THE EFFECT OF COMBINED STRATEGY INSTRUCTION ON READING COMPREHENSION

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ABSTRACT

THE EFFECT OF COMBINED STRATEGY INSTRUCTION ON READING COMPREHENSION

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This study investigated (a) the effectiveness of combined strategy instruction on reading comprehension, (b) students' perceptions of combined strategy training in reading instruction, and (c) teachers' perceptions about combined reading strategy instruction and their experiences during strategy instruction. Four upper-intermediate classes (two as control groups and two as experimental groups) participated in the study. The experimental group received four-week long combined strategy instruction while the control group followed the current reading syllabus without strategy instruction. During the four-week study, Chamot and O'Malley's (1994) strategy instruction model, Cognitive Academic Language Learning Approach (CALLA), was followed for the most part.

Prior to and after the four-week study an International English Language Testing System (IELTS) reading test was given to the students to assess their reading

comprehension. Retrospective think-aloud protocols were used after the post-reading test in order to gather evidence on the use of strategies during the post-test. Following the treatment, a questionnaire was administered to the experimental group students in order to explore their perceptions of the strategy instruction program. Finally, the instructors of the experimental classes were interviewed about their experiences during the treatment period.

The data analysis showed that the experimental group showed significantly greater improvement on the reading test after the four-week study. Furthermore, the retrospective think-aloud protocols demonstrated that experimental group students employed a broad range of strategies during the post-reading test. The analysis of the questionnaire and interviews revealed that combined strategy instruction had a positive impact on both teachers and students.

Keywords: Reading strategies, top-down reading strategies, bottom-up reading strategies, reading strategy instruction, strategic reader, scaffolding.

ÖZET

BİRLEŞİK STRATEJİ EĞİTİMİNİN OKUDUĞUNU ANLAMA ÜZERİNDEKİ ETKİSİ

Esra Banu Arpacıoğlu

Yüksek lisans, Yabancı Dil Olarak İngilizce Öğretimi Bölümü

Tez Yöneticisi: Asst. Prof. Dr. JoDee Walters

Temmuz 2007

Bu çalışma (a) birleşik strateji öğretiminin okuduğunu anlama üzerindeki etkileri (b) öğrencilerin okuma eğitimindeki birleşik strateji öğretimi hakkındaki görüşlerini ve (c) öğretmenlerin birleşik strateji öğretimi hakkındaki görüşlerini ve strateji öğretimi sürecindeki deneyimlerini araştırmıştır. Dört yüksek-orta düzey sınıf (iki deney iki control sınıfı) çalışmaya katılmıştır. Deney grubu dört hafta boyunca strateji eğitimi alırken, control grubu aynı ders programını strateji eğitimi almadan tamamlamıştır. Dört haftalık öğretim sürecinde Chamot ve O'Malley' nin (1994) strateji öğretim modeli Bilişsel Akademik Dil Öğrenme Modeli (CALLA), uygulanmıştır.

Dört haftalık çalışmanın öncesinde ve sonrasında, bir IELTS okuma sınavı ile öğrencilerin okuduğunu anlama yetileri değerlendirilmiştir. Eğitim sonrası okuma sınavında öğrencilerinin strateji kulanımı ile ilgili veri toplamak için retrospektif sesli düşünme protokolü kullanılmıştır. Eğitim sonrasında, deney grubu öğrencilerinin strateji

eğitimi programı hakkındaki görüşlerini incelemek için anket uygulanmıştır. Son olarak deney sınıfı öğretmenlerinin deneyimleri ve düşünceleri hakkında bilgi edinmek için bire bir görüşmeler yapılmştır.

Araştırma sonuçları deney grubu öğrencilerinin eğitim sonrası sınav sonuçlarında anlamlı yükseliş olduğunu ortaya koymuştur. Bununla birlikte, sesli düşünme protokol sonuçları deney grubu öğrencilerinin eğitim sonrası okuma sınavında geniş kapsamlı strateji kullandıklarını göstermiştir. Anket ve bire bir görüşmelerin incelenmesi birleşik strateji eğitiminin, hem öğretmenler hem de deney grubu öğrencileri üzerinde olumlu etkileri olduğunu ortaya koymuştur.

Anahtar kelimeler: Okuma stratejileri, ‘top-down’ okuma stratejileri, ‘bottom-up’ okuma stratejileri, okuma stratejileri eğitimi, stratejik okuyucu, yapılandırmalı öğretim (scaffolding).

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CHAPTER 1: INTRODUCTION

The era in which we are living has been described as the information age. An important feature of this age is the speed with which information is created, processed, stored or retrieved. This development has made reading an essential skill to acquire wherein readers need to employ strategies to assimilate information. Studies show that reading strategies, which have been defined as plans developed by a reader to assist in comprehending texts (Koda, 2005; Urquhart & Weir, 1998), have a positive influence on reading comprehension (Auerbach & Paxton, 1997; Urquhart & Weir, 1998). Therefore, while performing their reading tasks, students should learn to work strategically (Bimmel & Schooten, 2004; Janzen, 2002; Kern, 1989). A study by Block (1992) revealed that the difference between proficient and less proficient learners is that proficient readers make use of a larger variety of strategies and they can determine which strategy to use for different tasks. In order to develop strategic readers, the main goal of strategy instruction should be to employ a wide range of strategies in combination rather than instruction in a single strategy (Anderson, 1999; Bimmel, 2001).

This study sets out to explore the effects of combined strategy instruction on students' reading comprehension. It will also examine the beliefs and perceptions of students and teachers about the use of reading strategies. The findings may be of benefit to Ankara University, School of Foreign Languages in terms of providing new insights for the syllabus.

Background of the Study

Reading is a complex system of deriving meaning from a text, which involves skills like inferencing, guessing and prediction. Analysis of the reading process raises awareness of the demands of different texts and the need for strategy use to meet those demands. Three reading models, the bottom-up, top-down and interactive approaches, have been described to explain how reading occurs (Urquhart & Weir, 1998). According to Anderson (1999), the bottom-up process of reading is a piece-by-piece mental decoding of the information in the text. Readers start processing information from the smallest units (e.g., letters, words, sentences), decode them to sound, recognize words, and decode meaning (Carrell, 1998a; Grabe & Stoller, 2002). In contrast to the bottom-up model, in the top-down model the reader's main aim is to comprehend the overall meaning of the text. Readers start with the whole language, such as their background knowledge and their predictions, aiming for the overall comprehension of the text (Anderson, 1999; Grabe & Stoller, 2002). The interactive model was developed by theorists as a result of criticism against the bottom-up and top-down models. The interactive model provides a compound of bottom-up and top-down models (Carrell, 1998b). It emphasizes both what is on the written page and what a reader brings to it. Several studies have shown that proficient readers employ top-down and bottom-up processing simultaneously, whereas less proficient readers depend primarily on bottom-up processing (e.g., Auerbach & Paxton, 1997; Carrell, 1998b; Eskey, 1998).

Schema theory is important in explaining how prior knowledge contributes in the acquisition of new knowledge. According to the theory, prior knowledge is stored in

schema and later it is used to assist the reader to fill gaps in the new knowledge (Carrell, 1984). The crucial role of background knowledge on reading comprehension is highlighted by Anderson (1999) and reading problems related to the lack of schema were emphasized in Carrell's study (1987). Studies conducted with proficient and non-proficient readers revealed that proficient readers are reported to be making more use of their background knowledge and a higher frequency of reading strategies than non-proficient readers (e.g., Anderson, 1999; Janzen, 2002).

According to Anderson (1991), reading strategies are conscious actions that learners take to improve their language learning. Many reading researchers classify reading strategies into two main groups: cognitive and metacognitive. The results of a study conducted by Carrell, Pharis and Liberto (1989) show that metacognitive strategy instruction was effective in enhancing reading comprehension. Bimmel (2001) stated that reading comprehension instruction should aim at developing both cognitive and metacognitive competence. He further indicated that if students are given only separate reading strategy instruction, they will not be able to achieve reading comprehension successfully. Strategies are related to each other and therefore should be viewed as a process and not a singular isolated action (Anderson, 1999).

A study conducted to find out whether poor and good readers make use of different reading strategies showed that good readers use a wider range of strategies and they determine the strategies according to their needs and interests (Yiğiter, Sarıçoban & Gürses, 2005). This suggests that students should have knowledge of a wide variety of reading strategies. Thus, they will be able to decide which strategy meets their learning styles and goals. Bimmel (2001) points out that not every strategy is equally useful and

suitable for every student, so students should observe their reading processes and when an obstacle occurs they should be able to shift from one strategy to another while performing their reading tasks. Students must monitor their reading processes and choose reading strategies that are appropriate for them (Carrell et al., 1989; Casanave, 1988). In order to be able to shift from one strategy to another, students should be taught a wide set of strategies.

Reading strategies can be taught explicitly by providing guidance on the use of the strategy (Chamot & O'Malley, 1994). The teacher names the strategy, and explains how it is used with a specific task. It would be beneficial to instill some rationale for the necessity of strategies in trying to comprehend a text. Bimmel (2001) emphasizes that strategy instruction should provide students with a wide repertoire of strategies and that students should be asked to use strategy combinations which they find to be useful for a particular activity.

Statement of the Problem

Researchers continually attempt to understand the factors affecting success in reading comprehension. Studies conducted on reading comprehension have indicated that reading strategy instruction is an effective way of enhancing reading comprehension (e.g., Auerbach & Paxton, 1997; Bimmel, 2001; Bimmel & Schooten, 2004; Block, 1992; Goodman, 1998). Within the literature a variety of studies that examined strategy use can be found (Grabe & Stoller, 2002; Grellet, 1981; Koda, 2005). As no one strategy can fit the needs of students and as different types of texts require different strategies (Bernhardt, 1998; Eskey, 1998; Janzen, 2002; Masuhara, 2003), a combined set of reading strategies should be given to the students. Thus, students will develop the ability

to decide which strategies are appropriate with different text types. Although evidence from empirical research for the effectiveness of reading strategies and combined strategy instruction in L1 exists, there is a lack of research conducted on the effectiveness of combined strategy instruction in the L2 setting (Grabe, 2004). Because the research on combined strategy instruction is limited in L2 settings, information is mainly obtained from the studies conducted on L1 reading. This study intends to investigate the effectiveness of combined reading strategies in the L2 setting.

At Ankara University, School of Foreign Languages, students are required to take reading courses in order to be prepared for the academic reading they will encounter in their future university courses. It is crucial for the students to develop reading strategies and techniques which will aid in learning, understanding and retaining concepts. However, in spite of their participation in reading courses, students still perform badly on reading comprehension activities and their results on reading comprehension tests are unsatisfactory. The literature would suggest that there is a need to train the students to use reading strategies effectively in order to improve efficiency in reading courses. Reading strategies should be incorporated into the curriculum so that the students will be well equipped to deal with the language demands of their continuing academic study. The purpose of this study will be to investigate the effectiveness of combined reading strategy instruction and then to explore Ankara University, School of Foreign Languages teachers' and students' perceptions about reading strategies and strategy instruction.

Research Questions

This study will address the following research questions:

Main Research Question: How effective is instruction in combined reading strategies?

1. Does instruction in combined reading strategies contribute to students' achievement in reading?

2. What are the perceptions of instructors regarding the effectiveness of training in combined reading strategies?

3. How do students view reading strategies and strategy instruction?

Significance of the Study

Although there has been much research conducted on combined strategy instruction, little research has focused on combined strategy instruction in an L2 setting (e.g., Carrell et al., 1989; Kern, 1989) and none of the research has explored the effects of combined strategy instruction in an EFL setting. The data obtained from this study will provide empirical evidence as to the effects of combined reading strategy instruction in an EFL setting. This study may also contribute to the literature by revealing tutors' and students' perceptions of how combined reading strategies are effective in promoting reading skills. Since the use of combined reading strategies in L2 is not only a local issue, it is hoped that the findings of this study will be of guidance to other educational institutions.

This study may provide data for the reconsideration of the approach applied in reading courses at Ankara University. It may provide additional insights on reading skills, and data that will lead to the reconsideration of the curriculum objectives related to reading courses. Moreover, it may assist the school in planning ways to incorporate combined reading strategies into the curriculum. This study also sets out to reveal teachers' perceptions about reading strategies, and determine to what extent they encourage reading strategies. The results of the study may be valuable for my institution, as it may raise awareness for the teachers in understanding that they have a role in promoting learners' use of reading strategies.

Conclusion

In this chapter, the background of the study, statement of the problem, research questions, and significance of the problem have been discussed. The next chapter reviews the literature on reading, reading strategies, good reader strategy use, teaching reading strategies, strategic learners, and research on reading strategies. In the third chapter, the research methodology, including the participants, instruments, data collection and data analysis procedures, is presented. In the fourth chapter, data analysis procedures and findings are presented. The fifth chapter is the conclusion chapter which discusses the findings, pedagogical implications, limitations of the study, and suggestions for further research.

