6

Strategy Five

Verify Strategies

When I was in the sixth grade in elementary school, I remember the day that the teacher passed out announcements about the school orchestra. The music teacher from the Junior High School would be coming to our small elementary school once a week and working with children interested in being in an orchestra. What excitement! I walked home that day with two neighbor friends. They were each in the orchestra already. Kirsten played the viola and Peter played the cello. I was determined that I would join them in the orchestra.

At dinner that night I announced to my parents that I was joining the school orchestra. We had a piano and I was taking lessons, and I felt that I was ready now to expand my musical skills. My father responded that he did not want a squeaky violin in our home.

Up to that point I had not even given serious thought to what instrument I wanted to play. I just wanted to be in the orchestra. Before my father's response could dampen my eager enthusiasm I told him that I didn't intend to play the violin. I was going to play the string bass. The string bass? What a choice! I had made the announcement with such conviction and courage, and it wasn't a squeaky violin, so I think I caught my parents off guard. There were no objections. I joined the orchestra and began playing the string bass.

At the first meeting of the orchestra the teacher brought the large string bass for me to use. It was beautiful! I had never seen anything like it and neither had the other students at the elementary school. Because of its large size I knew I could not carry it back and forth often between my home and the school. I choose to practice before or after school in the building, rather than carry the instrument home.

At some point I wanted to spend some extra time practicing over the weekend so I carried the string bass home. I remember my father's reaction to my practicing. "What kind of music is that?" he asked. I wasn't sure how to answer his question. As I practiced I could "hear" the other instruments playing in my mind and I knew how my part fit into the overall pattern of the music. I knew that I was simply part of a greater whole. It was difficult for an 11-year-old to explain that to his father.

Then I started thinking. The string bass really isn't a very beautiful instrument when played by itself. There is real value in having a variety of instruments playing together to make real music. Knowing that what I was doing fit into the overall beauty of the music made me even more conscious of the beauty of the music. I remember thinking how poor the music sounded if the string bass was missing.

Exploring Second Language Reading. Issues and Strategies. Neil Anderson. 1999. Heinle and Heinle.

Understanding the interdependency of the string bass with the violins, violas, cellos, and other instruments in the orchestra was a very important learning experience for me.

Dawn is in a situation where she is currently experimenting with some techniques for teaching language learning strategies. Look at what she has tried while teaching reading strategies.

> I have tried to teach strategies explicitly in my reading class. After administering a reading strategy questionnaire at the beginning of the quarter, I asked the students to talk about which strategies they use that are helpful in reading. They discuss this in small groups and we come up with a list of strategies which could be used to help students improve their reading. After a week I check to see if the students have tried to use any of the new strategies we had discussed and the students have admitted that in their out-of-class readings, they were reading in the same way as before. I then ask the students to read a passage and write down a step-by-step analysis of their reading process. The students then exchange this list with a partner, and the partner has to read the same passage in the same way as the first student. I used this technique both in in-class and in out-of-class assignments. Some of the class said they found this helpful as it enables them to use different strategies and they see how others approach reading and we are able to discuss why some strategies are more helpful than others.
>
> This week I'm looking at sentence study in my class. The students are using strategies to analyze long complicated sentences in order to extract the main idea. I have found the explicit instruction of strategies to be very beneficial in my reading class. However, I also think that it is an area that needs to be pursued over a greater period of time than a 10 week course. It would be interesting to observe these students next quarter when they are in full-time academic classes and see whether they are still using the strategies we have looked at.

Defining strategies

Strategies can be defined as "deliberate actions that learners select and control to achieve desired goals or objectives" (Winograd and Hare, 1988, p. 123). This definition underscores the active role that readers take in strategic reading. Students need to learn how to orchestrate the use of reading strategies to achieve the desired result. Garner, Macready, and Wagoner (1984) point out that "a strategy is a sequence of activities, not a single event and learners may have acquired some of the sequence, but not all" (p. 301).

Researchers have suggested that teaching readers how to use strategies is a prime consideration in the reading classroom. While teaching L2 readers how to use a given strategy, they must also be taught how to determine if they are successful in their use of that strategy. Garner (1982) emphasizes that low-profi-

ciency readers need guided practice if strategy training is to be successful. Such training can emphasize the "when" and "why" of strategy use at least as much as the "what."

