the ability to make inferences is crucial to successful reading.

**Predicting**

This strategy involves the ability of readers to get meaning from a text by making informed predictions. Good readers use predicting as a way to connect their existing knowledge to new information from a text to get meaning from what they read. Before reading, they may use what they know about an author to predict what a text will be about. The title of a text may trigger memories of texts with similar content, allowing them to predict the content of the new text.

During reading, good readers may make predictions about what is going to happen next, or what ideas or evidence the author will present to support an argument. They tend to evaluate these predictions continuously, and revise any prediction that is not confirmed by the reading.

**Generating and Asking Questions**

By generating questions, students become aware of whether they can answer the questions and if they understand what they are reading. Students learn to ask themselves questions that require them to combine information from different segments of text. For example, students can be taught to ask main idea questions that relate to important information in a text.

Questions can be effective because they:

- Give students a purpose for reading
- Focus students' attention on what they are to learn

- Help students to think actively as they read
- Encourage students to monitor their comprehension
- Help students to review content and relate what they have learned to what they already know

The Question-Answer Relationship strategy (QAR) encourages students to learn how to answer questions better. Students are asked to indicate whether the information they used to answer questions about the text was textually explicit information (information that was directly stated in the text), textually implicit information (information that was implied in the text), or information entirely from the student's own background knowledge.

There are four different types of questions:

- **"Right There"**

  Questions found right in the text that ask students to find the one right answer located in one place as a word or a sentence in the passage.

  Example: Who is Frog's friend? Answer: Toad

- **"Think and Search"**

  Questions based on the recall of facts that can be found directly in the text. Answers are typically found in more than one place, thus requiring students to "think" and "search" through the passage to find the answer.

  Example: Why was Frog sad? Answer: His friend was leaving.

- **"Author and You"**

  Questions require students to use what they already know, with what they have learned from reading the text. Student's must understand the text and relate it to their prior knowledge before answering the question.

  Example: How do think Frog felt when he found Toad? Answer: I think that Frog felt happy because he had not seen Toad in a long time. I feel happy when I get to see my friend who lives far away.

- **"On Your Own"**

  Questions are answered based on a student’s prior knowledge and experiences. Reading the text may not be helpful to them when answering this type of question.

  Example: How would you feel if your best friend moved away? Answer: I would feel very sad if my best friend moved away because I would miss her.

### Reciprocal Questioning (ReQuest)

In this strategy, students improve comprehension by developing their self-questioning skills (Walker, 2000). The students and the instructor first read a passage silently. The instructor then models how to ask appropriate questions about the selection while integrating background knowledge and textual information. Finally, the students and the instructor take turns asking and answering one another’s questions about the text (Bacon, 1983; Walker, 2000). This strategy has been shown to improve the reading comprehension of less-skilled readers by teaching them to formulate questions as they read (Bacon, 1983). In addition, instructors can use the students’ answers to the various questions that are generated to model how to make inferences and predictions when reading a text.

**Visualizing**

This involves the ability of readers to make mental images of a text as a way to understand processes or events they encounter during reading. This ability can be an indication that a reader understands a text. Some research suggests that readers who visualize as they read are better able to recall what they have read than are those who do not visualize.

Visualizing is especially valuable when it is applied to narrative texts. In reading narratives, readers often can develop a clear understanding of what is happening by visualizing the setting, characters, or actions in the plot. However, visualizing can also be applied to the reading of expository texts, with readers visualizing steps in a process or stages in an event or creating an image to help them remember some abstract concept or important name.

**Summarizing**

Summarizing requires students to determine what is important in what they are reading and to put it into their own words. Instruction in summarizing helps students:

- Identify or generate main ideas
- Connect the main or central ideas
- Eliminate unnecessary information
- Remember what they read

**Comprehension Monitoring**

Students who are good at monitoring their comprehension know when they understand what they read and when they do not. They have strategies to "fix" problems in their understanding as the problems arise. Research shows that instruction, even in the early grades, can help students become better at monitoring their comprehension.