CHAPTER 2: LITERATURE REVIEW

Introduction

This study sets out to investigate the effect of combined reading strategy instruction on students' level of reading comprehension. It also examines the perceptions of the students and teachers about combined reading strategy instruction. This chapter will synthesize the literature on reading, models of reading, schema theory, strategies for reading, good and strategic readers, and methods to teach strategies.

Reading

Reading has been defined in several ways by researchers in the literature. Bernhardt (1998) describes reading as a cognitive process of understanding a written linguistic message, a mental representation of something. According to Wallace (1992), reading was defined as a passive skill in early accounts. Although there has been an ongoing disagreement about the nature of the reading process, there are some features that most researchers agree on. One such feature is that when people read they have a purpose in mind. People read for simple information, for pleasure, for general comprehension, to critique, to learn and so forth (Grabe & Stoller, 2002; Grellet, 1981). Grellet (1981) agrees that people read different things with different intentions. For instance, reading a traffic sign and reading an academic text require different aims. Having a purpose for reading is viewed as one of the factors that affect successful comprehension (Janzen, 2002; McNamara, Miller & Bransford, 1991).

Familiarity with and interest in the text is also stated to be one of the crucial factors influencing successful interpretation of a text (Janzen, 2002; Nunan, 2002). If the reader has highly developed prior knowledge of or experience on the topic, he will be

able to comprehend the text efficiently. Grabe and Stoller (2002) assert that these factors influencing the reading process take place automatically for fluent readers. Fluent readers are active readers who both bring meaning to and take meaning from the text by making use of information provided by the text, prior knowledge, and experience (Grabe, 1998).

Alderson (1984) views reading as both product and process. He indicates that the product aspect is only related to what the reader obtains from the text and it does not inform us about what actually happens when a reader interacts with a text, while the process aspect examines how the reader constructs meaning and reaches that specific understanding. Grabe and Stoller (2002) divide the reading process into two categories; (a) the lower-level process and (b) the higher-level process (Table 1). The former is "the more automatic linguistic process" whereas the latter is "the comprehension process" which describes reader's background knowledge and inferencing skill (p.20).

Table 1 - Reading processes that are activated when we read

Lower-level processes	Higher-level processes
• Lexical access • Syntactic parsing • Semantic proposition formation • Working memory activation	• Text model of comprehension • Situation model of reader interpretation • Background knowledge use and inferencing • Executive control processes

(Grabe & Stoller, 2002, p.20)

Models of Reading

Many researchers have tried to explain the reading process and have arrived at various reading models. Researchers who have reviewed the processes involved in reading distinguished two kinds of processing, bottom-up and top-down processes. The

bottom-up model emphasizes focusing exclusively on what is in the text itself, especially on the letters, words and sentences in the text (Aebersold & Field, 1997; Carrell, 1984). It is also called the text-based or data-driven reading model. Supporters of this approach focus on how readers extract information from the printed page (Samuels & Kamil, 1998). In the top-down model, on the other hand, the processing of a text begins in the mind of the reader (Bernhardt, 1998). Readers make predictions about what they will encounter by using their background knowledge, their experiences and their knowledge of how language works (Carrell & Eisterhold, 1983; Grabe & Stoller, 2002). In these two models, the term 'top' refers to higher order mental concepts such as the prior knowledge of the reader whereas the term 'bottom' refers to the physical text (Urquhart & Weir, 1998).

Theories that stress bottom-up processing indicate that language consists of sounds and letters, and decoding begins with the smallest units, letters, and works up to words, phrases and sentences. Proponents of this model indicate that written texts are hierarchically organized so the readers need to first identify letters, then words, and then proceed to sentence, paragraph and text level to construct meaning (Aebersold & Field, 1997; Anderson, 1999). Therefore, this model focuses on helping students decode the smaller units that make up a text.

As the traditional view changed over time, researchers started to consider reading as an active rather than a passive process. Thus, the bottom-up model was criticized for underestimating the contribution of the reader (Eskey, 1998). The importance of active readers and the use of background knowledge began to have an impact on theories of the reading process. These concepts did not play an important role in the bottom-up reading

theory, in which the reader mainly needed to use textual clues to comprehend the text (Eskey & Grabe, 1998). Contrary to the bottom-up model, the top-down model involves knowledge that the reader brings to the text which enables the reader to actively participate during the reading process, making and testing hypotheses about the text (Carrell, 1998b; Goodman, 1998; Urquhart & Weir, 1998).

Goodman's "psycholinguistic model of reading" is also considered as a top-down model. This model views readers as active participants who make predictions and verify them by processing the printed information (Goodman, 1998; Samuels & Kamil, 1998). However, the top-down model does not work well to describe what less proficient and developing readers do, and it seems to describe what skillful and fluent readers, for whom decoding has become automatic, do (Eskey, 1998).

As the importance of both the text and the reader was realized, the interactive model, which combines the prior knowledge and textual information, emerged (Eskey & Grabe, 1998; Urquhart & Weir, 1998). This model stresses both what is on the written page and what the reader brings to it (Aebersold & Field, 1997; Urquhart & Weir, 1998). The bottom-up and top-down processes work together in order to facilitate comprehension. Studies have shown that effective reading requires both background information and linguistic knowledge functioning together (Bimmel & Schooten, 2004; Grabe, 1998). If there is a problem with either one of them, the other compensates. For instance, when the linguistic ability of the reader is poor, top-down processing is likely to be used, or if the reader does not have the necessary background knowledge to interpret the new text, he allows the meaning come from the text itself. In the interactive model, the bottom-up process, which emphasizes textual decoding, and the top-down

process, which emphasizes reader interpretation and prior knowledge, function simultaneously to help readers perceive meaning from a text (Aebersold & Field, 1997).

Schema Theory

Schema theory, according to Anderson and Pearson (1998), is a learning theory that views organized knowledge as a complicated system of abstract mental structures which demonstrate people's understanding of the world. Thus, the more complex one's abstract mental structures, the deeper that person's schema is. Conversely, the narrower one's perception of the world, the shallower is one's schema. On the basis of this understanding, some educators emphasize that students need to be taught general knowledge and generic concepts to deepen their perception of the world in which they live, and by doing so, broaden their schemata (Alderson, 1984; McNamara, Miller & Bransford, 1991).

Schema theory has been extensively studied in the area of reading comprehension. There is enough evidence in the literature to support the theory that background knowledge, in the form of schema, plays a crucial role in the reading process and assists in comprehending new information (Carrell, 1987; Carrell & Eisterhold, 1983). Anderson and Pearson (1998) explain the role of schema in reading by saying:

> Whether we are aware of it or not, it is the interaction of new information with old knowledge that we mean when we use the term comprehension. To say that one has comprehended a text is to say that she has found a mental 'home' for the information in the text, or else that she has modified an existing mental home in order to accommodate that new information. (p.37)

In the literature, two main types of schemata have been specified: content schema and formal schema (Carrell, 1984). Content schema is the reader's knowledge about the world, culture and the universe (Carrell, 1984). In order to understand a text it is necessary for the readers to possess content schemata related to the text (Alderson, 1984; Devine, 1998a). Formal schema, on the other hand, refers to knowledge of rhetorical organization of texts and the linguistic knowledge of the reader (Carrell, 1987). In other words, the reader's knowledge of grammar, vocabulary, and structure make up his formal schema. Being familiar with the rhetorical organization of the texts enhances comprehension. Both content and formal schemata have been shown to have an effect on reading performance (Koda, 2005; Urquhart & Weir, 1998).

Even if the reader comprehends the meaning of the words in the text, he may have difficulty in comprehending the text without compatible schema (Carrell, 1984). Readers need to activate prior knowledge of a topic prior to reading. In trying to comprehend reading materials, readers need to relate new information to the existing information in their minds. Proficient readers use some key words or phrases or the context to stimulate the information stored in memory, i.e. the appropriate schema (Anderson & Pearson, 1998), and form hypotheses about the text information. While reading, they test the hypotheses and make the necessary alterations. Then the new information is added to their schemata to be used in the future.

Researchers identify two main reasons for problems that occur in the use of schema; either the reader does not possess the relevant schema or cannot activate the existing schema due to language specific deficiencies (Carrell, 1984; Carrell, 1998a; Carrell & Eisterhold, 1983). When formal schema is lacking, the teacher can preview the

text with the class, identifying the text type (narrative, compare/contrast, cause/effect) and pointing out the structures for organizing such texts (Aebersold & Field, 1997; Carrell, 1984). When content schema is lacking, or in other words, when the writer's 'model reader' is not similar to the reader's life experience, comprehension breakdown is an inevitable consequence (Carrell, 1984; Steffensen & Joag-Dev, 1984). Carrell (1998a) claims that in such situations some readers try to compensate for the lack of schema by approaching the text in a bottom-up manner in which the reader concentrates on all the details of a text. Thus, the reading process slows down. One way to solve this problem is to construct background knowledge on the topic before reading (Hudson, 1998). Carrell (1984) indicates that the teacher should provide the students with the appropriate schema they are lacking and should also teach how to connect the new information to existing knowledge. Pre-reading activities are usually designed and intended to construct or activate the readers' schemata. Carrell (1998b) specifies ways that may help to construct relevant schema: Lectures, visual aids, demonstrations, discussion, role-play, text previewing, introduction and discussion of key vocabulary, and key-word/ key-concept association activities (p.245).

As mentioned earlier, comprehension problems may also be due to readers' not being able to activate the relevant schema. Aebersold and Field (1997) indicate that readers may have the relevant background knowledge but they may not necessarily possess the linguistic competence to talk about it in the target language. Chamot and O'Malley (1994) emphasize that teachers should provide pre-reading activities that aim both to construct new background knowledge and activate existing background knowledge.

Reading in L2

Many of the present views of L2 reading have been determined by research on L1. Although L1 reading and L2 reading share some characteristics, there are some differences that exist between the two (Urquhart & Weir, 1998). One of the major differences is that L2 readers start with a smaller L2 vocabulary than L1 readers (Devine, 1998b). On the other hand, L2 readers start with greater world knowledge than L1 readers. Another important difference between L1 and L2 reading relates to the amount of exposure to L2 print. Most L2 readers are not exposed to enough L2 texts which will help them enhance their L2 vocabulary and enable them to become fluent readers (Koda, 2005). Grabe and Stoller (2002) identify the differences between L1 and L2 reading in three main groups;

(a) Linguistic and processing differences
- Differing amounts of lexical, grammatical and discourse knowledge at initial stages of L1 and L2 reading
- Greater metalinguistic and metacognitive awareness in L2 setting
- Differing amounts of exposure to L2 reading
- Varying linguistic differences across any two languages
- Varying L2 proficiencies as a foundation for L2 reading
- Varying language transfer influences
- Interacting influence of working with two languages

(b) Individual and experiential differences
- Differing levels of L1 reading abilities
- Differing motivations for reading in the L2
- Differing kinds of texts in L2 contexts
- Differing language resources for L2 readers

(c) Socio-cultural and institutional differences
- Differing socio-cultural backgrounds of L2 readers
- Differing ways of organizing discourse and texts
- Differing expectations of L2 educational institutions (p.63)

In the literature, there are two main hypotheses on reading in L2 that conflict with each other: the Linguistic Threshold Hypothesis (LTH) and the Linguistic Interdependence Hypothesis (LIH). The former suggests that a certain level of second language linguistic ability, such as vocabulary and structure knowledge, is necessary in order to be able to read in L2 as well as transfer L1 strategies and skills to an L2 text (Grabe & Stoller, 2002), whereas in the latter, it is stated that once the reading skill is acquired and a higher level of strategies are developed in L1 reading, these can easily be transferred to a second language reading situation (Bernhardt, 1998). However, there is evidence obtained from studies that support both LTH and LIH hypotheses. A study conducted by Alderson (1984) revealed that linguistic proficiency in L2 has a great effect on the ability to transfer L1 reading strategies to L2 reading. Readers with high level linguistic proficiency in L2 transferred their L1 reading skills more successfully than readers with low L2 proficiency level. In addition, Clarke (1980) indicates that readers' use of reading strategies in L2 is highly dependent on their linguistic proficiency level in that language. If the linguistic proficiency of L2 is limited, the transfer of the top-down strategies in L1 to L2 reading is impeded. Thus, the reader is restricted to using the bottom-up strategies. In contrast to these studies supporting the LTH hypothesis, Block (1986) proposes that when readers develop higher level strategies in L1, they can easily transfer them to L2 reading. A study carried out by Devine (1998) also confirms that L2 reading is closely connected with students' reading proficiency in L1.

Strategies

In general, strategies are specific actions taken to accomplish a given task (Anderson, 1999; Cohen, 1998). The aim of strategies is to promote learner autonomy and to make learning more efficient. Marking the difference between strategy and skill causes confusion at times. Strategies are plans that readers adopt to achieve their goals. Skills, on the other hand, are the abilities acquired that make it possible for the learners to achieve their goals (Paris, Wasik & Turner, 1991).

