Developing reading comprehension questions

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Abstract

This article presents a detailed picture of six types of comprehension and five forms of questions that can be used to help students become interactive readers. The taxonomies of the types of comprehension and the forms of questions may also be used as a checklist for language teachers as well as materials developers. Teachers can use the taxonomies to make their own comprehension questions for texts that their students read to help them understand better what they read. In addition, they can be used to analyze instructional materials and to develop materials to ensure that the various forms of questions are used to help students respond to a variety of types of comprehension.

Keywords: comprehension questions, teaching reading, materials development, evaluation

Some reading tasks

This article is somewhat different from most journal articles. We ask that you read the article, and then answer the questions in Appendix A. We also ask you to identify the type of comprehension and form of each question. The answers to the comprehension questions, identification of the type of comprehension each represents, and the form of the question are given in Appendix B. It may be useful to look over the questions in Appendix A before reading the article.

After you have finished answering the questions, identifying the types of comprehension and the forms of the questions, and checking your answers in Appendix B, we suggest you apply what you have learned by reading the short article in Appendix C and developing your own comprehension questions for the article. You might want to work with a colleague and discuss your responses and the article with each other. Appendix D contains a large number of comprehension questions that we developed for that text to illustrate the range of possibilities.
Introduction

In the last several decades, theories and models of reading have changed, from seeing reading as primarily receptive processes from text to reader to interactive processes between the reader and the text (cf., Adams, 1990; Eskey and Grabe, 1988; Perfetti, 1985; Samuels, 1994; Stanovich, 1992; and Swaffar, 1988). Approaches to the teaching of foreign language reading have attempted to reflect this development through interactive exercises and tasks. The use of questions is an integral aspect of such activities, and in our experiences as language teachers we have seen that well-designed comprehension questions help students interact with the text to create or construct meaning.

We believe that it is critical that teachers help their students create meaning. In a study of first grade teachers, Pressley, Wharton-McDonald, Allington, Block, Morrow, Tracey, Baker, Brooks, Cronin, Nelson, and Woo (2001) found that exemplary first-grade teachers had their students actively engaged in actual reading and writing through activities that involved reading, writing, and doing things with the text. This active involvement contrasted sharply with other classrooms where the students' engagement was passive – taking turns reading aloud or listening to their teachers. In addition, we have seen well-developed comprehension questions help our students begin to think critically and intelligently.

The purpose of this article is to present a detailed picture of six types of comprehension. We also describe five forms of questions. The six types of comprehension and the five forms of questions can be used to help students become interactive readers. These types of comprehension and forms of questions are a result of our work in teaching foreign language reading and in developing materials for teaching foreign language reading.

The taxonomies of the types of comprehension and the forms of questions are designed to be used as a checklist for language teachers as well as materials developers. Teachers can use the taxonomies to make their own comprehension questions for texts that their students read to help them understand better what they read. In addition, they can be used to analyze instructional materials and to develop materials to ensure that the various forms of questions are used to help students respond to a variety of types of comprehension.

We look first at the six types of comprehension, with a brief description of each. Then we examine how the five question forms can be used to engage students in the six types of comprehension. Both the types of comprehension and the forms of questions are shown in Figure 1.
Figure 1: Grid for Developing and Evaluating Reading Comprehension Questions

<table>
<thead>
<tr>
<th>Types of Comprehension</th>
<th>Yes/No</th>
<th>Alternative</th>
<th>True or False</th>
<th>Who/What/When/Where/How/Why</th>
<th>Multiple Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Questions</td>
<td>Literal</td>
<td>Reorganization</td>
<td>Inference</td>
<td>Prediction</td>
<td>Evaluation</td>
</tr>
</tbody>
</table>

**Types of comprehension**

As noted previously, the six types of comprehension that we propose and discuss are based on our experiences in teaching reading and developing materials. We do not intend this taxonomy to cover all possible interpretations of comprehension; we have found the six types to be useful in helping our students become interactive readers. Our taxonomy has been influenced in particular by the work of Pearson and Johnson (1972) and Nuttall (1996).