For more on teaching strategies see Barnett, 1989; Carrell, Pharis, and Liberto, 1989; Chamot and O'Malley, 1994; Cohen, 1990; Kern, 1989; Oxford, 1989; Swaffar, Arens, and Byrnes, 1991

Recall our introduction to CALLA (Chamot & O'Malley, 1994) discussed earlier. Chamot and O'Malley include language strategy instruction as the "third and central component of CALLA" (p. 11). They stress the central role of explicit strategy instruction:

> We emphasize repeatedly that students who are mentally active and who analyze and reflect on their learning activities will learn, retain, and be able to use new information more effectively. Furthermore, students will be able to learn and apply strategies more effectively with new tasks if they verbalize and describe their efforts to apply strategies with learning activities. (p. 11)

We discussed earlier (Teaching Strategy 3: Teach for Comprehension) the value of verbalization of metacognitive awareness. Chamot and O'Malley stress this element in their approach also. We will discuss further in this chapter how we can use verbalization of strategies as an instructional tool.

The role of teacher explanation

The role of teacher explanation is an integral part of success in learning how to verify strategy use. Winograd and Hare (1988) suggest five elements that can be included in teacher explanations about strategy use: (1) what the strategy is, (2) why the strategy should be learned, (3) how to use the strategy, (4) when and where the strategy is to be learned, and (5) how to evaluate the use of the strategy. Teaching the reader how to monitor successful use of a strategy may be more important than previously thought. A cognitive understanding of what should be done is not enough to guarantee success while reading. The reader must also understand how to apply the use of a given strategy.

Some of the research that I have done (N. J. Anderson, 1991) indicates that "the most significant finding from these data suggests that there is no single set of processing strategies that significantly contributes to success" (p. 468) in second language reading tasks.

> This seems to indicate that strategic reading is not only a matter of knowing what strategy to use, but also the reader must know how to use a strategy successfully and orchestrate its use with other strategies. It is not sufficient to know about strategies; a reader must also be able to apply them strategically. (Anderson, 1991, pp. 468–469)

Reflect back once again to the analogy of the tapestry. A variety of threads are used in the creation of a beautiful tapestry. Not just one or two, but many. How the threads are woven together will vary from weaver to weaver but all can create a beautiful product. Readers are like weavers. Each can weave the strategies together in a unique way. Good readers use a wide range of strategies and not just a narrow set.

Verbal reports

Verbal reports are a tool for the classroom teacher in getting readers to verify what they are doing while they are reading. A verbal report is produced when a language learner verbalizes his or her thought processes while completing a given task (Ericsson and Simon, 1984). Readers can listen to the verbal report

of another reader who has just read the same material, and it is often revealing to hear what other readers have done to get meaning from a passage. Cohen (1990) suggests that as readers verify what strategies they are using they become more aware of the "full array of options open" to them to improve their reading (p. 73).

Metacognitive awareness

As second language readers actively monitor their comprehension processes during reading, they will select strategies to assist in getting at the meaning of what they are reading. Metacognitive awareness of the reading process is perhaps one of the most important skills second language readers can use while reading. This indicates that they are able to verify the strategies they are using. Metacognition is best defined as thinking about thinking. Verbal reports have been used in many second language research designs as a method of getting at the mental processes that second language learners use to understand the language. Verbal reports allow "insight into the dynamic and interactive nature" of the language learning process (MacLean and d'Anglejan, 1986, p. 814). Getting students to think aloud and use verbal reports is a beneficial metacognitive activity. Irwin (1991) states that

> when students think aloud or hear others think aloud, their metacognitive awareness of options for responding to text increases. It can also help them to become aware of how much thinking goes into comprehending a text. (p. 203)

For more information on teaching main idea comprehension see Baumann, 1984

Based on this theoretical input, second language reading teachers can approach the instruction of reading strategies by addressing the following six questions suggested by Winograd and Hare (1988). The six strategy instruction questions are applied to a specific reading skill: Main Idea Comprehension.