Different criteria and taxonomies exist for classifying learning strategies. Cohen (1998) indicates that some strategies, such as memorization strategies, contribute directly to learning whereas other strategies, such as verifying that the intended meaning has been transferred, are language usage oriented.

Strategies are commonly divided into four categories: cognitive strategies, metacognitive strategies, compensation strategies, and social/affective strategies. Cognitive strategies are mental methods for processing information (Cohen, 1998). They include visualization, underlining, analyzing, and making associations (Oxford, 1990). Metacognitive strategies are the strategies that help the learners to plan, monitor, and reflect on their learning (Anderson, 1999; Grabe, 1991). They require learners to be aware of the task demands, plan the necessary steps to complete it, and monitor and evaluate the learning process by self-questioning. According to Oxford (1990), compensation strategies involve guessing while reading and inferencing. They enable learners to compensate for their limitations of grammar and vocabulary and make it possible for learners to use the language. Social/affective strategies help learners to keep motivated and deal with the problems of learning a new language (Oxford, 1990).

Oxford (1990) groups language learning strategies under two broad categories: direct and indirect. Memory, cognitive and compensation strategies fall into the category of direct strategies which are used for dealing with languages. On the other hand, indirect strategies which involve metacognitive, affective and social strategies are used for general management of learning.

Strategies for Reading

Strategies are either observable, such as a student taking notes during a lecture session, or are unobservable, such as inferring. Anderson (1991) pointed out that because strategies are conscious to the L2 reader, their selection and use are very much controlled by him/her. He also added that strategies are related to each other and therefore should be viewed as a process and not a singular and isolated action. Reading strategies are usually subcategorized into pre-reading, while-reading and post-reading activities (e.g., Paris et al., 1991; Wallace, 1992).

Pre-reading Strategies

What a reader brings to the printed page to a large extent determines the understanding he gains. Some researchers point out that the prior knowledge is one of the most crucial components in the reading process (Aebersold & Field, 1997; Grabe, 1991; Koda, 2005). It is therefore extremely important for a reader to organize himself before he reads. The knowledge an individual reader already possesses can be activated through specific activities such as brainstorming with oneself, mind or concept mapping, and the use of pre-questions and visual aids.

In brainstorming, the reader examines the title of the reading material chosen or given and lists all the information that comes to mind about it (Wallace, 1992). Wallace added that these pieces of information are then used to recall and understand the material. This takes place in the mind of the reader. This is where the use of mind mapping becomes very important. Within the mind, the reader puts the main idea in the centre and builds a "mind map" around it (Auerbach & Paxton, 1997; Grellet, 1981).

With the use of pre-questions, the reader can write a set of questions that he/she hopes to answer from the reading material (Wallace, 1992). An advantage of this strategy is that it enables the reader to think about what they will be reading and also pull out relevant information as he seeks to answer the questions.

Another pre-reading strategy readers can use is to have a definite purpose and goals for reading a given text (Chamot, Barnhardt, El-Dinary & Robbins, 1999). This strategy helps the reader to stay focused and also become more attentive. Chamot et al., further indicate that purposes can be developed through questions posed by the teacher, from class discussions or from the reader himself. Teacher can help their students by providing them with overviews and vocabulary previews before they begin reading the assigned materials (Aebersold & Field, 1997; Singhal, 2001). Overviews given by the teacher can take the form of class discussions, outlines or visual aids. These materials help students to form ideas of what the texts are about before they read them (Aebersold & Field, 1997). Furthermore, teachers can also help their students determine reading methods based on the reading purpose or goal.

Auerbach and Paxton (1997) suggest some other pre-reading activities: writing your way into reading (writing about reader's own experiences related to the topic),

making predictions based on previewing, identifying the text structure, skimming for the general idea, and writing a summary of the article based on previewing.

While-Reading Strategies

During reading, it is important for the reader to give his utmost attention to the reading assignment. The reader should also continuously check his own understanding of the material being read (Chamot et al., 1999). When the reader realizes that he is unable to comprehend what he is reading or faces an obstacle in comprehension, it may be necessary to adopt a strategy which would help gain understanding. One such strategy is re-reading the material (Grabe & Stoller, 2002).

Another strategy a reader can adopt during reading is to use semantic, syntactic and graphophonic cues to find the meaning of unfamiliar words (Wallace, 1992). By gaining understanding of key words from the reading material, the context becomes clear and in the process helps the reader grasp the meaning of the material being read (Aebersold & Field, 1997). Asking relevant questions to himself during reading is another strategy that a reader can adopt. By asking questions while reading, the reader's mind can stay focused and he makes his reading a useful activity.

Synthesizing relevant information from a given text while reading is another strategic tool readers can adopt (Aebersold & Field, 1997). Readers can benefit from reading by reflecting on what has been read and also by integrating new information with existing knowledge (Urquhart & Weir, 1998). These reading strategies also assist in recalling materials read.

Post-Reading Strategies

If the reader sets himself a reading purpose or goal, the post-reading phase is the time to assess whether the goal was achieved or not (Paris et al., 1991). It is also the time to evaluate if understanding was gained from the reading done. If the set goal was achieved and understanding gained, the post-reading period is the time to summarize major ideas discovered (Aebersold & Field, 1997; Urquhart & Weir, 1998). Summarizing ideas makes them easier to recall later. Another post-reading strategy the reader must employ is to distinguish the relevant ideas from irrelevant ones (Brown & Day, 1983 as cited in Paris et al., 1991; Grellet, 1981). The former must be developed, whereas the latter should be abandoned. This post-reading activity period also offers an opportunity for the readers to reflect upon what they have read.

Good Reader Strategy Use

What sets good readers apart from poor ones are the strategies they adopt before, during and after reading. Studies reveal many differences between good and poor readers. Before reading, good readers use their relevant prior knowledge to get a sense of what they will read (Grabe & Stoller, 2002) whereas poor readers do not consider their background knowledge about the topic and start reading without giving careful thought to the topic (Auerbach & Paxton, 1997), thus, beginning to read without a purpose. Another major difference is that good readers monitor their reading and use fix-up strategies (Koda, 2005). They use context clues to deal with the meaning of unknown vocabulary and concepts, identify the main idea and important details, question, review, revise and reread to develop overall understanding (Janzen, 2002; Koda, 2005). In contrast, poor readers do not recognize text structures, and they lack strategies to figure

out new words or to repair comprehension problems (Auerbach & Paxton, 1997). Poor readers either do not possess knowledge about strategies or they are not able to apply the strategies which are important for comprehending a text (Abraham & Vann, 1990; Bimmel, 2001). They spend a great deal of time engaged in bottom-up reading rather than being involved with meaning-making activities and they do not look ahead or reread the text to monitor and enhance comprehension (Masuhara, 2003).

A study conducted by Anderson (1991) showed that good readers are not only aware of varying strategies but they also know which strategies to employ in order to comprehend the text. A study carried out by Block (1992) had similar outcomes. It was observed that good readers focus more on top-down reading, where they become active participants in the reading process, whereas poor readers merely engage in bottom-up reading processes.

Sarıçoban (2002) examined the differences between successful and unsuccessful readers' use of strategies through pre-, while- and post-reading phases in his study with upper-intermediate level EFL students. The study revealed that while there were not considerable differences in the pre-reading phase, the readers' strategy use differed significantly in the while-reading phase. Sarıçoban listed some strategies that successful readers made use of to accomplish various reading tasks: "analyzing arguments, focusing on descriptions and certain kinds of verbs" (p.9). As for the post-reading phase, successful readers differed from unsuccessful readers in making use of two strategies: "evaluating and commenting".

Since reading is a strategic process, poor readers need to learn how to read strategically and be willing to counter the challenge of reading by finding ways to

overcome the problems. Teachers should be prepared to teach such strategies, and learners should take the responsibility for learning and applying the strategies. When they manage to internalize the strategies, they will be able to make use of them in other literacy activities.

Teaching Reading Strategies

Most researchers emphasize that strategy training should be viewed as a process, not a single, separate action (Chamot & O'Malley, 1987; Pearson & Fielding, 1991). Thus, strategies should be incorporated into the regular class activities. Before selecting the strategies to be taught teachers should, first of all, be familiar with the curriculum (Chamot, 1993; Oxford, 2002), because strategies should be based on the activities students will work on. This will make students feel that strategies are logical and directly related to their important classroom tasks.

Before designing the strategy training program, the teacher should find out what strategies students already know and make use of through retrospective interviews, stimulated recall interviews, questionnaires, written diaries and journals, and think-aloud protocols concurrent with a learning task (Chamot, 2004). While selecting strategies the teacher first needs to set goals and objectives and then decide on the strategies which would be most effective and suitable (Anderson, 1999; Janzen, 2002). Some researchers suggest that, after having decided on the strategies, teachers should start with a single strategy and then move on to other strategies when students completely learn that particular strategy (e.g., Janzen, 2002). However, other studies show that some strategies are so related to each other that they can be instructed simultaneously (Chamot & O'Malley, 1994), such as activating background knowledge and inferencing. In an

experimental study carried out in a foreign language setting (Kern, 1989), combined strategy instruction had a strong positive effect on readers comprehension gain scores. Many researchers agree on the point that at some time students should be asked to select strategies that will meet their needs from a group of strategies (e.g., Bimmel, 2001; Grabe & Stoller, 2002; Nunan, 2002). In other words, students should have the knowledge of a wide variety of strategies and be able to choose the appropriate ones among them according to their needs.

There is no general consensus on whether training of strategies should be explicit or implicit. Explicit strategy training is a direct, step-by-step guidance requiring student mastery of each step, whereas in implicit training, strategies are not overtly identified but they occur in reading activities over an extended period of time. However, quite a number of researchers strongly argue that explicit strategy instruction is the most effective way of teaching strategies (e.g., Chamot & O'Malley, 1987; Chamot & O'Malley, 1994; Oxford, 2002; Pearson & Fielding, 1991; Pressley, 2000). It is also suggested that strategy training should not only aim to explicitly teach how to use strategies, but also teach students when and why to employ strategies to facilitate their learning (Anderson, 1999; Bimmel, 2001; Janzen, 2002; Kern, 1989; Pearson & Fielding, 1991). According to Pearson and Gallagher (1983), explicit strategy instruction - explanation, modeling, guided practice - should proceed to independent practice. They created a visual model called "gradual release of responsibility" which illustrated their model of explicit instruction (Figure 1).

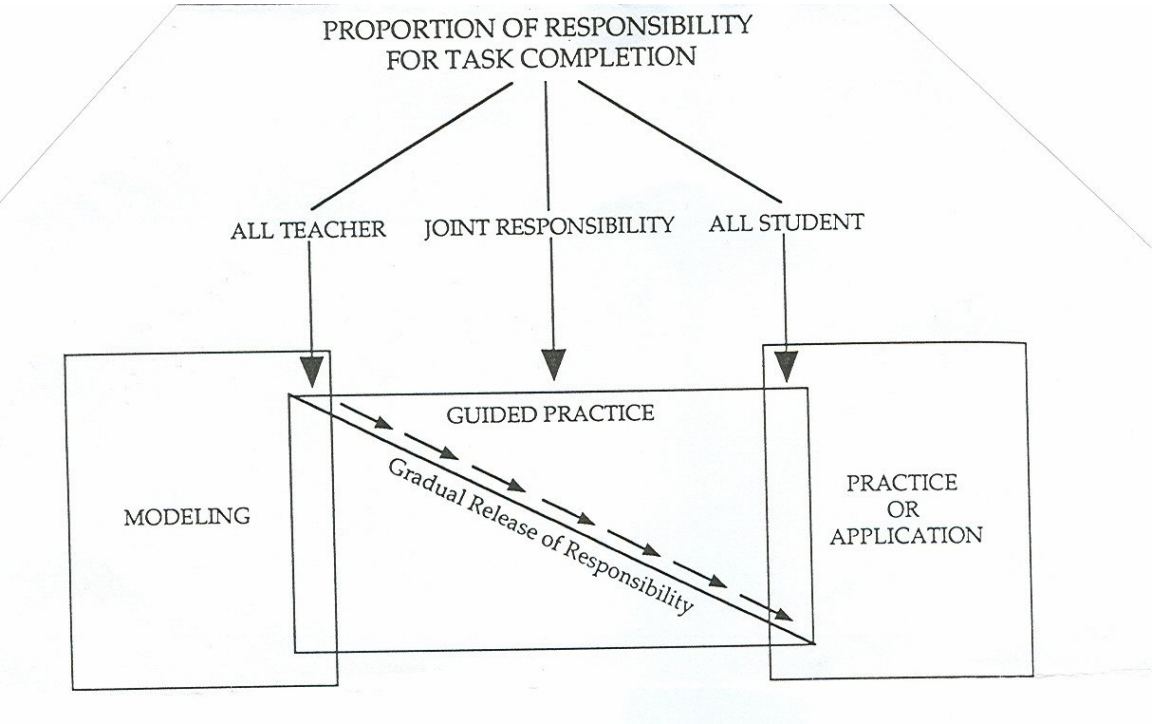

Figure 1 - A model of explicit instruction (Pearson & Gallagher, 1983)

Some different approaches to reading strategy instruction exist in the literature: Reciprocal Teaching Approach (RTA), Styles and Strategies Based Instruction (SSBI), and the Cognitive Academic Language Learning Approach (CALLA).