Comprehension monitoring instruction teaches students to:

- Be aware of what they do understand
- Identify what they do not understand
- Use appropriate strategies to resolve problems in comprehension

**Visual Structures or Graphic Representations**

These include maps, chains, charts, webs, trees, matrices, and diagrams. All provide a visual representation of a given text’s content in order to facilitate comprehension. By showing key parts of a reading and the relationship among those parts, they can help students identify the most important ideas and how they are organized (Dowhower, 1999; Jones, Pierce & Hunter, 1989).

Graphic organizers illustrate concepts and relationships between concepts in a text or using diagrams. Graphic organizers are known by different names, such as maps, webs, graphs, charts, frames, or clusters.

Regardless of the label, graphic organizers can help readers focus on concepts and how they are related to other concepts. Graphic organizers help students read and understand textbooks and picture books.

Graphic organizers can:

- Help students focus on text structure "differences between fiction and nonfiction" as they read
- Provide students with tools they can use to examine and show relationships in a text
- Help students write well-organized summaries of a text

Here are some examples of graphic organizers:

- Venn-Diagrams

  Used to compare or contrast information from two sources. For example, comparing two Dr. Seuss books.

- Storyboard/Chain of Events
- Used to order or sequence events within a text. For example, listing the steps for brushing your teeth.
- Story Map

  Used to chart the story structure. These can be organized into fiction and nonfiction text structures. For example, defining characters, setting, events, problem, resolution in a fiction story; however in a nonfiction story, main idea and details would be identified.

- Cause/Effect

  Used to illustrate the cause and effects told within a text. For example, staying in the sun too long may lead to a painful sunburn.

**Self-Assessment**

Recent research has identified *self-report rubrics, checklists,* and *portfolio entries* as ways for students to monitor their comprehension and their use of various reading strategies. These techniques can help students to pinpoint when they begin to lose focus as well as understand how various reading strategies can assist them in comprehending text (Dowhower, 1999; Walker, 2000).

For example, one specific self-assessment technique, which goes by the acronym FLIP, can help readers assess the difficulty of a given text in relation to their personal experiences and reading abilities (Underwood, 1997). Students are taught to preview the text and to decide on its *friendliness* (F) by looking at headings, pictures, graphs, and so on. They sample the *language* (L) of the text and estimate the level of difficulty of the vocabulary. Then, they decide how *interested* (I**)** they may be in the text, and finally they assess their level of *prior* (P) knowledge in relation to the topic. Techniques such as FLIP can encourage students to expect and find solutions for predictable difficulties that they may encounter while reading (Underwood, 1997).

Similarly, the Self-Monitoring Approach to Reading (SMART) has been found to help older readers in assessing their own reading comprehension. In this technique, instructors ask students to stop reading at the end of each paragraph and to ask themselves whether they understood the main points of what they read; whether it “clicks” or “clunks” (Underwood, 1997, p. 79). If it “clicks,” students put the

meaning of that section into their own words, and if it “clunks”, students identify what went wrong and formulate questions that might lead to resolving their confusion.

**Experience-Text Relationship (ETR)**

This strategy helps students link background *experiences* (E) to narrative story *text* (T) during pre-reading, guided reading, and post-reading. Students examine the relationship between the text and their own experiences as a way to increase their engagement in and understanding of the reading task (Dowhower, 1999). The instructor can begin ETR by facilitating a general discussion about what the students know about a given topic from their experiences and then by tying those experiences directly to the text to be read. Students make predictions about the text based on the discussion, and then read the text to check the validity of their predictions. This reading is followed by another class discussion in which students compare and contrast key ideas from the text with their personal experiences and predictions (Walker, 2000).

## Why do students need multiple strategies?

Researchers emphasize the importance of tailoring instruction in a given reading strategy to the demands of the specific reading task and topic and providing students with concrete practice in how to apply strategies (Dowhower, 1999). The list of strategies provided here should be viewed as a repertoire of diverse comprehension strategies that can be used in varying ways depending on student needs, teacher goals, and the demands of the reading task. By embedding strategy instruction in classroom content and providing students with a range of strategies, students with histories of reading comprehension difficulties can become more skilled readers and more successful in approaching the many types of texts and reading tasks required for college level work (Dowhower, 1999).