1. *What is the strategy?* Being able to identify the main idea is one of the most important reading skills you can develop. It is a skill that you need to apply to the majority of reading contexts.
2. *Why should the strategy be learned?* If the main idea can be identified, comprehension is facilitated by being able to organize the information presented and by being able to distinguish main ideas from supporting ideas and details.
3. *How can the strategy be used?* Read to locate the thesis statement of the passage and the topic sentences of each paragraph. Read quickly, don't worry about the details.
4. *When should the strategy be used?* Main idea comprehension should be used when reading expository passages which contain much new information.
5. *Where should the reader look?* The reader should read the first and last paragraphs of a passage and read the first sentence of each paragraph. Readers should be reminded to ask themselves the following questions: What idea is common to most of the text? What is the idea that relates the parts to the whole? What opinion do all the parts support? What idea do they all explain or describe?

6. *How can you evaluate the use of the strategy?* In the early stages of reading comprehension, open discussions with the reader will be the best method to verify whether the strategy is being used appropriately. The use of verbal think-aloud protocols can facilitate the evaluation of the strategy.

I have used these six questions as a tool for strategy instruction in my own reading classes. I have a transparency with the six questions in my class folder. I use the questions in two ways. First, I prepare a list of strategies that I know I am going to teach during the class. These are usually determined by questionnaires which I have administered and/or comments from the students themselves about what strategies they want to learn. Second, I use the questions on the spur of the moment in class when the context is right for explicit strategy instruction. I have found that some of the best strategy instruction in my class comes when the use of a strategy naturally emerges from the students themselves and is not planned by me. Both forms of instruction, planned and unplanned, have led to effective teaching.

1 *Prepare an overhead transparency of the six questions above. Select a strategy that you know your class needs to discuss. Select an appropriate reading passage that naturally elicits the use of the selected strategy. Talk through the six questions with your class. Allow them to then practice the use of the strategy. Ask the students to evaluate the explicit instruction of the strategy. Record in your Reflective Reading Journal what you have learned from this activity. What have your students learned?*

Paul Hardin provides insights into the techniques he uses with his students to get them to be aware of their reading strategies.

> Strategic learning is the key to student success in any endeavor. I view learning by strategies as the foundation for lifelong learning. Therefore, as with comprehension, strategic instruction has a pivotal role in all areas of my curriculum. It is a skill learned in the aural/oral classes, composition classes, as well as the reading classes. Since listening, speaking, reading, and writing are all integrated and interwoven into each class, the students receive extensive exposure to the "how to" of these communication modes. I impress upon my students that, "This is but one moment of time in your learning experience. Your next moment will find you on your own, with only the 'how to' that we learned together. Your next slice of life will challenge you to take what we have done and apply it to new learning situations. I can't 'teach' you all you need to know to be a successful learner in English, but I can give the strategies to use in other situations so you can learn on your own and continue to learn all your life." This belief is held constant in all interactions with

students. Other adults and peer tutors in the class reinforce this belief by providing strategies to answer the student's questions and not just giving them the answers.

One thing that I have learned from my students' Reading Survey, completed at the beginning of the semester, illustrates a trait found in many second language learners as they tackle text written in English. They approach it from a bottom-up perspective. They feel they must understand and be able to pronounce each word to comprehend. Thus, they spend hours looking up definitions in bilingual dictionaries and trying to "translate" the text, only to become frustrated by words that are misinterpreted by the dictionary or literal translations that have no meaning in English. As I introduce strategies to assist students in reading more effectively and utilize more top-down approaches to reading comprehension, I notice a sense of insecurity in the students. Their security blanket has been lost. They are uncertain about their reading and understanding of the text. They have lost the reassurance of the bilingual dictionary that gave them the "real" meaning and not a "guess"as these new strategies do. No matter how much I model or have the students rehearse in class, once they are on their own, they miss the training wheels and revert to more familiar and comfortable habits. They miss the confirmation and sense of correctness they felt as they translated every word and sentence.

To counter this fear and give them confidence in using strategies, I give them the immediate confirmation during group or individual reading time. As the students read or experience difficulty in the reading assignment, I will have the student "think aloud" and relate his/her thinking processes as he/she tackles the unknown using one of the strategies used in class. I ask the student to identify the strategy and work through the steps to reach a solution. For example, the student is stopped on an unknown word. He/she examines the word to identify word parts, the role the word plays in the sentence and any context clues that might help define the word. Once the student has completed the analysis and given a response, I will immediately confirm or reassure the student that the analysis was correct and that is the meaning of the word. If the student's analysis was not correct, I would step through the procedure with the student. This would be done in all classes to increase the student's confidence in strategic learning. I have found they need that constant reinforcement to revise the old ways and adopt the new. This nurturing will be frequent at the beginning, but taper off as the students become more secure with their reading. I can't be with them in all situations to provide that reassurance. They need to develop that security from within and trust in their problem-solving ability.