**Literal comprehension**

Literal comprehension refers to an understanding of the straightforward meaning of the text, such as facts, vocabulary, dates, times, and locations. Questions of literal comprehension can be answered directly and explicitly from the text. In our experiences working with teachers, we have found that they often check on literal comprehension first to make sure that their students have understood the basic or surface meaning of the text.

An example of a literal comprehension question about this article is: *How many types of comprehension do the authors discuss?*

**Reorganization**

The next type of comprehension is reorganization. Reorganization is based on a literal understanding of the text; students must use information from various parts of the text and combine them for additional understanding. For example, we might read at the beginning of a text that a woman named Maria Kim was born in 1945 and then later at the end of the text that she died in 1990. In order to answer this question, *How old was Maria Kim when she died?*, the student has to put together two pieces of information that are from different parts of the text.

Questions that address this type of comprehension are important because they teach students to examine the text in its entirety, helping them move from a sentence-by-sentence consideration of the text to a more global view. In our experience, students generally find reorganization questions somewhat more difficult than straightforward literal comprehension questions.
Inference

Making inferences involves more than a literal understanding. Students may initially have a difficult time answering inference questions because the answers are based on material that is in the text but not explicitly stated. An inference involves students combining their literal understanding of the text with their own knowledge and intuitions.

An example of a question that requires the reader to make an inference is: Are the authors of this article experienced language teachers? The answer is not in the text but there is information in the third paragraph, page 2 of this article that allows the reader to make a good inference: "These types of comprehension and forms of questions are a result of our work in teaching foreign language reading and in developing materials for teaching foreign language reading." Readers are required to use their knowledge of the field, teaching foreign language reading, with what they have gained from reading the article, in particular that sentence, to construct an appropriate answer. That is, readers might understand that newcomers to the profession generally do not develop materials or write articles, so the authors are probably experienced language teachers.

Prediction

The fourth comprehension type, prediction, involves students using both their understanding of the passage and their own knowledge of the topic and related matters in a systematic fashion to determine what might happen next or after a story ends.

We use two varieties of prediction, while-reading and post- (after) reading. While-reading prediction questions differ from post-reading prediction questions in that students can immediately learn the accuracy of their predictions by continuing to read the passage. For example, students could read the first two paragraphs of a passage and then be asked a question about what might happen next. They can determine the answer by reading the reminder of the text.

In contrast, post-reading prediction questions generally have no right answers in that students cannot continue to read to confirm their predictions. However, predictions must be supported by information from the text. Generally, scholarly articles, such as this one, do not allow for post-reading prediction questions. Other types of writing, such as fiction, are fertile ground for such questions. To illustrate, consider a romance in which the woman and man are married as the novel comes to a close. A post-reading prediction question might be: Do you think they will stay married? Why or why not? Depending on a variety of factors including evidence in the text and personal experiences of the reader, either a yes or a no answer could be justified.

Having students make predictions before they read the text is a pre-reading activity. We do not see this type of prediction as a type of comprehension. Rather, it is an activity that allows students to realize how much they know about the topic of the text.
Evaluation

The fifth type of comprehension, *evaluation*, requires the learner to give a global or comprehensive judgment about some aspect of the text. For example, a comprehension question that requires the reader to give an evaluation of this article is: *How will the information in this article be useful to you?*

In order to answer this type of question, students must use both a literal understanding of the text and their knowledge of the text's topic and related issues. Some students, because of cultural factors, may be reluctant to be critical or to disagree with the printed word. In such circumstances, the teacher might want to model possible answers to evaluation questions, making sure to include both positive and negative aspects.

Personal response

The sixth type of comprehension, *personal response*, requires readers to respond with their feelings for the text and the subject. The answers are not found in the text; they come strictly from the readers. While no personal responses are incorrect, they cannot be unfounded; they must relate to the content of the text and reflect a literal understanding of the material.