## Strategies to help memorization

There are many different techniques that can be used to help you memorize information you need to know while studying.
For whatever kind of text you might be reading, here are some techniques that can be used to aid memorization and/or overall understanding.

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| STRATEGY 1. CHUNKING | It is easier to memorize information when you break it up into small chunks. This is called chunking. You may not realize it, but you use chunking often, like when you memorize your friend's telephone number, a locker combination, or your social security number. It's easier to remember long numbers when you "chunk" them into groups of threes, fours and fives. That's because most people can only remember about three, four or five bits of information at a time.<br><br>Here are suggestions on how you can use "chunking" to remember information as well as numbers. |

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| | • Chunk vocabulary words by grouping them by parts of speech or other attributes.<br><br>• Chunk history by time periods or events.<br><br>• Chunk foreign language by grouping words into categories like household items or occupations.<br><br>• If there is no pattern to the information you need to study, just group the items into three, four or five at a time, and that will help a lot. |
| STRATEGY 2. UNDERSTANDING | Before you begin trying to memorize something, try to understand it. A good way to do this is by making a connection between what you are learning and what you have experienced. The better you can relate the new information to what you already know, the easier it is to learn. For example, before attempting to memorize events of European history, find the places on a globe (or world map) and see where they are relative to one another and also relative to where you live. |
| STRATEGY 3. GRAPHIC ORGANIZERS | These tools help you see things you are trying to learn. They help organize information. There are many different types of graphic organizers. You can even design them yourself.<br><br>• the Venn Diagram for comparing and contrasting<br><br>• a Web for the main topic and details<br><br>• the Cause and Effect Design with the event in the middle box, the causes listed in the left boxes and the effects listed in the right boxes. (The effects and the causes are connected to the event by lines.)<br><br>• the Cycle Organizer consists of shapes drawn in a cyclic pattern with words in each shape to represent things or events that go in cycles. For example, the water cycle.<br><br>To see/print examples of these graphic organizers, find No. 452 Improve Your Memory Skills, Silbert, at our StrongLearning website. |
| STRATEGY 4. VISUALIZATION | To visualize means to see an image in your head without actually looking at it. Visualization can help you learn almost anything. Here is an example. Let's say the topic is the water cycle. Create a mental image of a cloud. Picture it growing. Now see, and "feel" its heavy cold rain. See the rain hitting the ground, then flowing toward streams and rivers toward the ocean. Now "see" the hot sun hitting and evaporating the |

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| | water and forming clouds…. Get the picture? If you can visualize parts of the water cycle, the boring diagram becomes meaningful and remember-able. In general, if you have trouble visualizing material, try drawing maps, charts, graphs, or pictures. |
| STRATEGY 5. ASSOCIATION | Another learning strategy is to associate, or "connect," each word or event with a person, place, thing, feeling, or situation. For example, you may connect what you are trying to learn with someone you know, or with a movie character or scene. When you have to learn vocabulary words, just write the new words, write the definitions next to them, and then write a person, thing, event, movie, or any strong association to help you remember the meaning of each word. For example, "My altruistic Aunt Alice gives great gifts." (Altruistic means generous.) |
| STRATEGY 6. RHYMING | We all used rhyming in the ABC song to learn the alphabet. And the rhyme "I before E, except after C, or when it sounds like A as in neighbor or weigh." This is also a great strategy even when learning the times tables. For example, 7 and 7 went down the line to capture number 49; 8 and 4 made some stew and gave it to 32. (Rhymes don't have to make sense!) |
| STRATEGY 7. TALKING | Here's a strategy that's easy and fun to use, especially if you like to talk! Just talk about the information you have to learn. Tell Grandpa, Mom, a friend, or your dog what you have to learn! Do you want to learn history? Then talk history — discuss, debate, argue. Think of a person who may have lived during a major historical event and pretend to be that person. Now talk about the important events: who was involved, when it happened, where it took place, what happened, and why? If you're learning a language, then speak it at the dinner table. It doesn't matter if others know what you are saying; you do, so you'll learn. |
| STRATEGY 8. STORYTELLING | Storytelling is a great way to help you remember information in any subject. Write a story by focusing on the key points of what you're learning and arranging them in a logical sequence. It can even be a song or rhyme that tells the story. And there's a bonus: each event in the story triggers your memory of the next event, so you'll remember even more. |