These confidence-building activities are conducted in whole class work, small group work, pair work, individual work and homework. For confidence building in comprehension, I will demonstrate reading a paragraph using strategies we have practiced. I will think aloud as I read the title and predict what the topic of the paragraph or selection is. I'll examine vocabulary words and use strategies to

understand the meaning of the unknown words and how they relate to the topic. I'll use background knowledge to see what I already know about this topic. I'll go on to examine pictures and graphics to get clues and confirmation that my predictions are accurate or at least close. This process will continue at the group and pair level and the students will follow the formula and reach some kind of consensus on the topic. Then comes the true proof of the pudding—the individual work. The new reading is placed on each desk. The students are reminded to follow the formula they had in group work. I can see the students nervously looking at each other, then their eyes survey the entire page searching everywhere, but focusing nowhere. I sigh and resign myself to once more stepping them through the process. We begin with the title and they complete their analysis and we move on to the next step until once again we have gone through the formula and they have solved the equation. Where they falter is here at the solution level. They have as yet no mechanism to go back and check their work to ensure the solution is accurate. They are once again uncomfortable and uncertain of their work. To build their comfort level with comprehension, I use a backward build-up procedure that takes the students from their analysis back through the reading to locate actual text that verifies what they have predicted. It provides the students with a tool with which to check their work, much as they do in math. I have the students think aloud as they read their summaries and predictions and reference the text location where they obtained the information to determine the topic or key points. This is done with the whole class so all students can experience the process involved. As the student works through these strategies I will confirm his/her conclusions and provide the student with immediate reassurance that he/she has arrived at the correct solution. If the student has ventured down an incorrect path, then as a class we will retrace each step and clarify the point at which the wrong path was taken.This process will take place at the small group level and the pair level where the procedure will be repeated with new readings. The students will read, analyze, write summaries, determine topics, main ideas, supporting ideas, and key concepts and then share these findings with their partners. As this is accomplished the student will justify her/his conclusions by identifying the text location from which the summary was taken. This provides the student with the immediate reassurance that these new techniques do lead to correct solutions.

Classroom work needs to be augmented by homework as well as practice in other regular education classes. To facilitate extensive practice I ask my students to keep a running log of reading done in other classes. As they read their biology assignment (at first a small part of the assignment only) I have them write questions they may have, look ahead and look back to see how the current section ties in with past learning and how it might lead to future sections. I have them list the strategies they employed in the section, and why they used them. Then I will have the students write a summary of the section. In class the students will share their log with the whole

class. It is a variation on the theme of thinking aloud. The students will go through the strategies and explain to the class the content and key points of the section. Since most students are taking the same science classes this also allows those students having difficulties to hear discussions about the topic and ask questions to help them better understand the text. They hear from their peers the steps involved in thinking through and managing the text. When not using actual texts I will give the students a reading or have them choose a reading either expository or narrative and ask them to read and keep a running log of the reading. This will be kept in chart form with the following information listed:

Title of reading	Number of pages read	Strategies used	Page verification

At some point in the week the student and I will conference about this assignment and I will choose a strategy and the student will refer to the page noted next to the strategy and then proceed to think aloud as he/she shows me how the strategy was used and how it helped him/her. Also the student will indicate what information or key points was provided by the strategy. This allows another opportunity for the student to check strategies and understand how he/she becomes an empowered reader by using these tools. The goal is always to instill in the student the purpose of strategic learning. Until students see the value and utility to them they will view it as another exercise done to please the teacher and meet course requirements. They must develop the intrinsic motivation to use this reading method or it is put aside at the end of the class and forgotten.

Strategies are continuously being recycled and used in all content areas. This reinforces my initial comments to the class which stress the important role strategic reading plays in life-long learning. The students become comfortable with reading and comprehending in the second language and more importantly, they see the connection between strategic learning and text comprehension in their other classes. They understand the purpose and feel confident using this approach in English just as they had in their first language.