An example of a comprehension question that requires a personal response is: *What do you like or dislike about this article?* Like an evaluation question, students have to use both their literal understanding and their own knowledge to respond.

Also, like evaluation questions, cultural factors may make some students hesitate to be critical or to disagree with the printed word. Teacher modeling of various responses is helpful in these situations.

Summary of comprehension types

If we believe that reading is an interactive process in which the reader constructs meaning with the text, then we need to help our students learn to do this. This means moving beyond a literal understanding of a text, and allowing our students to use their own knowledge while reading. It may be challenging, however, for beginning and intermediate students to create their own understanding, if they are accustomed to reading word-for-word and focusing on meaning at the word- and sentence-levels.

When questions move beyond a literal understanding, students' answers have to be motivated by information in the text. Inference questions can have clearly correct and incorrect responses. In contrast, prediction, evaluation, and personal response answers are correct as long as they depend primarily on students' reactions to what they read. Evaluative and personal response answers not only depend primarily on students' reactions to what they have read, but they need to reflect a global understanding of the text.

Finally, research has shown that effective teachers and teachers in more effective schools are more frequently observed asking higher level questions, questions that go beyond a literal
understanding of a text, than less effective teachers and teachers in less effective schools (Knapp, 1995; Taylor, Peterson, Pearson, and Rodriguez, 2002). This provides a solid reason for teachers to engage their students in all six types of comprehension.

There is another reason for using a variety of questions that involve different types of comprehension. Guszak (1967, cited in Pearson and Johnson, 1972: 154) found that students performed best when answering questions of factual recall, which was the type of question that their teachers asked most often. This means that students do best at what they have learned and practiced. Thus, if we would like our students to be able to go beyond a literal understanding of a text, then it is necessary to teach them how to do this and to give them opportunities to work with different types of comprehension.

This taxonomy of comprehension types is not an inventory of reading skills and strategies. It is, rather, an overview of types of understanding that foreign language learners need to have if they are to read a text with more than a literal understanding. How these types of comprehension can be approached through a variety of question forms is the focus of the next section.

**Forms of questions**

We present and discuss five forms that comprehension questions may take to stimulate students' understanding of texts. This is not a discussion of all possible ways of questioning students. For example, we do not discuss fill-in-the-blank activities or cloze, as such activities or tasks may be more appropriate for assessing, and not comprehending, the types of comprehension presented and discussed in the previous section.

*Yes/no questions*

Yes/no questions are simply questions that can be answered with either yes or no. For example, *Is this article about testing reading comprehension?* This is a common form of comprehension question, but it has the drawback of allowing the student a 50% chance of guessing the correct answer. So when using yes/no questions, we recommend following up with other forms of questions to ensure that the student has understood the text.

Yes/no questions can be used to prompt all six types of comprehension. When yes/no questions are used with personal response or evaluation, other forms of questions seem to follow readily. For example, *Did you like this article? Why?* The follow-up questions may be more useful in helping students than the initial yes/no questions.

*Alternative questions*

Alternative questions are two or more yes/no questions connected with or: for example, *Does this article focus on the use of questions to teach reading comprehension or to test reading comprehension?* Similar to yes/no questions, alternative questions are subject to guessing, so the teacher may want to follow up with other forms discussed in this section.
Alternative questions have worked best for us with literal, reorganization, inference, and prediction types of comprehension. We have found that they do not lend themselves as well to evaluation and personal response.

**True or false**

Questions may also take the form of *true or false*. While *true or false* questions are found frequently in commercially available materials, there is a potential danger in relying exclusively on them. As with *yes/no* questions, students have a 50% chance of guessing the correct answer. Teachers might simply accept a right answer, failing to ask why the answer is correct or the distracters (the wrong choices) are not correct.

An example of a *true or false* question focusing on literal comprehension is: *Is this statement true or false?: The authors believe that the use of well-designed comprehension questions will help students become better readers.*

*True or false* questions are difficult to prepare. The false answers must be carefully designed so as to exploit potential misunderstandings of the text. False answers that are obviously incorrect do not help teach comprehension because students do not have to understand the text to recognize them as incorrect. *True or false* questions may also be hard to write because sometimes, as written, both answers are plausible, regardless of the degree of comprehension of the text.