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| STRATEGY 9. WRITING SENTENCES | Do you remember learning the silly sentence "Every good boy does fine" from music class? We used this to remember the notes. You may also have used the sentence "My Very Excellent Mom Just Served Us Nine Pizzas" to remember the planets. (Oops, change the sentence because Pluto is no longer considered a planet). This strategy can even help us learn those extra troublesome spelling words. Just make up a sentence using words that begin with the letters. So, to learn "aardvark," you may make up a nonsense sentence like: Aardvarks Always Run Down Very Angry Rowdy Kids. |
| STRATEGY 10. ACRONYMS | An acronym is a word made up from the first letters of a list of words. Here's how it works. You take the list of words or facts that you want to remember and put them in an order so that the first letters of each word, or the first syllables, spell a real word or a made-up word.<br><br>How do you memorize the names of the five Great Lakes? Easy, just remember "HOMES." H=Huron, O=Ontario, M=Michigan, E=Erie, and S=Superior. While this strategy won't help you understand the information, it at least helps you to memorize it. It's easy and fun, and you'll probably remember the information forever. You may be interested in knowing that our company name is an acronym. STRONG stands for: Self-esteem, Trust, Responsibility, Options, Needs, Goals. |
| STRATEGY 11. REHEARSING | When you want to remember information, you have to practice it, or else it fades. So, just as actors need to rehearse in order to remember their lines, students need to rehearse to remember what they are learning. Here are some helpful hints on "rehearsing" whatever information you need to learn for homework or tests:<br><br>• Rehearse for short practice periods (perhaps 30 to 60 minutes) and then take a short ten-minute break to call a friend, have a snack, or shoot some hoops.<br><br>• Use a multisensory approach every time you rehearse: say it, write it, read it, draw it, sing it – do whatever it takes.<br><br>• Just before going to sleep, review everything you will need to know for the next day or for the upcoming test. It's amazing how much more you'll remember if you rehearse the night before.<br><br>• Review in the morning while brushing your teeth, eating breakfast or sitting on the bus |

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| STRATEGY 12. PLAYING GAMES | Playing games is a great way to memorize information. You see, as you play the game you are learning the material and practicing it over and over again. Games can help you remember facts, formulas, definitions, events or any other information you're trying to learn. Here is an example.<br><br>Play Memory, alone or with others, using decks of cards you make from ordinary index cards you cut in half. Create pairs by writing the same number on each of two cards, 1 and 1, 2 and 2, etc. Write the numbers tiny so they will not interfere with play. On each pair, write a question on one card and the answer on the other card. For example, "2x7=" is on one card and "14" is on its pair, or "Where did the Pilgrims land?" is on one card and "Plymouth, Massachusetts" is on its pair. Then shuffle all the cards and play Memory with yourself or with a friend. If you're alone, see how fast you can match up all the pairs. You'll be able to check yourself by making sure the small numbers are the same. Have Fun!<br><br>For the Tough Ones: for the pairs that are really hard to remember, make a string "clothes line" between two places on a wall. Hang the pairs next to each other with spring type clothes pins. So, for example, if circle formulas get you down, every time you walk into your room you'll see "C=" and "2*pi*r" and "A=" and "pi*r squared" next to each other. Pretty soon you'll remember the info.<br><br>Another example is the many commercially available games to make learning to read easier and fun. A good example is, by using any of the twenty STRONG Learning Phonics Games, children in grades 1-6 can learn important phonics rules while playing popular card games: Go Fish, War, Memory, or Old Maid. |

## Strategies for pupils with autism spectrum disorder

It is a challenge for children with autism spectrum disorder (ASD) to integrate language, social understanding, and emotional intent of messages to understand their social world. They often have deficits in language and social cognition and difficulty interpreting and labeling emotions and incorporating or integrating each of these aspects of communication to gain meaning in social situations. There are a variety of strategies based on proficient reader research that can help children with ASD develop higher order reading comprehension skills and that can also be tailored to the cognitive characteristics of children with ASD.