Strategy training

Grabe (1991) provides a caution: "effective strategy training is not a simple or easy matter" (p. 393). He points out that the duration of training, clarity of training procedures, student responsibility, and strategy transfer are variables that influence strategy training results. In spite of these challenges, additional work in ESL strategy training needs to continue.

In addition to these six questions outlined by Winograd and Hare (1988), (What is the strategy? Why should the strategy be used? How can the strategy be used? When should the strategy be used? Where should the reader look? and How can you evaluate the use of the strategy?) allowing readers to become more aware that what they actually do while reading is extremely beneficial, the appli-

cation of verbal reports to the L2 classroom provides an opportunity for a teaching of metacognitive awareness strategies in all language skills. The following ten steps can be applied in adapting this research tool to the reading classroom. (Anderson and Vandergrift, 1996, p.9)

1. Select a passage to read aloud to the class in which you will demonstrate the think-aloud procedure. Select a passage that you have never read before in order to demonstrate in as natural a fashion as possible what is going on in your own mind while reading.
2. Read aloud while the students follow silently. While reading verbally report what is going on in your mind while you are reading. For fluent readers, you may need to slow down your thinking processes in order to be aware of what you actually do while you read.
3. At the conclusion of your model, encourage the students to add any of their own thoughts that occurred to them during your reading.
4. You may decide to provide additional models for your students so that they can see what is involved in producing a verbal report.
5. Students can then be grouped into pairs or threes and work together to practice thinking aloud. One student in the group can read aloud while the other(s) follow along silently. Students can be encouraged to verbalize their thoughts and the strategies that they are using during the reading.
6. Students who acted as listeners during this activity can be encouraged to add their thoughts to what their classmate has already shared.
7. The activity can also be done in a "reading round robin" format (Irwin, 1991). The class can be given a reading passage and each student is asked to read one sentence at a time and then verbalize what he or she is thinking about. This activity works best if the readers reveal only one line at a time of the reading passage.
8. A "hot seat" activity can also be applied. One student can be asked to read a short passage and think aloud while the others in the class follow along silently.
9. The think-aloud activity can also be applied to regular silent reading periods. Occasionally during a silent reading activity students can be interrupted and asked to verbalize what they are thinking. The verbal report activity can also be implemented by having students stop at certain points and turn to a partner to verbalize their thoughts.
10. Finally, students can be encouraged to practice this activity outside the classroom. Davey (1983) has suggested that students be asked to read silently and then complete a checklist to report the kinds of strategies they were implementing during the silent reading session. This can very easily be conducted as a homework assignment.

Through the use of this technique in reading classes students can be taught how to be more aware of what they are doing while they are reading and to see what other readers do when they encounter difficulties. Many of the examples that students come up with during their verbal reports in class provide excellent points of discussion about what good readers do when they read.

In practicing verbal reports in class, the focus can be on getting students to "aim for transfer" (Davey, 1983). The objective is to get students to use this in all their reading activities. The demonstration and practice provide not only a discussion of how to read, but also why and when you would use certain strategies.

O'Malley and Valdez Pierce (1996, pp. 120–121) suggest that teachers prepare a think-aloud checklist and record strategies readers report using as they share their strategies with each other. You might consider modifying this checklist and asking the students themselves to regularly check what strategies they used while reading a section of a passage.

I used the above techniques in my reading classes to get students to become more aware of their reading strategies and to be able to articulate what those strategies are. The first time I decided to do this I wanted to provide an authentic example for my class. I was preparing for class by reading a section from Andrew Cohen's 1990 book, *Language Learning*. In the book Cohen was discussing the value of getting students to monitor their reading strategies and then to discuss what they did. He indicated that thinking about your reading strategies is not an easy thing to do and does require development of metacognitive ability. He suggested that the readers of his book monitor their reading strategies while reading a passage he had included entitled Chernobyl: The Grim Statistics of Cancer. I thought, what a perfect opportunity! I'll stop reading here, make photocopies of this reading and do a live, authentic demonstration for my class. I didn't realize what a risk I was taking.

Below I have two columns. On the left is the passage, Chernobyl: The Grim Statistics of Cancer. On the right are the things that I said to my class about my reading strategies. Imagine this as a live, spontaneous reading and verbalization of my reading strategies.