The aim of the Reciprocal Teaching Approach (RTA) is to help students extract meaning from the text with or without a teacher's assistance (Palincsar & Brown, 1984). It was designed for students who were sufficient decoders but had poor comprehension (Pearson & Fielding, 1991). It also enables average or above average students to profit from strategy instruction by making it possible for them to comprehend more challenging texts. Studies conducted by Palincsar and Brown (1984) revealed the effectiveness of reciprocal teaching in strategy training. RT is an instructional activity in which there is a dialogue between the teacher and the students, and each take a turn as

the dialogue leader (Pearson & Fielding, 1991; Roehler & Duffy, 1991). This approach involves two main sections, the first of which is instruction and practice of the four strategies; prediction, questioning, summarizing, and clarifying (Roehler & Duffy, 1991). In this section the teacher explicitly teaches and models the strategy, and the students employ it and check their own understanding by questioning and summarizing. In the second section, students gradually start working independently. Expert scaffolding, which is removing the support provided by the teacher gradually as students achieve competence, is the essential component of the approach. This helps students to gradually become independent performers (Palincsar & Brown, 1984; Roehler & Duffy, 1991).

The Style and Strategy-Based Instruction Model combines learner styles and strategy instruction activities with the regular classroom program. It is based on the idea that students should be provided the circumstances to understand not only what they can learn in the language classroom but also how they can learn more effectively and efficiently (Cohen, 1998). The important aspect of the model is to provide both explicit and implicit integration of strategies in the language classroom (Cohen, 1998). Cohen suggests that it is the teacher's responsibility to see that strategies are both explicitly and implicitly embedded into the classroom activities to provide contextualized strategy instruction. First the teacher determines how much strategy knowledge the students have and then she/he explicitly teaches how, when, and why (either alone or as a set) certain strategies are used to facilitate learning. The teacher explains, models, and gives examples of strategy use. Students are encouraged to make use of a wide variety of

strategies. Finally students evaluate their use of strategies and find ways to transfer them to other contexts.

In the Cognitive Academic Language Learning Approach (CALLA), Chamot and O'Malley (1994) explain five phases: preparation, presentation, practice, evaluation, expansion. In the preparation phase, the teacher raises students' awareness of their current strategies and provides the opportunity to discuss with the students how they approach learning, whether they have individual techniques and strategies or not, and whether the strategies they currently use are effective. In the second phase the teacher uses explicit instruction to teach the particular strategy, explains the steps of the strategy and gives guidance on how to use the strategy and explains why the strategy is crucial for learning. By doing so, the teacher increases the students' metacognitive awareness of the text requirements (Roehler & Duffy, 1991; Singhal, 2001). In the practice phase, the teacher reviews the steps of the strategy with the students and assigns them either individual or group work so that they have the chance to practice the strategy extensively. The evaluation phase is when the teacher reflects with the students on their improving competency with the strategy. The teacher encourages the students to build a repertoire of strategies that they can make use of with different texts. In the last phase, the teacher provides opportunities for the students to use the strategy independently in materials that are not part of the original classroom materials. The CALLA model is a recursive model, in other words, the teacher and the students can go back to the prior phases if needed (Chamot et al., 1999).

All of these strategy instruction models include direct instruction and continuous modeling by the teacher, followed by more limited teacher involvement and then

gradually decreasing teacher involvement as students begin to gain control over strategy use. In other words, explicit description of strategies, modeling, collaborative use, gradual release of responsibility of the teacher, and students' independent use of strategies are the common features of strategy instruction models.

Strategic Learners

According to Pearson & Fielding (1991), strategic readers deliberately select a strategy to achieve a specific goal or complete a given task. Beckman (2002) lists what happens to students when they become strategic learners:

- Students trust their minds.
- Students know there is more than one right way to do things.
- They acknowledge their mistakes and try to rectify them. They evaluate their products and behavior.
- Memories are enhanced.
- Learning increases.
- Self-esteem increases.
- Students feel a sense of power.
- Students become more responsible.
- Work completion and accuracy improve.
- Students develop and use a personal study process.
- They know how to "try".
- On-task time increases; students are more engaged.

When narrowed to the subject of reading, it simply means purposeful reading (Paris et al., 1991). It is the kind of reading where the readers adjust their reading to a specific purpose they have in mind. They select methods to accomplish these purposes as well as monitor and repair their comprehension.

Reading Strategies Research

There is a general agreement that strategy training in reading strategies improves comprehension of readers. Silberstein (1994) emphasizes that in order to promote successful reading teachers should present reading strategies not only at high level English classes but also at beginning proficiency level classes. There are many studies in the literature that have concentrated on reading strategies and their effects on overall reading comprehension. Carrell et al. (1989), for example, examined the effects of metacognitive strategy instruction on reading comprehension. Intermediate level ESL students from varied native language backgrounds were the participants in the study. Participants were trained in either semantic mapping or the experience-text-relationship method. In semantic mapping training, students were asked to think of ideas related to the topic. This brainstorming made the students use their prior knowledge. As the students read the text, they altered their semantic maps accordingly. Thus, new information was integrated with prior knowledge. In the experience-text-relation method, the teacher first asked questions and guided the students to activate their background knowledge and make predictions about the text. While reading the text, students stopped at appropriate points to discuss the text and determine whether their predictions were confirmed. Finally, when the students finished reading, the teacher guided the students to relate ideas from the text to their own experiences. Both groups showed enhanced reading comprehension, in comparison to a control group. In other words, the results of this study showed that metacognitive strategy instruction was effective in enhancing reading comprehension.

Another study conducted by Carrell (1989) examined the relationship between L2 readers' comprehension in both L1 and L2 settings, and their metacognitive awareness. The participants were a group of native Spanish speakers studying English as a second language and a group of native English speakers learning Spanish as a foreign language. Participants were given two texts, one in L1 and one in L2. After having answered the multiple-choice questions about the texts, students were given a strategy use questionnaire which examined their reading strategies. Carrell correlated the answers to the strategy use questionnaire with comprehension and concluded that proficient readers made use of top-down strategies during the reading process while the non-proficient readers used more bottom-up strategies. On the other hand, in the study conducted by Abraham and Vann (1990), it was observed that both good and unsuccessful language learners can be active users of similar strategies, but unsuccessful language learners lack metacognitive strategies. Unsuccessful learners were not able to assess the task and make use of necessary strategies to complete it.

There have been studies exploring the individual differences in strategy use. For instance, a study conducted by Anderson (1991) examined individual differences in strategy use by using standardized reading comprehension tests and academic texts. He indicated that reading is of an individual nature and readers do not approach texts in exactly the same way. Anderson pointed out that both good and poor readers can employ the same strategies but the way they approach the text is not the same. The study revealed that in order to enhance second language reading comprehension, knowing what strategy to use is not enough. Students should also learn how to use a strategy and arrange their strategies carefully in order to produce the desired results.

Most of the studies suggest that teaching a set of strategies to students is important in enhancing proficient readers. There are a small number of studies conducted on combined reading strategy instruction. In a study conducted by Kern (1989), for example, participants were native English speakers learning French. An experimental group that received a set of reading strategies explicitly and a control group that did not receive any strategy training were formed. The study focused on strategies of word analysis and the recognition of sentence and discourse cohesion. A reading task was given to all participants prior to and after the treatment in order to assess their comprehension of texts in French. The findings of the study showed that combined reading strategy instruction had a positive effect on readers' comprehension.

A study by Palincsar & Brown (1984) also provided students with a set of strategies. They taught students four reading strategies: summarizing, questioning, clarifying and predicting. The study reported that strategy training was effective in enhancing the reading ability of the students. However, this study was conducted with native speakers of English, not in an L2 setting. There has been a gap in the literature about the effects of combined reading strategy instruction in the EFL setting. Therefore, the current study will be a unique one in this respect. By providing EFL readers with a set of specific strategies this study examines the effectiveness of combined strategy instruction in fostering students' reading comprehension.

Conclusion

To conclude, this literature review suggests that strategy training is a crucial feature in reading instruction for students to cope with the obstacles they encounter during the reading process. Students need to be equipped with a broad range of strategies

and be able to select the appropriate strategy consciously. This requires raising students' awareness of strategy use and a set of combined strategy instruction in class.

The study that is described in this thesis will fill the gap in the literature by exploring the effects of combined strategy training on reading comprehension in an EFL setting. In the next chapter, the research tools and methodological procedures followed will be discussed. In addition, information about the setting and the participants will be provided.

CHAPTER III: METHODOLOGY

Introduction

The aim of this study is to investigate whether training in combined reading strategies has any effect on learners' overall reading comprehension. During the study, the researcher attempted to answer the following questions:

Main research Question: How effective is instruction in combined reading strategies?

1. Does instruction in combined reading strategies contribute to students' achievement in reading?
2. What are the perceptions of instructors regarding the effectiveness of training in combined reading strategies?
3. How do students view reading strategies and strategy instruction?

In this chapter, information about the setting and participants, instruments, data collection procedures, the four-week strategy instruction, and data analysis procedures are given.

Setting and Participants

The participants in this study were 73 upper-intermediate proficiency level EFL students. They were enrolled in four intact classrooms at Ankara University, School of Foreign Languages, which is a one-academic-year intensive English language program designed to prepare students for their further academic studies in various departments of Ankara University. Students are placed at appropriate levels by a placement test at the beginning of the academic year. An academic year is divided into two terms, 28 weeks in total. This study was conducted during the second term. Students attend classes 25

hours a week and the absenteeism limit for the prep school students is 30%. Of the 25 hours per week, eight hours are devoted to reading classes. In the reading classes, bottom-up strategies, such as decoding, are generally taught. A department-created coursebook which consists of reading passages followed by varied comprehension exercises is used.

The four teachers who participated in this study were the regular course teachers of the four classrooms with a minimum of three years of teaching experience with the same proficiency level students and a minimum language teaching experience of six years.

Table 2 - Background information about the participant teachers

Participant teachers	Years of experience with Intermediate level classes	Years of teaching experience at Ankara University
P1	5	8
P2	7	12
P3	3	6
P4	6	10

One of the teachers volunteered for her class to participate as an experimental group while the other three classes were randomly assigned as one experimental and two control classes. After assigning two of the classes as the control group and the other two as the experimental group, the classroom averages of the students' grades from monthly assessment tests and weekly assessment quizzes were taken into account to guarantee that the level of proficiency in English of the experimental and control groups was equal. Means for the experimental and control groups for first term final grades were 40.3 and 42.7, respectively. A t-test performed on the means confirmed that they were not

significantly different *(p*<0.2). Information about the participant students can be seen in Table 3.

Table 3 - Background information about the participant students

		Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
Gender	Female	14	37.8%	15	41.6%
	Male	23	62.1%	21	58.3%
Age	Mean	19.8		18.7	
	Range	18-23		18-22	
First term grade means	Mean	40.3		42.7	
	Range	34-49		34-48	
	SD*	4.6		4.1	

SD*: Standard Deviation

Instruments

The instruments used in this study were an IELTS reading test (2002), a students' perception questionnaire, retrospective think-aloud protocols and post-treatment interviews.

The reading section of the International English Language Testing System (IELTS) was administered prior to and after the treatment to assess students' reading comprehension. The IELTS is a standardized test and has been used internationally as a test of English proficiency of non-native speakers of English. In the IELTS reading test, which lasted 60 minutes, students were required to read three passages and answer a total of 40 questions. The IELTS reading test contained multiple–choice, gap filling, matching, and true/false questions.

Retrospective think aloud protocols were used after the reading post-test in order to gather evidence on the use of strategies during the reading post-test. Retrospective think aloud (RTA) is a method that gathers information about the user's performance

after the performance is over (Ericsson & Simon, 1980). RTAs should be carried out soon after the task because as the task becomes distant it gets more difficult for the participant to recall the real performance process (Cohen, 1996).

In order to gather data about students' perceptions of strategy instruction, a questionnaire was designed. As a tool for data collection, the questionnaire was the most suitable instrument because the study aimed to gather data from all the participants who received combined strategy training. The questionnaire items, which aimed at bringing students' perceptions to the study, were formulated in the light of the findings of other relevant studies in the literature (e.g., Auerbach & Paxton, 1997; Beckman, 2002; Block, 1986; Chamot et al., 1999; Chamot & O'Malley, 1994; Nunan, 1997) The items were developed to reflect on concepts previously identified in the literature. The questionnaire consisted of three parts. The first part consisted of one question which aimed at soliciting background information about the participants. The second part of the questionnaire, which was designed to elicit information about the students' perceptions of the four-week training they received, consisted of four questions. Part three consisted of 11 questions designed to understand students' perceptions about reading strategies. A 5 point Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. The post-perception questionnaire was administered in the students' native language, Turkish. It was first written in English (see Appendix A for the English version) and then translated into Turkish by the researcher (see Appendix B for the Turkish version). Then, a teacher colleague at Ankara University translated the Turkish version back into English. Necessary changes were made in the original version according to the comparison of the original questionnaire with the back-translated version.