These strategies include

- priming background knowledge
- picture walks
- visual maps
- think-alouds and reciprocal thinking
- understanding narrative text structure
- goal structure mapping
- emotional thermometers
- social stories

Incorporating visually cued instruction, such as graphics and color, with these strategies provides tangible and concrete information important for focusing on relevant parts of the story. Visually cued instruction also helps students remember what to do or say, decrease reliance on other prompts, and increase independence. As children become more automatic in responses, fade visual prompts.

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| **Think aloud strategy** | The think-aloud strategy asks students to say out loud what they are thinking about when reading, solving math problems, or simply responding to questions posed by teachers or other students. Effective teachers think out loud on a regular basis to model this process for students. In this way, they demonstrate practical ways of approaching difficult problems while bringing to the surface the complex thinking processes that underlie reading comprehension, mathematical problem solving, and other cognitively demanding tasks.<br><br>By verbalizing their inner speech (silent dialogue) as they think their way through a problem, teachers model how expert thinkers solve problems. As teachers reflect on their learning processes, they discuss with students the problems learners face and how learners try to solve them. As students think out loud with teachers and with one another, they gradually internalize this dialogue; it becomes their inner speech, the means by which they direct their |

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| | own behaviors and problem-solving processes (Tinzmann et al. 1990). Therefore, as students think out loud, they learn how to learn. They learn to think as authors, mathematicians, anthropologists, economists, historians, scientists and artists. They develop into reflective, metacognitive, independent learners, an invaluable step in helping students understand that learning requires effort and often is difficult (Tinzmann et al. 1990). It lets students know that they are not alone in having to think their way through the problem-solving process.<br><br>Think-alouds are used to model comprehension processes such as making predictions, creating images, linking information in text with prior knowledge, monitoring comprehension, and overcoming problems with word recognition or comprehension (Gunning 1996).<br><br>By listening in as students think aloud, teachers can diagnose students' strengths and weakness. "When teachers use assessment techniques such as observations, conversations and interviews with students, or interactive journals, students are likely to learn through the process of articulating their ideas and answering the teacher's questions" (National Council of Teachers of Mathematics 2000). |
| **Picture Walk** | A picture walk is an interactive activity shared between the students and the teacher prior to the reading of a new story. Students are shown at the pictures as a means clustering of previewing the story.There is no reading of the text.<br><br>PURPOSE AND BENEFITS |

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| | Through a picture walk students discover that the book contains action and characters, that they can relate to it and it increases interest.<br><br>PROCEDURES<br><br>Select a book to share with the students.<br><br>Show students the book's cover; make sure all students have a clear view of the illustrations.<br><br>Read the title and the author's name while looking at the title page.<br><br>Ask, "What do you think the story is about?"<br><br>Browse through the pages in chronological order without reading a word. You may wish to comment on the pictures along with students to help Increase vocabulary.<br><br>Encourage students to talk about what they see and make predictions.<br><br>Ask what might be happening in a selected illustration.<br><br>Spend time on every illustration.<br><br>Ask who, what, where, why and when to questions as well as how questions.<br><br>Focus on character emotions.<br><br>Respond to students' answers with statements to stimulate interest, for example, "You might be right." "We will have to see If that will happen." "What makes you think this?"<br><br>Let students share stories and experiences connect that their relationship to the illustration (s). Begin reading the story. |