The Passage	**Verbalization of My Reading Strategies**
Chernobyl: The Grim Statistics of Cancer	(1) Chernobyl. I remember this nuclear disaster. I don't think I followed this story much. This should be interesting. Grim statistics. I'm going to learn about how many people died from cancer as a result of the meltdown.
Two American physicists have drawn a rough but grim outline of the spread of cancer that could result from the fallout from Chernobyl.	(2) *Could* is an important word here. The grim statistics may only be projections.

They expect tens or even hundredsof thousands of tumours, and possibly several thousand deaths from cancer during the next 30 years. Experts in the US government's nuclear agencies accept the findings.

(3) *Expect.* Another confirmation that we're not sure here.

(4) Just because a government agency accepts these findings, does that mean I have to?

The estimates have been made by Frank von Hippel of Princeton University and Thomas Cochran of the Natural Resources Defense Council, an environmental group. They calculate the following consequences from all routes of exposure:

- 2000 to 40 000 cases of thyroid tumours from inhalation of iodine-131. Only a few percent of these tumours will be fatal.

(5) Note: I misread thyroid for typhoid on my initial reading and corrected myself.

- 10 000 to 25 000 cases of potential thyroid tumours from iodine absorbed from contaminated milk.

(6) I wonder why there are no commas used to separate thousands in these numbers. I wonder if this was written by a Brit.

(7) Oh, notice the spelling of tumours. We spell it tumors. This has to be written by a Brit.

(8) Absorbed from contaminated milk. Oh, I get it. The cows must have eaten grass that was contaminated and that caused the milk to be contaminated.

- 3500 to 70 000 cases of cancer from all sources of caesium-137. About half might be fatal.

(9) What is caesium-137? I have no idea.

Von Hippel and Cochran will describe their research in the September issue of the Bulletin of Atomic Scientists. "There is a lot of uncertainty in the figures," von Hippel stresses.

(10) *Uncertainty.* Even the experts gathering the numbers are not very confident in these findings.

The calculations start from an estimate of contamination of language and the level and of contamination of the air. The pattern of fallout is derived from models made by Helen ApSimon and Julian Wilson of Imperial College, London

(*New Scientist* 17 July, p. 42) and the Lawrence Livermore National Laboratory in California. When combined with data on population densities and standard coefficients for the amount of radioactivity absorbed by human bodies, a "population dose" can be established. For direct inhalation of iodine-131 via crops and food, it is 50–900 million person-rads; and for caesium-137, it is 5–84 million person-rads.

(11) There is no date given for this publication. I don't remember exactly when all this took place.

(12) What is iodine-131? I don't know.

(13) Caesium-137? I still don't know what that is.

Finally, these dose calculations are multiplied by a "dose-consequence" coefficient, which translates a given dose into a figure for the likely increased incidence of death or tumours.

ApSimon and Wilson calculated that the accident at Chernobyl released 15 to 20 megacuries of iodine-131 and 1 to 2 megacuries of caesium-137. These amounts correspond to 20–25 per cent of the reactor's inventory of these two radionuclides when the accident occurred.

(14) *Megacuries.* What is a megacurie? Mega means big. I wonder if a curie has anything to do with Madame Curie.

Scientists are still tabulating how much radioactivity fell where. The maps drawn by ApSimon and Wilson, unlike those made in the US, take into account weather patterns and rainfall over central and western Europe. Rainfall brings radioactivity down to Earth, increasing contamination.

(15) The rainfall could have contributed to the grass contamination, which would lead to the contamination of the milk.

The measured concentration of caesium-137 in Stockholm averaged about 1 becquerel on 28 April. There were hot spots, however, such as at Simpedvarp, on the Swedish coast about 200 kilometers south of Stockholm, where values of 190 becquerels were reported. For the 200 million people in Eastern and central Europe who were most exposed

(16) *Bequerel.* I'm reading stuff I don't really know about. Iodine-131, caesium-137, megacuries, bequerels. These are all new terms to me. I'm nervous because I'm the teacher and I don't want to look foolish in front of my class. Oh well. Just goes to show you that you can't know everything.

To Chernobyl's cloud of radioactivity, the extra dose would be about the same as that received by the generation of humans exposed to the peak of global fallout from atmospheric nuclear tests during the early 1960s.

If, before the accident, the lifetime risk of cancer in an area was 20 per cent, it would now increase to perhaps 20.005 per cent. The high numbers of tumours and cancers are not a result of heavy doses of radiation, but of the sheer numbers of people exposed to a low dose.