One week before the questionnaire was administered to the experimental group students, it was piloted in an intermediate level class of 16 students. During the piloting process, it was needed to make clear that point 3 in the Likert scale corresponded to "undecided". Therefore, after the piloting, a corresponding description for each point in the scale was added to the questionnaire.

The purpose of the interviews was to find out the participant teachers' perceptions of reading strategy instruction. The interviews with the two participant teachers were semi-structured. Basic questions such as their perceptions about combined strategy instruction, what they experienced in their classes during the four-week instruction period, and the impact of combined reading strategy instruction on their students were asked. The aim of such broad questions was to elicit whatever the participants had experienced. Subsequent questions were built on the participants' responses (for a sample interview transcript, see Appendix C).

Reading Strategy Instruction

The figure below illustrates the sequence of reading strategies incorporated in the texts during the four-week study.

WEEK I

- Creating pre-reading expectations
- Overviewing the text (read the title and headings to understand what the text is about, look at the diagrams, tables, graphs and illustrations)
- Understanding the relationship in the texts (cause/effect, addition, compare/contrast)
- Questioning the text
- Recalling background information
- Identifying the organizational pattern of the text to provide framework for their comprehension
- Identifying the topic sentences of the paragraphs and the supporting details
- Predicting the subsequent information in the text
- Identifying cohesive elements and determining what they refer to (pronouns etc.)
- Identifying discourse markers (e.g. therefore, however) to clarify relationships among text components.
- Semantic mapping (identifying key words, phrases and arranging them)
- Guessing about the meaning of unknown words using clues from the text
- Skipping unimportant details

WEEK II

- Setting a purpose for reading
- Skimming through the texts, looking at subheadings and graphics in order to get a general idea of what the text will be about
- Using background knowledge for prediction
- Confirming and disconfirming predictions
- Backtracking/ referring back to the previous sentences
- Summarizing with own words

WEEK III

- Scan for specific information
- Evaluating the text

WEEK IV

- Restatement/ trying to rephrase difficult texts in simpler terms

Figure 2 - Strategy instruction program

During the four-week strategy training, there was a constant recycling of strategies over new texts. In other words, week one strategies were also used in weeks two, three, and four. Thus, the students encountered the groups of strategies over and

over again. Strategies were identified to meet the requirements of the reading texts in the coursebook. The strategies were to target the objectives of the text and the class, and lead the students to success in their reading comprehension tests.

Bimmel (2001) indicates in his study that reading strategy instruction should not be limited to just teaching students a strategy but it should also help them learn what working strategically means. He suggests that the aim of strategy training is not only to show students how to apply strategies but also to contribute on students' learning to control their own reading processes. Many researchers have suggested direct instruction in strategy training (e.g., Aebersold & Field; Chamot & O'Malley, 1994; Janzen, 2002) where the teacher explains and models the strategy overtly and gives feedback on students' strategy use. Grabe (2002) indicates that teachers should guide students to use strategies where relevant and have them gradually carry out the strategies independently.

In order to accomplish this, in this four-week study, Chamot and O'Malley's (1994, p. 66) strategy instruction model was for the most part followed. This model, Cognitive Academic Language Learning Approach (CALLA), consists of five phases: preparation, presentation, practice, evaluation, expansion (see Appendix D for a sample lesson plan).

First, the teacher explains the rationale and the value of the strategies to the students in order to develop students' awareness of strategy use. Then the teacher uses explicit instruction and provides a detailed description of the strategy step by step as well as explaining why that particular strategy is appropriate for the text being used. The teacher models the strategy overtly for the students by applying a think-aloud model which reveals the reasoning involved in using the strategy, and then she assists them to

use the strategy where relevant. At this phase the teacher works with the students until they show that they can regulate their use of the strategy. The teacher provides guidance to individual students whenever necessary. The assistance is gradually reduced as the students gain confidence in using the strategy. Subsequently, the teacher discusses with the students how strategy use helped them with their comprehension of the text.

In this four-week study one reading text was assigned as homework every week. The students were also asked to reflect on their strategy use. They were asked to plan, monitor and evaluate their strategy applications. They filled in a reading strategy table as illustrated below (Figure 3) for every reading text assigned as homework. Students wrote down the strategies, indicated how they applied it, how well it worked and noted any changes they made in the strategies. In the subsequent lesson, while checking the homework the teacher guided a class discussion of the strategies, praising any useful strategy they mentioned. During the discussions students also considered how they could include new strategies. This homework assignment served the students by enabling them to make choices about the strategies independently to complete their homework as well as showing them that strategies could be transferred to other texts. Thus, strategy instruction made more sense to the students.

READING STRATEGIES	
What strategy/strategies did I apply?	1. 2.
Why did I apply it/them?	1. 2.
How did I apply it/them?	
Did it/they work?	
Did I make any changes to the way it was originally instructed?	

Figure 3 - Strategy use worksheet

Data Collection Procedure

In the two experimental classes the combined reading strategy program, which was incorporated into the curriculum by the researcher, was covered, whereas the two control groups used the same materials without reading strategy training. During the four-week period there were seven reading texts assigned in the coursebook to be carried out within the reading classes and four reading texts assigned as homework. Both the experimental and control groups were exposed to these eleven texts. Prior to the initiation of the study, the two experimental group teachers participated in four hours of strategy instruction training provided by the researcher. The researcher and the two participant teachers discussed some specific ways in which reading strategy instruction would be incorporated into the existing curriculum. Over the four-week study, the experimental groups received both modeling and explanation on reading strategies. However, they were not told about being the participants of a study specifically about reading strategies because the idea of being observed or studied could have altered the participants' behavior. During the four-week treatment period, the researcher and the two experimental group teachers had weekly meetings to share ideas about the application of the strategies. The subsequent classes were improved accordingly. In

order to ensure that the lessons were carried out as intended in the experimental groups and also to verify that there was no strategy instruction given in the control groups, all the reading classes were audio taped. These recordings confirmed that there was not any explicit strategy training in the control group classes. However, they also revealed that there was some implicit integration of strategy use in the coursebook. For example, some exercises in the coursebook required students to guess the meanings of new vocabulary from the text. The recordings also enabled the researcher to observe how well the strategies were instructed and how well the students received them in the experimental group classes. The data obtained from the recordings were then discussed during the weekly meetings held with the experimental group teachers and they were used to modify the following lesson plans.

Prior to the initiation of the study all experimental and control students were given the IELTS reading test. The students were not provided with the correct answers after the test. A t-test was performed on these reading pre-test results to confirm that the control and the experimental group students were comparable in terms of reading comprehension in English. The combined strategy training, which all the experimental group students participated in, started on February 12, 2007 and finished on March 12, 2007. Students in the control group were not explicitly taught the reading strategies and they did not practice them. However, the reading load and the assignments were the same in both control and experimental groups. At the completion of the four-week training the IELTS reading pre-test was administered to all control and experimental students as a reading post-test. The quantitative data obtained from the results of the reading pre- and post-test were analyzed in mid March.

The retrospective think aloud protocols were conducted with two control and two experimental group students two days after the administration of the reading post-test outside of the classroom time. The purpose of RTA was to gain insight into the reading process of the participants during the reading post-test as well as to reveal evidence of the range of strategy use by the experimental group participants. The four participants were given training individually in thinking aloud prior to data collection. During the training, first, the purpose and the method were briefly explained to the four participants. Then the researcher demonstrated the process of think aloud. The training was considered to be important so as to equip the students with the necessary skills needed for the students to successfully carry out the think-aloud protocols. The instructions were worded carefully to reduce the likelihood that they would influence students' responses. The participants were provided with the reading texts and instructed to read it and verbalize everything they were thinking about. The RTAs were conducted in separate sessions for each participant and none of the participants reported difficulty in fulfilling the required task. All the participants preferred to verbalize their thoughts in Turkish while they were performing the task. If the participants were silent for more than 10 seconds, the researcher prompted them to indicate what they were thinking about or doing to understand the text. Otherwise, the researcher did not interact with the participant while they read. The participants' verbal reports were audio-taped, transcribed and translated into English.

Subsequent to the post-reading test, the experimental group students were given a post-perception questionnaire in which they were asked for their ideas on combined strategy use. To ensure that the items were clear and understandable, the questionnaire

was checked in consultation with teachers working at Ankara University, School of Foreign Languages. It was administered in Turkish (Appendix B) to allow the students to express their views with ease and the results were translated into English.

As the final step of the data collection, the two experimental group teachers were interviewed at the end of four-week reading strategy training on their perceptions about combined strategy use and their teaching experiences. The answers to the open-ended questions were tape recorded in late March and transcribed in early April.

Data Analysis

For this study, both qualitative and quantitative data were collected through the administration of reading comprehension tests before and after the treatment, post-treatment questionnaires, think-aloud protocols and teacher interviews.

In the analysis of the quantitative data, the Statistics Package for Social Sciences (SPSS 11.5) was used. In order to examine the effects of the training program on students' general reading comprehension, *t*-tests were performed on the results of the reading pre- and post-tests.

The data obtained from the student perception questionnaire and teacher interviews enabled the researcher to find out students' reactions to strategy training and use, and also explore the strategy instruction process from the teacher's point of view respectively. For every item of the questionnaire, frequencies and percentages were calculated. As for the retrospective think-aloud protocols conducted after the reading post-test, they were transcribed, translated into English and used as a means for looking into the process of reading during the reading post-test and getting a better picture of students' strategy use during the post-test. They were analyzed both quantitatively and

qualitatively. The interviews with the two participant teachers also provided qualitative data for the study. Some key words and themes which emerged frequently in the transcripts were identified. Then, the information was interpreted and categorized.

Conclusion

This chapter provided information about the research questions, participants, setting, instruments, the treatment period, and the data collection procedure. In the following chapter, the data analysis procedure and results will be discussed.

CHAPTER IV: DATA ANALYSIS

Introduction

The first aim of this study was to investigate the effectiveness of combined reading strategy instruction on reading comprehension. In addition, the study was designed to determine how students who received combined strategy instruction in reading perceived the strategy training. Teachers' perceptions of combined reading strategy instruction and their experiences during strategy instruction were also explored. The answers to the following questions are given in the study:

Main Research Question: How effective is instruction in combined reading strategies?

1. Does instruction in combined reading strategies contribute to students' achievement in reading?
2. What are the perceptions of instructors regarding the effectiveness of training in combined reading strategies?
3. How do students view reading strategies and strategy instruction?

This study was conducted with the participation of four teachers and 73 students enrolled in four intact classes of the upper-intermediate level at the School of Foreign Languages, Ankara University. Two of the classes were assigned as the control group and the other two classes were assigned as the experimental group. The experimental group students were provided with a four-week long combined strategy instruction program incorporated into the current reading syllabus, while the control group students covered the same materials without strategy instruction. The experimental group students focused on 22 strategies in the four-week treatment period.

Data Analysis Procedure

Data for this study were gathered through reading pre- and post-tests, a questionnaire, retrospective think-aloud protocols and interviews.

One week before the initiation of the treatment, both groups were administered an IELTS reading test which consisted of three passages with a total of 40 questions. In this test, the aim was to measure students' reading comprehension. The same test was administered to both groups at the end of the four-week treatment period. The analysis of data collected through reading pre- and post-tests was computed by performing paired samples t-tests to see the achievements of students and independent samples t-tests to explore the differences between the pre- and post-test scores of the control and experimental groups.

In addition, prior to the study, in order to be able to consider the two experimental classes and the two control classes as one control and one experimental group, an independent samples *t*-test was performed on the means of first term grades and reading pre-test scores between the classes in each group. According to independent samples t-tests, there was no significant difference between experimental class one and class two ($p< 0.283$) and no significant difference was found between the two control classes ($p<0.548$) in terms of first term grades. The results of the independent samples t-test for the pre-reading test scores revealed no significant difference for the experimental classes ($p<0.427$) nor for the control classes ($p<0.464$). Consequently, the two experimental and the two control classes were combined together for the purposes of data analysis to form one experimental and one control group. In order to find out whether the two experimental and two control classes could be considered as one control

and one experimental group after the post-reading test, an independent samples t-test was performed on the mean scores of the post-test. The results of the independent samples t-test applied on the post-test scores revealed no significant difference for the experimental classes (p<0.730), nor for the control classes (p<0.258). Thus, the two experimental classes and the two control classes were considered as one experimental and one control group all throughout the study.

In this chapter, the results will be presented in tables to display the analysis of quantitative data. The quantitative data analysis of the pre- and post-tests is given in three sections: (a) comparison of the control and experimental groups in terms of reading comprehension skill prior to the study (b) comparison of the pre- and post-reading comprehension test for all participant students, and (c) comparison of the control and experimental groups' post-reading comprehension test scores. In addition, in order to reveal the strategic processes employed by the students during the reading test, retrospective think-aloud protocols were conducted with four participant students after the post-reading test. The think-aloud protocols were first transcribed and translated into English. Then, the strategies used by the experimental group participants were counted and percentages for strategy use were found for each participant.