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| **Background Knowledge** | This strategy requires readers to activate their background knowledge and to use that knowledge to help them understand what they are reading. Background knowledge is made up of a person's experiences with the world (including what he or she has read), along with his or her concepts for how written text works, including word identification, print concepts, word meaning, and how text is organized. Research has established that readers' existing knowledge is critical in determining their ability to comprehend what they read.<br><br>One of the most important contributions made by cognitive scientists to the understanding of how comprehension works is schema theory. This theory is based on how people organize and activate their knowledge.<br><br>According to schema theory, as people learn about the world, they develop a large network of knowledge structures, or schemas, with each schema connected to many others. These schemas grow and change as a person acquires new information through experience and reading. For example, a very young child's schema for dog might contain only her or his understanding of the family pet — something white, furry, and fun to play with. As the child gains more experiences with a variety of dogs in a variety of settings, the dog schema will expand and be refined. It may connect to other schema — types of dogs; colors of dogs; foods dogs eat; places where dogs stay when the family is on vacation; dangerous dogs; who veterinarians are; and locations of important dog shows.<br><br>When they applied schema theory to reading comprehension, cognitive scientists found that |

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| | good readers constantly connect their background knowledge to the new knowledge they encounter in a text. In fact, they appear to activate a schema as soon they begin to read. The initial schema then activates others, thus directly affecting how readers understand and react to a text.<br><br>Schemas that are related to text organization are especially important to comprehension. Having knowledge of a text's organization improves students' understanding of that text. |
| **Visual Mapping** | The process of translating visual thinking onto paper (or electronic paper) is visual mapping. A visual mapper combines words and images to create a visual record of the spoken and written words – literally revealing the “big picture.”<br><br>The value of visual mapping goes well beyond the “wow” factor of creating a pretty picture, map, or diagram. Research has shown that most people (~80%) of the population are visual thinkers, as evidenced by metaphors used in everyday language, such as “do you see what I mean?”, “I get the picture,” or “here’s what it looks.” So, it is not surprising that students regularly comment that seeing a picture of course material helps them understand better than a written notes and text ever could. |
| **Goal structure mapping** | These include maps, chains, charts, webs, trees, matrices, and diagrams. All provide a visual representation of a given text’s content in order to facilitate comprehension. By showing key parts of a reading and the relationship among those parts, they can help students identify the most important ideas and how they are organized (Dowhower, 1999; Jones, Pierce & Hunter, 1989). |

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| | When constructing a graphic representation, students first survey the text, giving special attention to the title, subheadings, and illustrations in order to determine the topic and objectives of the text. Students then begin to form a theory of the structure of the text and which graphic representation (map, chart, web, etc.) might best represent it. Students then read the text with that graphic representation in mind, leading them to approach their reading with a specific purpose (Jones, Pierce & Hunter, 1989). After reading the text, students complete the graphic representation, using the questions or categories provided by the instructor as a guide.<br><br>Students may flesh out the graphical representation by adding information about their personal experiences with the topic or any background knowledge that they may possess. To further facilitate comprehension, students can then use the information in the graphic representation to write a summary of the text.<br><br>Researchers claim that “graphic organizers and outlines are fundamental to skilled thinking because they provide information and opportunities for analysis that reading alone and linear outlining cannot provide” (Jones, Pierce & Hunter, 1989, p. 25). Graphic representations can also foster nonlinear thinking and promote “in-depth processing and rich contextual associations,” because they can be read from left. |

