

Reading activities for effective top-down processing

IN ONE CURRENT PERSPECTIVE ON READING COMPREHENSION, THE reading process is an interaction between a reader's prior knowledge and the information encoded in the text. The interactive model has recently been studied under the rubric of schema theory. This theoretical framework emphasizes that the reader is an active participant who can contribute to the construction of meaning. When reading, students interpret the text in light of their previous knowledge and simultaneously modify their original schemata as new information is learned.

Processing text

From this perspective, there are two simultaneous and complementary ways of processing a text: top-down and bottom-up. In top-down processing, readers use their prior knowledge to make predictions about the text. In bottom-up processing, readers rely on their knowledge of language to recognize linguistic elements—letters, words, and sentence structure—for the construction of meaning. It is logical to suppose that readers must understand the individual parts of the text before they can grasp the overall meaning; but in practice, effective readers continually adopt a top-down approach to predict the probable theme and then move to the bottom-up approach to check their assumption by reading details (Nuttall 1996). This implies that in teaching reading, teachers should instruct students to start their reading by using a top-down approach and later switch between the two approaches, as each kind of interpretation supports the other.

As a college English instructor, I often come across learners who report having understood each individual word and sentence in a particular paragraph of a passage, but not the main idea which that paragraph conveys as a whole. Most of my college students rely too much on bottom-up processing in recognizing individual words and analyzing sentence structure, but do not apply top-down processing for the overall view of the text. This may result from the lack of appropriate instruction and practice in applying reading strategies.

Many teaching techniques have been developed to activate students' prior knowledge for effective top-down processing in order to facilitate reading comprehension. Several of them have been empirically proven to be helpful, but some have not. Surprisingly, prereading vocabulary exercises, despite widespread use, do not improve overall comprehension (Hudson 1982; Johnson 1982). In fact, according to Johnson, vocabulary study may result in a word-by-word, bottom-up approach that is detrimental to comprehension. However, there are several activities that do help. This article will introduce three of them, together with certain problems that an English teacher may confront when applying them in class as well as possible solutions.

Three activities

Semantic map

The first activity that activates students' appropriate background knowledge of a given topic is the semantic map (Freedman and Reynolds 1980; Heimlich and Pittelman 1986). The map is an organized arrangement of vocabulary concepts which reveals what students already know about the topic and provides them with a base upon which they can construct the new information learned from the text.

The teacher begins by telling students the topic they are going to read about and then asks them to make free associations with it. That is, students write down whatever words they think of when they hear the topic. Then the teacher asks students to group their associated words into categories and helps them label the categories. After reading the selection, the students may wish to revise the original map. The resulting map is the integration of students' pre-existing knowledge and their knowledge acquired from the text.

At first, students may have difficulty in categorizing free associations. The teacher can help them by conducting the discussion with the whole class. When students offer their associations, the teacher can list the responses on the chalkboard and discuss with the students how to put the associations into categories and what to label them. If there is more than one way to construct the relations among different concepts, the teacher may show students the different possibilities. This demonstration indicates how concepts can be organized around a topic.

After some illustrations, students can be divided into groups to carry out the discussion in teams. Interestingly, each group will usually come up with different versions, categories, and labels. The teacher may ask a representative from each group to draw the map on the chalkboard and decide if the concepts are appropriately constructed. From the demonstration, modeling, and discussion, students themselves will gradually learn how to categorize and label associations appropriately. The same procedure can be applied to the postreading discussion about revising the maps.

When generating associations, students are encouraged to look up new words in their dic-

Sure	Not Sure/Don't Know
1. Whales are not fish.	1. How many kinds?
2. The largest are 40 meters long	2. How long do they live?
3. There are different kinds.	3. What do they eat?
4. They are used to make soap.	4. How fast can they swim?
	5. How heavy are they?

FIGURE 1. WHALE'S LIST

tionaries. The teacher may also consult a dictionary, preferably English-English, to help the students determine if the meaning and usage of new words fit the topic.

The following is a brief sample of a semantic map done by my students on the topic of North American Indians:

Hunting: buffalo, spear, bow and arrow

Lifestyle: nomad, riding horses, tent

Clothing: animal skin, long hair, feather

Ceremony: chief, dance, song, legend

Movie: *Dances with Wolves*, *Pocahontas*

Questioning

Another type of top-down processing activity is questioning. Questions may be generated by the teacher or by the students and should be done before the reading, rather than after the reading.