(17) This certainly doesn't look like a significant increase to me. Scientists are so exact in their measurements.

(18) We're getting to the end of this article so this must be the conclusion. Let's see what they have to say.

The moral, perhaps, is that in the aftermath of the accident, governments (who should be concerned about the risk of deaths among entire populations) should have panicked more, while individuals need not have panicked as much as they did. (Cohen, A. D. [1990]. Language Learning, pp. 98–99. Boston: Heinle & Heinle Publishers.)

(19) The public is often guilty of blowing things out of proportion.

(20) I really didn't have to know the meanings of the scientific terms in order to understand this article. The statistics still don't look so grim to me. I'll have to watch and see if in several years from now there is ever a follow-up to these statistics that may confirm or refute what this article suggests.

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2 *Reread the passage above (only the material in the left-hand column). Record the strategies you used while reading. How are your strategies different from or similar to the strategies reported above?*

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3 *Review the written record of the think-aloud protocol above. What strategies do you see used? Make a list noting the comment number then compare it with the list below.*

Reading strategy checklist

Keep in mind that not all readers are going to use the same strategies while reading. That is what I have found makes the use of the verbal report such an exciting classroom tool. Readers in your class can listen to the verbal reports of their classmates and see immediately that there are many different ways of reading and understanding the same text. The background knowledge we each bring to the reading setting makes the orchestration of strategies such an individual process. I believe that it is important for readers to learn this point.

Based on some research that I've conducted (Anderson, 1991), I have developed the following Reading Strategy Checklist. The list is not exhaustive, but it does contain common reading strategies that you might want to consider teaching. I have shared this list with students in my classes as examples of possible strategies that can be used while reading. Sometimes the list has sparked a desire to discuss specific strategies that students are unfamiliar with. I have broken the list of 24 strategies into three different groups: cognitive reading strategies (thinking), metacognitive reading strategies (thinking about your thinking/planning), and compensating reading strategies.

Cognitive Reading Strategies

1. Predicting the content of an upcoming passage or section of the text.
2. Concentrating on grammar to help you understand unfamiliar constructions.
3. Understanding the main idea to help you comprehend the entire reading.
4. Expanding your vocabulary and grammar to help you increase your reading.
5. Guessing the meanings of unfamiliar words or phrases to let you use what you already know about English.
6. Analyzing theme, style, and connections to improve your comprehension.
7. Distinguishing between opinions and facts in your reading.
8. Breaking down larger phrases into smaller parts to help you understand difficult passages.
9. Linking what you know in your first language with words in English.
10. Creating a map or drawing of related ideas to enable you to understand the relationships between words and ideas.
11. Writing a short summary of what you read to help you understand the main ideas.

Metacognitive Reading Strategies

12. Setting goals for yourself to help you improve areas that are important to you.
13. Making lists of relevant vocabulary to prepare for new reading.

14. Working with classmates to help you develop your reading skills.
15. Taking opportunities to practice what you already know to keep your progress steady.
16. Evaluating what you have learned and how well you are doing to help you focus your reading.

Compensating Reading Strategies

17. Relying on what you already know to improve your reading comprehension.
18. Taking notes to help you recall important details.
19. Trying to remember what you understand from a reading to help you develop better comprehension skills.
20. Reviewing the purpose and tone of a reading passage so you can remember more effectively.
21. Picturing scenes in your mind to help you remember and understand your reading.
22. Reviewing key ideas and details to help you remember.
23. Using physical action to help you remember information you have read.
24. Classifying words into meaningful groups to help you remember them more clearly.

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4 *Monitor your own reading strategies during a 15 minute period of reading. Approximately every 5 minutes, stop and identify the strategies you have used while reading. Record the strategies on a piece of paper.*

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5 *Take the* Strategy Inventory for Language Learning *(Oxford, 1990, version for English speakers learning a new language, pp. 283-291; ESL version, pp. 293-300). How does this self-inventory help you to be aware of your reading strategies? Record your reactions in your Reflective Reading Journal.*

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6 *If you currently teach, what are your course goals for reading? How do you approach the teaching of reading strategies in the class? What successes or failures have your experienced doing this?*