# Teaching strategies for dyslexic learners

## Teaching strategies useful for all grades of school

1. **Use technological devices (e.g. computers, CD players, portable media players).** Many problems with materials are related to reading disorders. Instructions and specific lessons can be recorded. The student can replay them until instructions and concepts are clear. Moreover, in order to improve reading skills, the student can read the printed words silently while listening to the recorded text.
2. **Clarify or simplify written instructions.** Some instructions are written in paragraphs and contain many units of information. These can be overwhelming to some students. The teacher can help them by underlining or highlighting the significant parts of the instructions. Sometimes it is helpful to rewrite the instructions.
3. **Give a small amount of work.** The teacher can reduce the amount of work (especially when it is redundant) for those pupils who become anxious and discouraged because of the amount of work.
4. **Block out extraneous stimuli.** If a student is easily distracted by visual stimuli on a full worksheet or page, a blank sheet of paper can be used to cover those sections of the page which the pupils are not wotkin on. Line markers can be used to aid reading, and windows can be used to display individual math problems.
5. **Highlight essential information.**
6. **Provide additional practice activities.** Some materials do not provide enough practice activities for students with learning disorders.Teachers must provide extra activities: instructional games, peer teaching activities, self-correcting materials, computer software programs, and additional worksheets.
7. **Provide a glossary.** At secondary school the specific language of some subjects requires careful reading. Students often benefit from a glossary of content-related terms.
8. **Develop reading guides.** A reading guide provides the students with a map of what is written and offers questions to help them to focus on relevant content. It helps the reader to understand the main ideas and sort out the numerous details related to the main ideas. A reading guide can be developed paragraph-by-paragraph, page-by-page, or section-by-section.
9. **Use explicit teaching procedures.** Teachers can include explicit teaching steps within their lessons (i.e., present an advanced organizer, demonstrate the skill, provide guided practice, offer corrective feedback, set up independent practice, monitor practice, and review).
10. **Provide students with a graphic organizer.** An outline, chart, or blank web can be given to students to fill in during presentations. This helps students to focus on the key information and see the relationships between concepts and related information.

11. **Combine simultaneously verbal and visual information.** Verbal information can be provided with visual displays (e.g., on an overhead or handout).
12. **Repeat instructions.** Students who have difficulties in following instructions are often helped by asking them to repeat the instructions in their own words. .
13. **Maintain daily routines.** Many students with learning disorders need the structure of daily routines to know what to do and what they are expected to do.
14. **Provide a copy of the lesson notes.** The teacher can give a copy of the lesson notes to pupils who have difficulties in taking notes whikle listening.
15. **Use step-by-step instruction.** New or difficult information can be presented in small sequential steps. This helps learners with limited prior knowledge.
16. **Write key points or words on the chalkboard.** Before a presentation the teacher can write new words and key points on the board.
17. **Use balanced presentations and activities.** An effort should be made to balance oral presentations with visual information and participatory activities. Moreover there should be a balance between large group, small group, and individual activities.
18. **Use mnemonic strategies.**
19. **Emphasize daily review.** Daily review of previous learning or lessons can help students connect new information with prior knowledge.

**Teaching strategies based on the pupils performances**

Students can differ a lot from one another in their way of

- Expressing themselves orally;
- Taking part in a debate;
- Writing letters, numbers and paragraphs;
- Drawing objects;
- Spelling;
- Working in noisy environments;
- Reading, writing or speaking quickly;
- Processing the information presented visually or orally.

The following strategies take into account the different way of receptiveness and expression and can be used to improve the pupils’ performance.

1. **Change way of answering.** Pupils with fine motor skills difficulties (such as handwriting) can answer questions underlining, selecting from multiple choices, sorting, or marking. Students with fine motor problems can be given extra space for writing answers on worksheets or can be allowed to respond on individual chalkboards.