At the end of the four-week combined strategy instruction a questionnaire was administered to the experimental group students in order to determine their perceptions of strategy instruction. The results of the questionnaire administered to the experimental group to reveal their perceptions about the strategy instruction were analyzed quantitatively using the Statistical Packages for Social Sciences (SPSS). Frequencies and percentages for every question were calculated. The reliability of the questionnaire,

based on the data from the participants, was 0.94 using Cronbach's alpha coefficient of internal consistency.

The participant instructors of the experimental classes were interviewed about their experiences during the treatment period. They were asked whether combined strategy instruction was carried out as desired, whether they were aware of the strategy instruction before the treatment, and in what way the combined strategy instruction affected their classes and students' reading skill. The interviews were audio-taped and then transcribed. First, the transcriptions were read carefully to get a sense of the whole. While reading, some keywords and ideas were written down briefly. Finally, this information from the interviews was reduced to certain themes and categories. The qualitative data gathered from the interviews provided insights about what the perceptions of the teachers about combined strategy instruction were.

The Analysis of the Pre- and Post-Reading Tests

In order to investigate the first research question, an IELTS reading comprehension test was administered to 73 students before the explicit strategy training in order to find out students' level of L2 reading ability. The scoring of the pre-test was done by giving one point for each correct answer and the raw scores were converted into percentages.

Table 4 - Comparison of the groups in terms of pre-test scores

Pre-test (out of 100)	Number	Mean	Standard Error Mean	Standard Deviation	Minimum	Maximum
Experimental Group	37	61.96	2.49	15.15	30.00	82.50
Control Group	36	66.88	2.19	13.15	37.50	90.00

The results of this pre-test were also used to determine whether there was a significant difference prior to training between the students who received combined strategy instruction (experimental group) and the students who did not receive strategy instruction (control group). To analyze the results of the pre-reading test, an independent samples t-test was used. The results of the independent samples t-test revealed no significant difference between the two groups on the standardized reading comprehension test prior to the study ($p<0.144$). In other words, the analysis of the pre-test scores as shown in the table above revealed that both groups performed similarly on the pre-reading comprehension test and that the two groups were not different before the treatment.

The table below displays the post-reading test scores for both the experimental and control group. It appears that the experimental group has performed better on the post-test than the control group. In order to investigate whether this difference is significant, the scores will be examined in more detail.

Table 5 - Comparison of the groups in terms of post-test scores

Post-test (out of 100)	Number	Mean	Standard Error Mean	Standard Deviation	Minimum	Maximum
Experimental Group	37	83.72	1.63	9.91	55.00	95.00
Control Group	36	70.42	2.53	15.20	35.00	95.00

In order to find out whether there was a significant difference between the pre- and post-test scores for the experimental students, a paired samples t-test was conducted. The table below shows the mean, standard deviation and the paired samples t-test results for the experimental groups' pre-test and post-test scores.

Table 6 - Comparison of the pre- and post-test scores for the experimental group

Experimental Group	Number	Mean	Standard Deviation	Standard error Mean
Pre-test	37	61.95	15.15	2.49
Post-test	37	83.71	9.91	1.62
t-value: -15.540	*p*-value: 0.000			

The results of the paired samples t-test revealed that there is a statistically significant difference between the scores of pre- and post-tests for students who received combined reading strategy instruction ($p< 0.000$). The total means show that the scores have improved by 21.7 points.

The table below shows the means, standard deviation and paired samples t-test results for the control group test scores.

Table 7 - Comparison of the pre- and post-test scores for the control group

Control Group	Number	Mean	Standard Deviation	Standard error Mean
Pre-test	36	66.88	13.15	2.19
Post-test	36	70.42	15.20	2.53
t-value: -5.528	*p*-value: 0.000			

As seen in the table, the results of the paired samples t-test show that there is a significant difference between the scores of the pre- and post-test for the control group students ($p<0.000$). The total means show that their scores have improved by 3.5 points. Some improvement was expected as the control group also continued their studies with the current reading syllabus, although they did not receive any strategy instruction during the four-week study. The 3.5 point increase in the post-test results is thought to be due to the reading classes they attended.

In order to compare the scores of both groups in the post-test, an independent samples t-test was conducted. The results show that the mean of the experimental group post-test scores is significantly higher than the mean of the control group post-test scores ($p< 0.000$). In other words, the experimental group performed significantly better than the control group on the post-test.

Table 8 - Comparison of the mean gains between the groups

		Means			Standard Errors of Means		
	Number	Pre-test	Post-test	Difference (gain scores)	Pre-test	Post-test	Difference
Experimental	37	62.0	83.7	21.7	2.5	1.6	1.4
Control	36	66.9	70.4	3.5	2.2	2.5	0.6
t-value: 11.831 *p*-value: 0.000							

After the gain scores were calculated for both the groups, an independent samples t-test was conducted on the gain scores in order to compare the gained difference between the experimental and control groups. As displayed in Table 8, there is a significant difference between the experimental and control groups' gain scores ($p<0.000$). In other words, the experimental group gained significantly more than the control group on the post-test.

The following bar graph illustrates the mean scores for the pre- and post-tests for both the control and the experimental group.

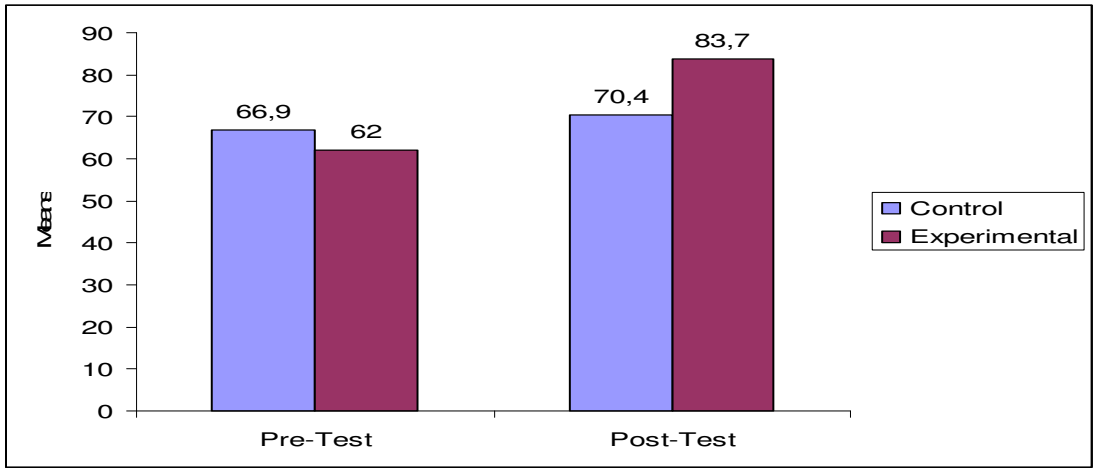

Figure 4 - Comparison of the pre- and post-test scores

The results of the study indicate that there is a significant difference between students who received combined reading strategy instruction (experimental group) and those who did not receive training in reading strategies (control group) in terms of scores for the post-test.

Analysis of the Think-Aloud Protocols

After the post-reading test, two students from the experimental group and two students from the control group volunteered to participate in the retrospective think-aloud protocol. The pre- and post-reading test scores for the four participants are shown in the table below.

Table 9 - Test scores of the think-aloud participants

	Pre-test	Post-test
Experimental Group		
Participant 1	57.5	87.5
Participant 2	40.0	75.0
Control Group		
Participant 1	45.0	51.5
Participant 2	57.5	65.0

Think-aloud protocols, which are verbal reports where participants state their thoughts and behaviors, are valid methods for discovering students' comprehension processes (Cohen, 1996). In this study, the aim of the think aloud protocol was to make students' cognitive processes visible to the researcher. Before conducting the actual think-aloud task, the procedure was clearly explained to the students and a short demonstration was provided. Students practiced until they understood and could think aloud clearly. Students were told that they could think and speak in Turkish.

In the data analysis procedure, the think aloud protocols were recorded, transcribed and translated into English. In the following section are samples of two experimental group students' think-aloud protocols. The students' responses are represented in brackets and the sentences they read out from the texts are written in italics. The strategies the students employed are identified.

Samples from Think-aloud Protocols

Strategy: Overviewing the text, creating pre-reading expectations and predicting.
[I look at the picture and see a factory, a lot of black smoke coming out. This passage can be about...maybe air pollution. Factories and maybe other causes of air pollution.]

Strategy: Confirming predictions.
"*Air pollution is increasingly becoming the focus of government and.....* [I was right; air pollution is the topic of the text.]"

Strategy: Guessing about the meaning of unknown words using clues from the text.
"*.... the exhaust of 60,000 vehicles, it ....* [exhausts? I do not know this word. Of vehicles... a part of a car maybe... oh it is really similar to the Turkish word 'egzoz'. Yes, I think exhaust means egzos.]"
"*...lingered over the city...* [what is linger?] *... a cloud of exhaust lingered over the city of London for over a week.* [It is the verb of the sentence and it is in the past tense form...what did exhaust do over the city? Can it be something like remain....maybe stay?]"

Strategy: Referring back to the previous sentence.
"*...decrepit vehicles....* [I don't know the meaning of this word. I do not think it is important to know as I can understand the main idea of the paragraph. Oh, just a minute, it says *any old, run-down vehicle ...* in the previous sentence so this might mean something like an old car.]"

Strategy: Inferencing.
"*...infra-red spectrometer...it gauges the pollution from a passing vehicle...* [so they will be able to measure the amount of pollution caused by the vehicle and maybe remove the vehicle from traffic.]"

Strategy: Summarizing with own words.
"[This passage first lists the causes of air pollution and mentions some precautions to be taken in order to reduce air pollution. It also tries to call people's attention to the air pollution problem.]"

Strategy: Using the first sentences of the paragraph to infer what it will be about.
"*Action is being taken along several fronts...* [hmm the paragraph will probably give information about the actions taken to reduce pollution.]"

Strategy: Rephrasing.
"O*ne solution is car-pooling, an arrangement in which a number of people who share the same destination share the use of one car.* [They will get together and travel with just one car, good idea.]"

Strategy: Scan for specific information.
"[this question wants me to match the city names with the list of solutions according to the text. I will not read the whole text from the beginning to the end... but I can go through the text quickly to find the information of specific cities.]"

Strategy: Questioning the text.
"*rates can vary according to road conditions time of day...* [What? How will this be possible? They will monitor cars all the time? Does not this require a lot of finance?]"

Strategy: Skipping unimportant details.
"*The trouble is, Los Angeles seem to.....* [not very important information, I'll skip that.]

Strategy: Decoding the components of the words for meaning.
"..overstaffed…" [staff… worker, over… more than needed so having more people than necessary.]"

The think-aloud protocols were also analyzed quantitatively in order to find out which strategies were employed by the students during the post-test. Table 10 shows the name and the number and percentage of total use of the strategies by the experimental group participants during the post-reading test.

Table 10 - Strategy use in the think-aloud protocols by experimental group students

Strategy	P1	Percentage	P2	Percentage
• Recalling background information	5	7.46%	3	5.17%
• Guessing the meaning of unknown words	8	11.94%	7	12.06%
• Overviewing the text	3	4.47%	3	5.17%
• Using background knowledge for predictions	3	4.47%	4	6.89%
• Confirming/ disconfirming prediction	3	4.47%	2	3.44%
• Summarizing with own words	2	2.98%	4	6.89%
• Scan for specific information	9	13.43%	5	8.62%
• Restatement	-	0%	2	3.44%
• Skimming through a text to get a general idea	3	4.47%	3	5.17%
• Identifying the topic sentence of the paragraphs and the supporting details	5	7.46%	7	12.06%
• Identifying cohesive elements and what they refer to	6	8.95%	9	15.51%
• Identifying discourse markers to clarify relationship among text components	3	4.47%	-	0%
• Skipping unimportant details	5	7.46%	2	3.44%
• Questioning the text	1	1.49%	3	5.17%
• Decoding the components of the words for meaning	2	2.98%	1	1.72%
• Backtracking/ referring back to the previous sentences	9	13.43%	3	5.17%

The analysis of the think-aloud protocols showed that 16 different strategies in total were employed by the participant students. The strategies that were most frequently used were guessing the meaning of unknown words using clues from the text, scanning for specific information, and identifying cohesive elements and determining what they refer to. It was observed that experimental group students also employed bottom-up strategies during the post-test. A good example was while guessing the meaning of unknown words they decoded the components of the words.