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7 *Observe a reading class. What are the overall reading goals for the course? Does the instructor try to make readers aware of reading strategies? Were there opportunities during the class where explicit instruction on strategies would have been beneficial for the readers?*

8 *Talk to a second language learner about his/her reading strategies. Is he/she aware of what happens during reading? Ask him/her about reading strategies in the first language. Does he/she transfer strategies from reading in the L1 to reading in the L2? Record what you learn in your Reflective Reading Journal.*

9 *As you or your students verbalize reading strategies, do you see how integrated the ACTIVE framework is that we are looking at? Activation of background knowledge. Cultivation of vocabulary. Comprehension skills. Reading Rate. Do any of the issues we have discussed in earlier sections reveal themselves in the think-aloud protocols?*

Brain-based research

For more on brain-based research see Caine & Caine, 1997; Christison, 1997

A relatively new area of research which provides additional insights into language learning is brain-based teaching. The metacognitive strategies play a major role in this research. Caine and Caine (1997) state that

> [r]eflection on one's own processes, what is generally called metacognition, and on parts of what we call active processing is the core of high-level learning, because reflection is how people extract meaning from experience. We now see that metacognitive capacities can themselves be further developed. (p. 21)

Perkins (1995) uses the terms "reflective intelligence" when he refers to metacognitive strategies. He emphasizes that metacognitive strategies can be developed and are, in his thinking, an intelligence. He states:

> [Reflective intelligence involves] coming to know your way around decision making, problem solving, learning with understanding, and other important kinds of thinking. . . . The stuff you get is very diverse—strategies, habits, beliefs, values, and more—but it's all part of knowing your way around. (p. 236)

It may be that the development of the metacognitive strategies can have the greatest impact on the development of second language reading skills.

10 *What is your reaction to the statements above by Caine and Caine and Perkins? Can metacognitive strategies be taught? Would you agree that this is an intelligence as Perkins suggests? Record your ideas in your Reflective Teaching Journal.*

11 *Of all the strategies discussed in this chapter, which may be the most important for you to teach the second language learners you work with? Discuss your ideas with other teachers you work with.*

12 *Visit with a teacher who currently teaches second language learners. Ask what strategies he/she feels are the most important to develop in second language readers. Record the ideas in your Reflective Reading Journal.*

Concluding Thoughts

The use of strategies, like each of the elements of the ACTIVE framework, is closely tied into the individual student's motivation for reading and comprehending what she/he has read. We'll discuss this in greater detail in Teaching Strategy 7: Build Motivation. Begin thinking now about what role motivation plays in reading.

At the age of 11 I learned that the sound of the string bass had to be integrated with the sound of the other instruments in the orchestra. Reading strategies are neither taught nor learned in isolation. Second language readers need to remember that strategies are orchestrated based on the purpose of reading and studying. Also, having a variety of instruments in an orchestra enriches the sound. A variety of strategies is needed for effective reading. Learners need to be exposed to that variety and explicitly taught some that they do not know about. Learning how to evaluate the effectiveness of strategy use is an important skill to develop.

Suggested Readings

Two articles and two books may be of interest to those who would like to refine their thinking about reading strategy instruction. First, Carrell, Pharis, and Liberto (1989) report a study designed to teach metacognitive reading strategies. This research needs to be replicated in order to provide second language educators additional input on how to teach learners how to be aware of what they do as they read.

A 1989 article by Carrell, Gajdusek, and Wise ("Metacognitive Strategy Training for ESL Reading") provides a current view of the role of metacognition and second language reading. This article can provide some valuable input to a teacher interested in increasing understanding of the role of metacognition.

Anyone really interested in learning about strategy instruction should investigate Rebecca Oxford's book, *Language Learning Strategies: What Every Teacher Should Know* (1989). The book explains the six areas of language learning strategies that Oxford uses in her Strategy Inventory for Language Learning. The book contains a chapter on each of the six areas and is filled with appropriate applications to second language learners. The subtitle of her book says it all: *What Every Teacher Should Know.*

Finally, an increasing amount of research is being conducted on the brain and how we learn. Renate and Geoffrey Caine (1997) highlight research on the potential of brain-based teaching. This book, *Unleashing the Power of Perceptual Change: The Potential of Brain-based Teaching,* along with others that the Caines have written, will provide insights into teaching and learning strategies that I believe will benefit education.