2. **Provide an outline of the lesson.** An outline enables some students to follow the lesson successfully and make appropriate notes. Moreover, an outline helps students to see the organization of the material and ask appropriate questions
3. **Encourage use of graphic organizers.** To develop a graphic organizer the students must work on the text: they must analize it, make a list of the topics, divide central information from secondary details, organize their material, and so on. It will help to understand to connections between te concepts.
4. **Place students close to the teacher.** Students with attention problems should seat close to the teacher, to the board, or to the work area and away from distracting sounds, materials, or objects.
5. **Encourage the use of diaries.** Students can use diaries for assignment, school related activities, tests and assignments.
6. **Reduce the use of single copies in favour of brochures and leaflets.**
7. **Let the pupils use the lined sheets for math**. Lined paper can be turned vertically to help students keep numbers in appropriate columns while solving math problems.
8. **Use cues to denote important items.** Asterisks or bullets can denote questions or activities that count most in the evaluation. This helps students spend time appropriately during tests or assignments
9. **Design hierarchical worksheets.** The teacher can design worksheets with problems arranged from easiest to hardest. Early success helps students to begin to work**.**
10. **Allow use of instructional aids.** Students can be provided with letter and number strips to help them write correctly. Number lines, counters, and calculators help students compute once they understand the mathematical operations
11. **Display work samples.** Samples of completed assignments can be displayed to help students realize what they are expected to do.
12. **Use peer-mediated learning.**
13. **Encourage note sharing.** A student can use carbon paper or a notebook computer to take notes and then share them with absent students or students with learning disorders.
14. **Use flexible working time.** Students who work slowly can be given extra time to complete written assignments.
15. **Provide extra practice.**
16. **Use alternative assignments.** Students can be allowed to do projects instead of giving oral reports or vice versa.

## Simplification and facilitation

Simplification and facilitation can be useful strategies to be used with pupils with a hearing impairments, learning disabilities, pupils of a different nationalities who don’t know very well the language of the country where they live and also with pupils with a light mental retardation.

The readability and comprehensibility of a text are not synonymous.

**Readability** is the result of mathematical formulas that provide a readability index that is generally based on two parameters: average length of words and of sentences (syntax-lexicon).
**Comprehensibility** depends on a third parameter: the content organization.

To understand a text a person needs stimulus, keywords, questions schemes introducing and explaining the meaning. In order to facilitate the understanding of a text there are:

• Two fields of action = action on the text and action on the task

• Two ways of acting = simplify (deleting elements of complexity both on linguistic and on content level) facilitating (elaboration, explanation, contextualization).

So we can:

- simplify the text
- simplify the task
- facilitate the text
- facilitate the task

## Simplifying the text

The simplification process is structured on three levels: lexicon, syntax, organization of the text.

The lexicon includes measures concerning the choice of words.
We recommend to choose words commonly used in order to increase the chance that readers know them and know how to use it autonomously

**Avoid idioms**

For example use “It rains a lot” instead of “It rains cats and dogs”.

**Avoid nominalizations (nouns that are derived from verbs)**
Their use hinders understanding because it creates confusion between action and what happens.

Invasion -> to invade; insertion -> to be included
The conquest of Sicily by Garibaldi is a nominal group that can be transformed into Garibaldi conquered Sicily.

**Avoid figurative forms**
Metonymy
Metaphor
And other figures of speech

**Procedure**

Emphasizes the terms that you think are complex and look for synonyms.

Highlight idioms and replace them with simple phrases.

Identify nominalizations and simplify them.

Emphasize the terms that you think are essential and that you do not want to replace and prepare a glossary that explain them.

**Besides lexicon also the syntax is important.**

Write short sentences (no longer than 20-25 words)

Write simple sentences (subject-verb-complement)

Reduce the number of subordinate leaving only the most common

Reduce impersonal and passive forms.

Do not delete the connective, on the contrary add some more

**Take care also of the organization of the text**.

Highlight connections

Repeat the most important words

Use nouns rather than pronouns

Highlight when you switch from one topic to another.

## Simplifying the task

Make a request cognitively and / or linguistically simpler (eg. ask to find / remember a single or general information; the main topic; concrete information instead of abstract concepts; ask to manipulate or complete a text instead of writing a text)

## Facilitating the text

Rework the organization of the content;

Make the text clearer: use glossaries, highlighting, underlining, sub-titles, pictures, extra information, and so on;

Contextualize difficult or very abstract concepts.

## Facilitating the task

Do not give a different task, but prepare a structured task that guides the pupils and help them to understand.

LIST OF SOURCES

Material given during a course on how to approach pupils affected by autism. The speakers of the course were Jarymke Maljaars of the KU Leuven University and Steven Degriek expert on autism;

Strategies used by Leen Tiesters at Ter Bank;

Strategies used by Ellen Laureys at Miniemeninstituut;

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