Like *yes/no* questions, *true or false* questions can be used to prompt all six types of comprehension. When used with personal response or evaluation, follow-up tasks are sometimes necessary. To illustrate, a personal response question about this article might be: *Is this statement true or false? I like this article. Explain your choice.*

**Wh-questions**

Questions beginning with *where, what, when, who, how, and why* are commonly called *wh*-questions. In our experience, we have found that they are excellent in helping students with a literal understanding of the text, with reorganizing information in the text, and making evaluations, personal responses and predictions. They are also used as follow-ups to other questions forms, such as *yes/no* and *alternative*.

In particular, *wh*-questions with *how/why* are often used to help students to go beyond a literal understanding of the text. As beginning and intermediate readers are often reluctant to do this, using *how/why* questions can be very helpful in aiding students to become interactive readers.

**Multiple-choice**

*Multiple-choice* questions are based on other forms of questions. They can be, for example, a *wh*-question with a choice:
When was Maria Kim born?

a. 1940
b. 1945
c. 1954
d. 1990

Generally, but not always, this form of question has only one correct answer when dealing with literal comprehension.

The multiple-choice format may make wh-questions easier to answer than no-choice wh-questions because they give the students some possible answers. Students might be able to check the text to see if any of the choices are specifically discussed, and then make a choice. Multiple-choice questions may be used most effectively, in our experience, with literal comprehension. They can also be used with prediction and evaluation. However, when used for these types of comprehension, we suggest using follow-up activities that allow students to explain their choices.

As with true or false questions, developing good multiple-choice questions requires careful thought. We have found that developing a question with four choices works best for students with low proficiency in the target language. One of the four, obviously, is the desired answer; the others should be seemingly plausible responses.

An important consideration

Regardless of the level of comprehension or the form of the question, teachers and materials developers need to make sure that the questions are used to help students interact with the text. This can be done by making sure that students keep the text in front of them while answering questions on the text. They should always be able to refer to the reading passage, for we are interested in teaching reading comprehension, not memory skills.

Another element in ensuring that the questions actually teach is avoiding what we call tricky questions. If the goal is helping students to improve their reading comprehension abilities, teachers must resist the temptation to trick them with cleverly worded questions (e.g., a complex sentence in which one clause is true and the other is false). Negative wording in a question can also make it tricky. Such unclear or misleading questions tend to discourage students. It is better to ask about important aspects of the text in a straightforward, unambiguous fashion.

Conclusion

In our experience, the use of well-designed comprehension questions can be used to promote an understanding of a text. However, comprehension questions are only a means to an end. The use of questions by themselves does not necessarily result in readers who interact with a text utilizing the six types of comprehension discussed in this article. The teacher, through a
combination of teacher-fronted and group activities, must promote a discussion of the answers, both the right and wrong ones, so that students are actively involved in creating meaning.

We would like to end on a note of caution. Beware of the death by comprehension questions syndrome. The use of comprehension questions in teaching reading can be overdone. Even the most highly motivated student can become bored having to answer 20 questions on a three-paragraph text. As with most things in life, moderation is the best course of action.

Notes
1. For other treatments of comprehension, see Applegate, Quinn, and Applegate (2002), Bartlett (1932), Barrett (1972, cited in Smith and Barrett, 1974 pp. 53-58), Keene and Zimmerman (1997), Nuttall (1996), and Pearson and Johnson (1972).

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We would like to express our appreciation for the insightful comments and suggestions by two anonymous reviewers.

References


**Appendix A: Comprehension Questions**

Instructions: After reading the article, answer these questions. Then, identify the *form* of each of the ten questions and their *type* of comprehension. The answers are found in Appendix B.

1. Why do the authors believe that it might be difficult for beginning and intermediate students to answer evaluation questions?