The strategy use of the two experimental group students was compared to that of the two control group students. While analyzing the think-aloud protocols of the control group students it was observed that while the two experimental group students had a

wide repertoire of strategies and they were also able to choose an appropriate strategy to meet the demands of the text, control group students were not able see themselves as being autonomous. They were not able to take control of their reading and handle difficulties efficiently. Moreover, they did not monitor and self-evaluate their performances. How the control group students approached the texts was different from the experimental group students. First of all, they mostly started reading without thinking about the process of reading; they did not know why they were reading, but apparently just viewed it as a task to cover. They were not able to relate the content to their experience and provide meaningful and extra information to the texts. They tended to stop reading when confronted with difficulties even at word level. The strategies used by the two control group participants were mainly bottom-up strategies. The strategies observed were trying to understand the meaning of each word in the text, translating the sentences into the native language, and focusing on the sentence structure. However, one of the control group participants (P1) employed a very few top-down strategies. He tried to guess the meaning of an unknown word by using contextual clues, scanned for specific information twice, and he overviewed one of the reading texts and tried to understand what the text was about by reading the title and by looking at the illustrations. However, he did not confirm or disconfirm his predictions about the text while reading. In the following section are samples of control group participant students' strategy application during the think-aloud protocol.

> Strategy: Guessing the meaning of unknown words.
> " … *air quality in many of the world's major cities will deteriorate beyond reason.* [air quality…hava kalitesi , major cities ana sehirler, will deteriorate… I do not know what it means but it might mean "become bad" or "decay".]

Strategy: Overview the text.
"[Pictures of women with banners, all women. I think, I will read a text about women's rights.]"

Strategy: Focusing on the sentence structure.
"Although the exhibition officially charts the years 1906 to 1914, graphic display boards…show what was achieved. [A complex sentence, although the exhibition…, although a subordinating conjunction, at the beginning of the first clause, it is a dependent clause.]
"In Singapore, renting out road space to users is the way of the future.[renting out road to users …subject of the sentence, is.. the verb, the way of the future… predicate, I think.]

Because of the labor-intensive nature of think-aloud protocols only four students were involved in this part of the research. In order to gain more insight into students' strategy use during the post-test, the experimental group students were given the post-test a second time and were asked to report the strategies they used during the test. First, students were introduced to a coding scheme they were supposed to use (see Appendix E for the coding scheme). The coding scheme was adapted from Oxford and Lee's study on reading strategies (2007), in which the students were given either color or letter codes for each strategy type (for a sample post-reading test coding, see Appendix F). To ensure that information derived from coding was reliable, a short group interview was held with the students during which the students were asked to explain and reflect on the strategies they reported for the post-reading test. The group interview was conducted in the native language of the students. Table 11 shows the 35 experimental group students' results of the coding. The number of students using the strategies during the coding and the percentages of students using each strategy are displayed in the table below.

Table 11 - Experimental group students' strategy use

Strategies	Number of students using the strategy	Percentage
Creating pre-reading expectations	31	88.5%
Overviewing the text	35	100%
Understanding the relationships in the text	31	88.5%
Questioning the text	32	91.4%
Recalling background information	35	100%
Identifying the organizational pattern of the text to provide framework for comprehension	26	74.2%
Identifying topic sentences and the supporting details	33	94.2%
Identifying cohesive elements and determining what they refer to	33	94.2%
Identifying discourse markers	31	88.5%
Semantic mapping	0	0%
Guessing about the meaning of unknown words	35	100%
Skipping unimportant details	35	100%
Setting a purpose for reading	28	80%
Skimming through the text	33	94.2%
Using background information for predicting	35	100%
Confirming/disconfirming predictions	33	94.2%
Backtracking/ referring back to the previous sentences	35	100%
Scan for specific information	33	94.2%
Evaluating the text	28	80%
Summarizing with own words	32	91.4%
Restatement/ trying to rephrase difficult texts in simpler terms	33	94.2%
Predicting the subsequent information	29	82.5%
Decoding the components of the words for meaning	18	51.4%

*Total number of students: 35
*Percentage: percentage of students using strategies

The data gathered from the coding revealed a wide variety of strategy use by the experimental group students during the post-test. As seen from Table 11, all participants used the strategies of recalling background information, prediction, guessing the meaning of unknown words, and backtracking. In addition, although the bottom-up strategy of decoding the components of the words for meaning was not one of strategies instructed during the four-week study, it was employed by 18 of the participants. On the other hand, none of the students applied the strategy of semantic mapping during the coding.

To sum up, the control group participants did not apply many strategies consciously or subconsciously during their reading processes. The retrospective think-aloud protocols and the coding revealed that students who gained a significant enhancement in reading comprehension used a wide range of strategies, many of which were considered to be effective by the researcher and the participant teacher who analyzed the data gathered through the think-aloud protocols and the coding.

Analysis of the Questionnaire

The perception questionnaire, which was developed to explore students' perceptions after the training program, was administered to 35 experimental group students. The questionnaire consisted of three sections. In the first part of the questionnaire, the aim was to find whether students had received any explicit strategy instruction in their educational backgrounds. The table below displays the number of students who have received explicit strategy training before this study.

Table 12 - Previous strategy instruction

	Frequency	Percentage
Yes	7	20.0
No	28	80.0
Total	35	100.0

The results of the first question show that most of the students had not received any strategy instruction prior to this study. The majority said that this was the first time they had received strategy instruction.

The second part of the questionnaire sought to reveal students' perceptions of the combined strategy training they received during the four-week period. As shown in Table 13, the responses to the questions in the second part of the questionnaire reveal that the majority of the respondents thought the four-week strategy instruction was beneficial.

Table 13 - Students' perceptions of the explicit combined strategy instruction

Questions	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)	Mean	Standard Deviation
Q.1	0	1	2	8	24	4.57	.73
	0%	2.9%	5.7%	22.9%	68.6%		
Q.2	0	1	1	14	19	4.45	.70
	0%	2.9%	2.9%	40.0%	54.3%		
Q.3	0	1	3	11	20	4.42	.77
	0%	2.9%	8.6%	32.4%	57.1%		
Q.4	0	1	5	10	19	4.34	.83
	0%	2.9%	14.3%	28.6%	54.3%		

Q.1 Combined strategy instruction provided in the reading course was efficient.
Q.2 I was given ample encouragement during the classes to use strategies.
Q.3 I was given ample opportunities during the classes to use strategies.
Q.4 I was given ample feedback on my strategy use.

Responses to the second part of the questionnaire indicate that students view the combined strategy instruction they received as a positive experience. According to the percentages shown in Table 13 above, the great majority of the students tend to think that strategy training was effective. They mostly agree that they were supported to make use of the strategies and they were provided with sufficient opportunities to practice them during the classes. A considerable number of students were also satisfied with the feedback they received for their strategy use.

The third part of the questionnaire develops a clear picture of how students perceive reading strategies. Table 14 reports the results of this section.

Table 14 - Students' perceptions of reading strategies

Questions	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)	Mean	Standard Deviation
Q.1	0	2	3	11	19	4.34	.87
	0%	5.7%	8.6%	31.4%	54.3%		
Q.2	0	0	4	9	22	4.51	.70
	0%	0%	11.4%	25.7%	62.9%		
Q.3	0	2	6	9	18	4.22	.94
	0%	5.7%	17.1%	25.7%	51.4%		
Q.4	0	0	4	12	19	4.42	.69
	0%	0%	11.4%	34.3%	54.3%		
Q.5	0	0	7	14	14	4.20	.75
	0%	0%	20%	40%	40%		
Q.6	0	2	2	13	18	4.34	.83
	0%	5.7%	5.7%	37.1%	51.4%		
Q.7	0	1	6	13	15	4.20	.83
	0%	2.9%	17.1%	37.1	42.9%		
Q.8	0	0	6	15	14	4.22	.73
	0%	0%	17.1%	42.9%	40.0%		
Q.9	0	0	5	10	20	4.42	.73
	0%	0%	14.3%	28.6%	57.1%		
Q.10	0	2	5	10	18	4.25	.91
	0%	5.7%	14.3%	28.6%	51.4%		
Q.11	0	1	5	11	18	4.31	.83
	0%	2.9%	14.3%	31.4%	51.4%		

Q.1 Reading strategies improved my performance on exams and quizzes.
Q.2 Reading strategy instruction improves readers' ability to process information.
Q.3 Reading strategies foster readers' interest and motivation in a subject.
Q.4 Reading strategies enable learners' to become proficient and effective readers.
Q.5 Reading strategies lead to improved class participation.
Q.6 Reading strategies make reading an active process.
Q.7 Reading strategies promote a sense of power for the reader.
Q.8 Reading strategy instruction creates lifelong productive readers.
Q.9 Reading strategy instruction creates responsible and autonomous readers.
Q.10 Reading strategy instruction helps learners develop and use a personal reading process.
Q.11 Reading strategies teach learners that there is more than one right way to do things.

It could be inferred from the results of the third part that students have positive views about reading strategies. The majority of the students believe that their performances on exams improved due to strategy application during exams. In Part 3, most of the participants indicated that reading strategies heighten their interest,

motivation and reading comprehension skills. They become actively engaged in a text and find different, individual styles to deal with the reading text. Very few participants (17%) were indecisive about the statement that reading strategies create lifelong productive readers. However, most of them identified strategic readers as lifelong productive readers.

The Analysis of the Interviews

The two experimental group teachers were interviewed at the end of the four-week treatment period. The interviews were conducted in English and the responses were audiotaped and transcribed. The following features were explored during the interviews.

1. Teachers' perceptions of combined strategy instruction.
2. The impact of combined reading strategy instruction on students and their reading comprehension from the teacher's view.
3. What the teachers experienced in their classes during strategy instruction.

Both participant teachers indicated that they had previously from time to time taught strategies but they had never informed students explicitly about strategies. Both the teachers focused on the explicit strategy instruction during the interview, indicating that instructing strategies explicitly was essential and that teachers should inform their students about the value and application of strategies. They both emphasized the importance of a systematic approach to strategy instruction and highlighted the importance of giving teachers adequate professional support to teach strategies. One of the instructors (T1) said the following;

> T1: Teachers should also need to know when and where to apply the strategies. Strategy training in classes should not be limited to the same few strategies like skimming and scanning. This four-week strategy training experience helped me figure out how to teach strategies more systematically.....It would also be beneficial if we had more materials for strategy instruction that would be ready to use in our classes.

A problem experienced during the strategy training by both participant teachers was the lack of materials and coursebooks appropriate for reading strategy instruction. Because the existing materials for the class did not contain explicit reading strategy instruction, it took a lot of time to adapt the existing materials and to integrate strategy instruction into the regular language curriculum**.** One of the participant teachers (T2) further indicated that it would be of great benefit if they had guidelines in matching strategies for classes of different levels and textbooks. The teacher (T2) indicated:

> T2: If the institution develops curriculum which provides a rationale of strategy use by implementing strategy instruction in an organized way across different levels, then it will be possible to provide strategy instruction consistently to the students at all levels.

As for the impact of strategy training on students' reading skills, they stated that combined reading strategy instruction was effective and improved motivation as the students became more active, aware and responsible learners. The quotes below from the two participant teachers show how strategy instruction helped students to become efficient learners:

> T2: Before the strategy instruction when they came across unfamiliar words they used to either ask me the meaning of the words or ask their friends sitting near them. They thought that it was only possible to comprehend the text only if they knew the meaning of every single word in the text. However, whenever they encounter an unfamiliar word now they try to

> find a way to deal with it. They even tell me not to give them the meaning of the word as they want to see whether they can guess the meaning by using contextual clues.

> T1: I think there is a big difference in the attitudes of the students toward the reading activities carried out in the class. Towards the end of the treatment period I realized that the students were more enthusiastic and self-confident as they now have tools.... strategies to enable them to become more successful readers.

While working on the weekly homework students were also asked to fill in a table where they reported their strategy use by writing about which strategy they used, the reason for using the strategy, how they used it and whether it worked or not. The participant teachers indicated that the strategy chart and mini classroom discussions on students' strategy use (see Chapter III, p. 41) enabled the creation of more independent learners. They both experienced during the strategy discussions that students eventually started to make use of strategies independently and they were also able to justify their work. The participant teachers indicated:

> T2: The students eventually became aware of their own thinking and learning approaches, they were able to identify what a text entailed and arrange the strategies that met the demands of the text.

> T1: While the students were required to think-aloud during the lessons, I realized that they were able to identify and understand text requirements and they could match the strategies to meet those requirements.

One of the participant teachers (T2) further emphasized that learner autonomy is only possible if the teacher believes and values it. She indicated that strategy instruction would be successful if the teachers really believe in it. Thus, the students will use it as a

part of their learning. It is the teacher's responsibility to show the students what difference it makes.

When the two instructors were asked about their strategy instruction experiences and whether they experienced anything that interfered with the treatment, they mentioned the need to use L1 and L2 together during the explanation of the strategies. Although this decreased the time of students' exposure to the target language, they both agreed that it actually saved a great amount of time which was used to practice the strategies in the target language. They emphasized the importance of providing multiple practice opportunities with the strategies so that students can use them autonomously. One of the instructors talked about her concern by saying:

> T1: Instructing a set of strategies definitely worked with upper-intermediate proficiency level students. However, I believe that students with low English proficiency level and their instructors would encounter difficulties in teaching and learning a set of reading strategies. Strategy instruction should be postponed until intermediate level courses.

