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Top-down and bottom-up processes

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1. Introduction

There are two skills, in which it is vital to comprehend texts, reading and listening. There are similar processes operating in both therefore both skills are addressed together in the present unit. In order for learners and teachers to understand how the comprehension of written and spoken texts work, we need to examine the operation of certain procedures.

In the present unit we are going to take Johnson's (2008:269-277) train of thought and examples as the basis for understanding these processes.
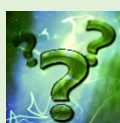
Thinking task 1

1. Take a minute to think about how you would define what a piece of text is. Note down your answer before you go on to the next question.
2. Click to open Presentation 1 in the attached folder. In the slide you can read what members of the public generally think of what a text is. Do you agree with this view?

The view presented in Presentation 1 is a model of comprehension processing which prevailed before the 1970s. The name of the model is **bottom-up processing**. As explained in Slide 1, the reader needs to decipher the individual words and structures of the text, and from these building blocks the meaning is built up gradually. Click on Presentation 2 in the attached folder where you can read and hear a famous example with an explanation as regards how the process works.

The process described in Presentation 2, that is working out the meaning of, in this case, a sentence, word by word is **called parsing**. It is also called **bottom-up**, because the process start at the bottom, at the level of the text. Another term for the same phenomenon is **data-driven processing**.

Thinking task 2

Can readers understand all the text that they read with the help of the bottom-up processes described above? Can you think of examples where this model is not satisfactory? Note down your answers.

Hints

Now read the following ideas and extend your notes:

Johnson (2008:271-274) lists examples when

- the reader or listener understands every word of the text and still does not know what it is about (pp 271-272)
- the reader or listener understands only parts of the text, yet still knows what the text is about (p. 272)
- the reader or listener understands a message although there is no actual reference to the intended interpretation (p. 272)
- the reader or listener brings her own background into interpreting the text (p. 273)
- the reader or listener may ignore parts of the text if they do not fit to their expectations (p. 273)
- different readers or listener may 'hear' different pieces of information from the same text (p. 273-4)

As you have probably realised by now, the bottom-up model alone cannot explain comprehension, the reader or the listener also has a role in the comprehension process. The name of the emerging model is ***top-down*** and is also called ***concept-driven processing*** (Johnson 2008:275).

When talking about top-down processing, an important notion is what Bartlett (1932 in Johnson 2008) calls *schemata* (singular: schema). Schemata are the so called 'mental frameworks' that people have in their minds, and whenever they read or hear a text, they bring these into the interpretation of these texts.

This is why, for example, in the American folk tale experiment the listeners altered/added to the story: they brought all their background knowledge about the Native American culture into their interpretation of the tale, the schemata are about what they know about the lives of the Native Americans, the way they fought and the weapons they used, this is how the motif of the arrow was included in the story.

If you consider the example of the sentence about the farmer and the threshing machine, you can observe that the schema works in the following way: the word 'straw' has two meanings. If you process the text in a purely bottom-up way, what happens, as explained in the presentation is that when you first see the word, you note both meanings, and make a decision about which meaning to apply at a later stage. It is more likely, however, that when you read

the sentence, the words 'farmer' and 'threshing machine' would make you invoke the 'farmyard schemata', which limits the meaning of the word straw to a 'grain stalk' in this context *processing* (Johnson 2008:275).

Please note

Currently comprehension models involve both types of processing. Readers and listeners are likely to be engaged in both kinds of processing when they are trying to understand a text. These insights are very important both when we process texts in our mother tongue and in the foreign language(s) we speak.

Find out more

Follow the following links to expand your knowledge about the topic:
https://classroom.synonym.com/difference-between-topdown-teaching-bottomup-teaching-12059397.html
https://speechling.com/blog/start-at-the-top-or-start-at-the-bottom-with-chinese/
https://www.usingenglish.com/forum/threads/16541-A-Bottom-up-Approach-to-ESL-Learning-and-Teaching

Summary

In the present unit you were provided with an introduction into bottom-up and top-down processing. You familiarised yourself with the idea of bottom-up processes, but you were also asked to think critically about them, which led you to the notion of top-down processing. Both processes are at work when we are trying to understand texts.

References

Bartlett, F. C. 1932. *Remembering.* Cambridge: Cambridge University Press.

Bransford, J. D. and Johnson, M. K. 1973. Considerations of some problems of comprehension. In Chase, W.G. (ed.). *Visual Information Processing.* New York: Academic Press. 383-438.

Clark, H. H. & Clark, E. V. 1977. *Psychology and Language: An Introduction to Psycholinguistics.* New York: Harcourt Brace Jovanovich.

Garnett, W. 1992. A Back-to-the-Drawing-Board Oboe. *Double Reed News.* 19:22-25.

Grellet, F. 1981. *Developing Reading Skills: A Practical Guide to Reading Comprehension Exercises (Cambridge Language Teaching Library).* Cambridge: Cambridge University Press.

Johnson, K. 2008. *An Introduction to Foreign Language Learning and Teaching: Learning About Language.* Harlow: Longman Pearson.

Widdowson, H. G. 1978. *Teaching language as communication.* London: Oxford University Press.