2. *True* or *False:* The authors believe that the use of well-designed comprehension questions will help students become better readers.

3. How many types of comprehension do the authors discuss?

4. What are the strengths of the article? What are its weak points?
5. Is the purpose of the article to present information on teaching reading or to explain how comprehension questions can be used to teach reading?

6. Why did the authors write this article?

7. Would you recommend the article to a colleague?

8. Did you like the article? Why or why not?

9. What is the motivation for the use of comprehension questions?
   a. It helps students to learn more vocabulary.
   b. It helps students to develop their sight or hearing vocabularies.
   c. It helps students interact with the text to construct understanding.
   d. It helps students develop important strategies such as skimming.

10. What was the most important thing you learned from reading this article?

Appendix B: Possible Answers and Identification of Forms of Questions and Types of Comprehension

<table>
<thead>
<tr>
<th>Answer</th>
<th>Form</th>
<th>Type of Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Because the answers are not found in the text.</td>
<td>Wh-</td>
<td>literal</td>
</tr>
<tr>
<td>2. True</td>
<td>True or False</td>
<td>literal</td>
</tr>
<tr>
<td>3. Six</td>
<td>Wh-</td>
<td>literal</td>
</tr>
<tr>
<td>4. (possible) strength: well written; (possible) weakness: too many tasks</td>
<td>Wh-</td>
<td>evaluation</td>
</tr>
<tr>
<td>5. To explain how comprehension questions can be used to teach reading</td>
<td>Alternative</td>
<td>literal</td>
</tr>
<tr>
<td>6. There are a number of possible answers. One is: They wanted to share their experiences with other reading teachers.</td>
<td>Wh-</td>
<td>inference</td>
</tr>
<tr>
<td>7. Yes!</td>
<td>Yes/no</td>
<td>evaluation</td>
</tr>
<tr>
<td>8. Yes, because it will be useful in developing my own comprehension questions.</td>
<td>Yes/no with a wh- follow up.</td>
<td>personal response</td>
</tr>
<tr>
<td>9. c</td>
<td>Multiple choice</td>
<td>literal</td>
</tr>
<tr>
<td>10. I have learned how to develop comprehension questions.</td>
<td>Wh-</td>
<td>personal response</td>
</tr>
</tbody>
</table>
Appendix C: Community Service

I was reluctant to go there on that first day, and as I waited outside the director's office, my anxiety only increased. My legs felt like lead. "There" was a rehabilitation residence for mentally and physically ill people. My dad, a doctor, had insisted on my volunteering at the residence. He wanted my high school community service requirement to be filled in a productive way. I felt the same. The previous summer I had gardened and picked up trash, activities that didn't really seem to make the meaningful difference that I thought I wanted to make. Still, I was scared imagining what the realities of working at the residence would be. The director was brief. She told me about the need to establish emotional connections with the residents, then rushed to introduce me to a group of 15, their ages ranging from 8 to 21, that I was asked to supervise. My charges welcomed me graciously. Some tried to clap but couldn't bring both hands together; some tried to say hello, but their speech was so impaired that I really only guessed at what they said. Most conspicuous among them was Young-il. He was older than I, and he was the only one who spoke clearly enough for me to understand fully. Young-il had the face of a 30 year-old, but he was barely four feet tall. He took me in charge at first and, stumbling as he walked, showed me around and taught me the basics of the residents' routine. I was embarrassed when he told me what to do; to be frank, I felt as if I were being instructed by a child. Later, thinking back on my condescension toward that kind, intelligent man, I felt a much deeper embarrassment.

The youngest was Sung-Min. He was eight years old, only three feet tall, and his fingers were all odd shapes and sizes. A teacher told me that Sung-Min's fingers used to be fused, but he had recently had an operation. Sung-Min now had five discrete digits on each hand, but their irregular forms still made it very hard for him to grasp things. In spite of his physical struggles, Sung-Min was the brightest and most energetic person at the residence. On my second day of work, he was the first to greet me, something I was grateful for, since not all of the residents remembered my face.