Reutzel (1985) has proposed the Reconciled Reading Lesson to help teachers form effective prereading questions. Teachers who adopt the Reconciled Reading Lesson reverse the textbook sequence by forming prereading questions from the comprehension questions that appear in the textbook after the reading selection or in the teachers' manual.

A problem in class is that not all the questions originally designed as post-reading exercises can be appropriately converted to prereading activities. For instance, a question like "What is the main idea of the second paragraph?" does not provide learners any clue to the content of the passage and fails to stimulate their prior knowledge which would enable them to make feasible predictions.

How do students generate text-related questions even before they read the passage? Williams (1987) gives an interesting three-phase approach to reading, with particular attention to the prereading phase. The approach begins by introducing the topic of the passage that students are going to read.

Once the topic is presented, students are asked to work in groups and write a list in two columns. The first column lists things about the topic that they are sure of, and the second lists things that they are not sure of or don't know. See Figure 1 for an example of what a list about whales might look like.

It is suggested that each member of the group in turn volunteer a fact or question, so that no group member is neglected. Afterwards, the teacher asks a representative from each group to write one or two items from their lists on the chalkboard so that some interesting items, which other groups may not have thought of, can be included.

In the reading phase, students are asked to read the text to verify what they were sure of and find the answers to questions they were not sure of. Using the list on the board, the teacher can ask students which sentences provide evidence for their responses.

In the postreading phase, the students are assigned tasks which consolidate their prior knowledge of the topic with information acquired from the text. For example, they may write an account of whales based on the information in their lists, or they may research the questions on their lists that have not been addressed in the text.

Williams' (1987) three-phase approach provides an interesting way to activate students' prior knowledge and enhance their motivation to read. However, it has its practical limitations. For example, it may not be appropriate for opinion-giving text or fiction. It is best used with text that provides factual information. Furthermore, the length of the text should be moderate, because longer passages, which usually express more complicated concepts, may open too many possibilities for the students to question. As a result, the students may spend too much time generat-

ing questions in the prereading phase, and the list of questions may be too long to handle effectively. One possible solution to this problem is for the teacher to divide the text into sections and implement the approach section by section.

Another problem may occur when students generate statements and questions about the topic. This stage clearly requires a range of topic-related vocabulary and adequate writing competence. For the vocabulary problem, the same dictionary solution suggested for the semantic map can be adopted. When it comes to writing, if learners are not competent enough to produce correct sentences to reflect their ideas, they are allowed to write them in their native language. This writing does not focus on mechanics but gives priority to idea development for activating and developing background knowledge.

Previewing

The aim of previewing is to help readers predict or make some educated guesses about what is in the text and thus activate effective top-down processing for reading comprehension. Several stimuli in a text, such as the title, photographs, illustrations, or subtitles, are usually closely connected to the author's ideas and content. So, based on any of them, students can make predictions about the content of the text.

To make more specific predictions, however, students obviously need more guidance. The following guidelines can help:

1. Ask the students to read the title of the article. Do they know anything about this subject?
2. Have the students read the first few paragraphs, which generally introduce the topics discussed in the text. Can they determine the general themes of the text?
3. Then ask them to read the first sentence of each paragraph, usually the topic sentence, which gives the main idea of the paragraph. Can they determine the major points of the article?
4. Read the last paragraph, which often reveals the conclusion of the author. Have the students discuss how the author organizes the information to present his point of view.

The students then read the entire article for more detailed information. Since they already have an overview of the text, they can

understand the rest of the information much more easily.

The successful application of previewing depends on the presence of certain conventional features of English writing, namely, topic sentences and paragraphs of introduction and conclusion. However, not all kinds of texts have these rhetorical features. Often, an expository passage follows the pattern more closely and therefore is more suitable for the steps described above.

Conclusion

This article has offered language teachers alternative reading techniques for effective top-down processing. Certain steps described in the article may be omitted, modified, or given more attention, depending on the reading passage. In my reading classes, I have also tried to combine the semantic map with the previewing technique for long expository passages. After establishing the maps, students are asked to preview the text and select possible subtopics from their maps before they read the passage. Teachers may adapt these reading techniques to their own particular instructional setting to make them even more efficient and beneficial for their students.

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