Helping at lunch was my most difficult task. It required considerable patience. Some residents had trouble focusing on eating and would often start shaking their heads violently as I tried to feed them. But whatever their physical challenges and discomforts were and however unappealing the food was, none of the residents ever complained. I couldn't help contrasting the residents' behavior with mine. I was again embarrassed to think about my regular pickiness, my refusal to eat this or that or at all, my demands for particular foods; and I began to hope that the road to wisdom was paved with such small embarrassments.

After my first lunch at the residence, a teacher took over the group. Everyone in the room said goodbye in his own way, and Sung-Min, the little guy with the mismatched fingers, accompanied me to the door and hugged my knees. I walked home, my legs much lighter than they had been that morning. My fears and worries had disappeared; in their place were the surprising beginnings of an emotional connection that I had thought was beyond me. I was looking forward to seeing the residents again, to helping them, I hoped, and having them help me. (This is adapted from a college essay written by Jun-Min Kim, November 2003, and used by permission.)
Appendix D: Questions for Community Service
(Note: We have developed a large number of questions to illustrate the variety of types of comprehension and forms of questions. For an article the length of "Community Service" – about 600 words – we would recommend no more than ten questions. A = the Author)

LITERAL
1. A's father was a doctor. T/F
2. The residents of the rehabilitation home were mostly old men. T/F
3. Did the director of the residence think it was necessary that A learn sign language or establish an emotional connection to work with the residents?
4. Who was the youngest resident at the home?
5. Who taught A the basic routines of the home?
6. What was A's most difficult daily assignment?
7. When did A garden and pick up trash in his neighborhood?
8. Why did A's father want A to work at the residence?
9. How many residents did A supervise?
10. How did A feel when he first arrived at the residence?
11. Did A first go to the home by himself?
12. The institution where A worked was:
   a) a hospital
   b) a school
   c) a rehabilitation residence
   d) a job training center
13. When A was leaving the residence after the first day, Sung-Min ______
   a) sang a song.
   b) hugged A's leg.
   c) showed him around the residence.
   d) gave A some food.

REORGANIZATION
14. Is Young-il a child?
15. How did most the residents communicate with A?
16. Was the operation on Sung-Min's hands a complete success?
17. A suspects that "the road to wisdom is paved with small embarrassments." What embarrassments is he referring to?
18. In what way did A's legs feel different at the beginning and end of his first day at the residence?

INFERENCEN
19. Was Sung-Min able to speak clearly?
20. Sung-Min hugged A's leg:
   a) because they were playing a game
   b) because he wanted to be fed
   c) to help him understand the residents' daily routine
   d) as his way of saying goodbye
21. How has A's attitudes toward and understanding of disabled or disadvantaged changed through his experience at the residence?
22. Did the residents only play or did they also study?
23. Do you think that A's work at the residence made a meaningful difference to the people there?
24. Why do you think A's work at the residence made a meaningful difference to him?
25. Why did A feel as if he were being instructed by a child when Young-il taught him about the residence?

PREDICTION
26. Do you think that A will continue to volunteer at the residence after his school requirement is satisfied?
27. Imagine that next summer A is offered the opportunity to either return to his volunteer work at the residence or to participate in a foreign-language study program abroad. Which do you think he will choose?
28. While feeding the residents, A is embarrassed remembering his own behavior at mealtimes. Do you think that A will change the way he behaves?

EVALUATION
27. This essay was written as part of a college application. Is the essay effective in presenting the author as an attractive or interesting candidate to an admission officer in a college?
28. Is this article well-written?

PERSONAL RESPONSE
29. Was A's decision to work at the rehabilitation residence a good choice for satisfying his school community-service requirement?
30. How do you feel about A? Do you like him?
31. Which person in the essay do you find most interesting? Who, in the essay, would you like to meet?
32. What experiences have you had with disabled or disadvantaged people?
33. Would you like to or be willing to volunteer at the residence?
34. What other activities do you think would be good community service activities?

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