Another problem indicated by both teachers was the time constraint. As the teachers dedicated a great deal of time and effort to strategy training in class, they stated that extra time should be provided in the syllabus for strategy instruction**.**

During the interviews it became clear that the teachers felt that students should be provided combined strategy instruction not only on reading strategies but also other language skills, such as listening, speaking and writing. Below is how one of the instructors expresses her views on the matter:

> T2: I think combined strategy instruction had a tremendous influence on students' reading comprehension. I realized that the students started making use of strategies in other contexts too. In other words, they were transferring the strategies to

other skills. It is apparent that strategy instruction should be expanded and instructed for all skills.

From the interviews, we can say that the two experimental group teachers reported a large range of positive effects on students and on themselves as instructors. They believe that combined strategy instruction made them more effective as teachers and made their classes and instruction more efficient.

Conclusion

This study explored (a) the effect of combined strategy training on upper-intermediate level students' reading comprehension (b) students' perceptions of combined strategy instruction and (c) participant teachers' experiences and views on combined strategy instruction. The results of the reading pre- and post-tests of the students who received combined strategy instruction revealed a significant increase in students' reading comprehension. Furthermore, the findings of the retrospective think-aloud protocols and the coding revealed the use of strategies during the post-test. The student questionnaires and the interviews with the two experimental group teachers provided an insight into how strategy training affected student performances in reading comprehension.

In the next chapter, the findings of the study and implications for combined strategy training will be discussed. Chapter 5 will also consider limitations of the study and directions for future research.

CHAPTER V: CONCLUSIONS

Introduction

This study investigated the effectiveness of combined reading strategy instruction on reading comprehension, students' perceptions of combined strategy training in reading instruction, and teachers' perceptions of combined reading strategy instruction and their experiences during strategy instruction.

With the purpose of providing answers for the research questions, the required data were gathered through an IELTS reading test which was administered to 73 participant students at Ankara University prior to and after the intervention. In addition, two students from the control group and two from the experimental group verbalized their reading processes for the reading post-test through retrospective think-aloud protocols. A reading strategy perception questionnaire was administered to experimental group students after the four-week combined strategy training. The two experimental group instructors participated in semi-structured interviews after the treatment.

In the following sections of this chapter the findings, pedagogical implications, and limitations of the study are discussed. Finally, suggestions for further studies and overall conclusions are presented.

Findings and Discussion

Effect of Combined Strategy Instruction on Reading Comprehension

The first research question, whether combined reading strategy instruction enhances students' reading comprehension, was answered satisfactorily in the light of

quantitative data gathered from the IELTS reading test which was administered one week before the initiation of the study and also at the end of the four-week treatment. The reading pre- and post-test scores of both control and experimental groups were calculated and compared with each other to see the effect of combined strategy instruction on reading comprehension. The analysis of quantitative data revealed a statistically significant difference between the participants who received strategy instruction and the participants who did not receive any strategy instruction ($p<0.000$). There was a significant increase in the reading post-test scores of the experimental group. The total means of the experimental group test scores improved by 21.7 points, while the total means of the control group test scores improved by 3.5 points. These findings indicate that combined strategy instruction had a positive effect on students' overall reading comprehension of the test passages. The study confirms the findings of similar strategy training studies (Barnett, 1988; Block, 1986; Kern, 1989). The 3.5 point increase in the mean scores of the control group was attributed to the fact that although the control group students did not receive any strategy instruction, they continued their reading courses over the four-week period of the study, and this may have had a positive effect on their reading comprehension.

In order to exclude the possibility that the differences in comprehension gain scores between the experimental and control group students were due merely to pre-existing differences in students' language proficiency level and strategy knowledge, a reading pre-test was administered prior to the study. The results of the pre-test revealed a mean score of 66.9 for the control group and 62 for the experimental group. This difference was not found to be significant ($p<0.144$). Therefore, it can be stated that it is

highly unlikely that differences in reading comprehension for the reading post-test scores were due to the differences in participants' prior knowledge of reading strategies or English language proficiency level.

The results outlined so far indicate that the answer to the first research question is, yes: 'combined reading strategy instruction had a significant effect on upper-intermediate EFL students' reading comprehension scores'. This result supports the claims of scholars who believe that students should be provided with a wide variety of strategies in order to succeed and become strategic readers (Bimmel, 2001; Kern, 1989).

The results of the retrospective think-aloud protocols and the coding also revealed evidence of the reading strategies employed intensively by the experimental group participants during the reading post-test. On the other hand, during the think-aloud protocols, it was observed that the control group students were more attentive to surface structure of the language and mostly relied on bottom-up strategies. The data from the retrospective think-aloud protocols and the coding are in line with how the literature defines proficient readers. Successful readers are active and strategic when they read (Pressley, 2002), whereas unsuccessful readers either do not possess strategy knowledge or rely heavily on bottom-up strategies with little use of top-down strategies (Carrell, 1998a).

The retrospective think-aloud protocols revealed a great deal about students' reading processes on the reading post-test. The two participants from the experimental group used a variety of strategies to comprehend the text. It was observed that they employed both bottom-up and top-down strategies. This finding supports what the literature indicates about proficient readers. In the literature, it is stated that proficient

readers use both top-down and bottom-up strategies interactively in order to facilitate the reading process (Abraham & Vann, 1990; Auerbach & Paxton, 1997; Block, 1992; Grabe & Stoller, 2002). For instance, while guessing the meaning of unknown words they mostly inferred the meaning from the context and sometimes decoded the components of the words for meaning. As the two participants continued reading, they often stopped to summarize what they had just read, trying to understand by restating and paraphrasing some parts of the text. On the other hand, the way the control group participants approached the texts during the think-aloud protocols, was different from the experimental group students. While they were reading, it was observed that vocabulary was a big obstacle to comprehension. They spent more time in trying to work out the meanings of the words. This focus on vocabulary prevented the readers from paying more attention to the overall text to figure out the main points in the text. This approach to the text might be due to the way they learned English. In most of the schools in Turkey, English is taught by following a bottom-up model. Thus, vocabulary is usually taught isolated from the text. Another main difference observed between the experimental and control group participants during the think-aloud protocols was the confidence the experimental group students had in themselves. The self-confidence they displayed during the reading process can be attributed to their knowledge of a wide variety of reading strategies. This is consistent with what the literature reveals about strategy application. A study conducted by Oxford and Nyikos (1989) showed that effective use of appropriate strategies can lead to increased motivation and self-esteem and vice versa. When the control group students came across an obstacle, they began to panic, while the experimental group students regulated their strategy application

accordingly. It is obvious that the knowledge of strategies that students possess plays a critical role in deciding what to do and what not to do.

Teachers' Perceptions

As for the second research question, which is 'what are the perceptions of instructors towards instruction in combined reading strategies', the findings from the interviews with the two experimental group instructors provided fruitful information about strategy instruction and about their experiences during the four-week intervention.

Both the instructors reported that they were aware of reading strategies but they had never taught them explicitly. During the interviews both the participant instructors mentioned the need to first of all train teachers in reading strategies. Participant T1 said that few teachers were aware of the reading strategies and she further claimed that the focus was always on the same restricted number of strategies such as skimming and scanning. Both the instructors suggested that all the teachers should first receive strategy training and then they should teach students the strategies. I also believe that workshops or other training programs should be prepared for the teachers. These training programs will raise awareness of strategy instruction. Through the training programs teachers who are not familiar with the concept of reading strategies may gain knowledge, and teachers who already possess strategy knowledge may gain information on how to make use of them in their classroom instruction, as well as how to train students on strategies.

The participant instructors suggested that a set of reading strategies should be taught explicitly and further indicated that students can improve their reading skills through effective instruction and guidance on strategies. However, the two teachers had conflicting perceptions on combined strategy instruction to lower level groups. T1

indicated that students should be exposed to strategy instruction at lower levels as well. On the other hand, T2 argued that it would not be beneficial to teach strategies to lower-level students. She indicated that students should be equipped with at least intermediate English level proficiency before receiving strategy instruction. She claimed that it would be too demanding to ask students to deal with both language learning and strategies simultaneously. The literature reveals different findings about the effects of strategy instruction at various levels of language proficiency. For example, Walters (2006) conducted a study with 44 ESL students from different proficiency levels. In her study, she used pretest and posttest scores to compare the effectiveness of three different methods - instruction in a step-by-step procedure for inferring meaning from context, instruction in recognizing and interpreting specific context clues, and practicing with cloze exercises - on the skill of inferring from context and reading comprehension. The results showed that instruction in a step-by-step procedure was the most effective in inferring from context, and that this method was as effective as context clue instruction in improving reading comprehension. However, differences were observed between beginner and advanced level students in their reaction to the method of training. It was revealed that beginner level students gained more from the step-by-step instruction, whereas advanced students responded better to instruction in specific context clues. Another study conducted by Ikeda and Takeuchi (2003) revealed that higher proficiency level students benefited more from strategy instruction. In their study, Ikeda and Takeuchi introduced seven reading strategies to 21 EFL students over an eight-week period. They evaluated the effect of students' proficiency level and frequency of

students' strategy use. The results revealed that high proficiency level students' frequency of strategy use increased significantly after the eight-week treatment.

These findings seems to indicate that the advice of the participant teacher about students' language proficiency level and combined strategy instruction should be taken into consideration and be investigated to find out whether combined strategy instruction can be of help in students' reading comprehension. Choosing strategies appropriate for students' proficiency level is a crucial step before starting to teach strategies to low-level students.

The results of the study revealed that both teachers experienced problems in teaching strategies due to time constraints. At Ankara University instructors are provided with a weekly program where there is not much time left to add extra training as they wish. They must not fall behind the suggested program because students take weekly quizzes and they are tested on subjects which are supposed to be covered in that particular week. Therefore, both of the instructors felt the pressure of limited time during the four-week study.

Lack of materials appropriate for strategy instruction was another issue raised by the teachers. It was stated by the instructors that because of the lack of materials available for strategy instruction, teachers will need to spend a lot of time designing materials suitable for the strategy instruction in their classes.

There are several factors stated by the two teachers that should be considered before strategy training: training the teachers in reading strategy instruction, students' proficiency level, and time constraints. There seems to be a need for emphasis in teacher education on the teaching of strategies. Teachers can be taught to teach strategies

effectively and this will lead to improved performance on the part of the students' use of the strategies. A study conducted by Duffy et al. (1987) demonstrated the effectiveness of training teachers. The results of the study indicated that when compared with students of untrained teachers, the students of trained teachers were more informed and aware of specific reading strategies. Substantial teacher preparation is generally required for teachers to become successful at teaching strategies.

To conclude, the concerns expressed during the interviews were about training the teachers, time constraints and students' proficiency level. However, in spite of these concerns the analysis of the data from the interviews revealed that the teachers held favorable perceptions about combined strategy instruction. To restate the answer to the second research question, the teachers' perceptions about the strategy training were positive.

Students' Perceptions

The third research question, which was related to student perceptions about strategy training, has been answered through the questionnaire given to the experimental group students. The first part of the questionnaire revealed that this strategy training program was the first explicit strategy instruction most of the students had ever received. The second part of the questionnaire was designed to obtain information about students' reactions toward the class and the combined strategy instruction. Most of the students' responses indicated that they had very positive experiences during the strategy training. This is in line with what the two experimental group teachers reported about their experiences during the four-week study. They also reported that the strategy instruction program was beneficial for both the students and themselves. The explicit instruction of

strategies was found to be efficient. This finding also confirms what the literature indicates about strategy instruction. Researchers agree that explicit instruction is the most effective way of teaching strategies (Chamot & O'Malley, 1994; Oxford, 2002; Pearson & Fielding, 1991). During explicit strategy instruction, students are encouraged to use strategies and they are provided with opportunities to practice them. The teacher constantly gives feedback on students' strategy use and supports independent strategy use.

Most of the students' responses indicated that reading strategies improved their performances on exams and quizzes. The results of the reading post-test also show that students performed better on the test after the strategy training. There was a significant increase in the post-test mean scores which can be associated with the positive effects of explicit strategy training.

The results of the questions in part 3 of the questionnaire show that the majority of the students indicated that reading strategy instruction enhances readers' ability to process information, promotes students' interest and motivation, and creates lifelong, productive, responsible and autonomous readers. Such results are consistent with what the literature has revealed about reading strategy instruction. Another point that studies report about strategy training is that it develops a wide variety of problem-solving skills (Cohen, 1998). Students' responses to the questionnaire show that in general, they agreed that reading strategies teach them more than one right way to do things.

During the interviews with the teachers, it was reported that strategies encouraged the students to participate in class actively. Students were asked to analyze and reflect on their strategy use. In other words, reading strategy instruction made the

students think about what they read, and caused them to react to it and to evaluate it. Students' answers to the questionnaire are in agreement with what the teachers observed. They stated that strategies lead to improved class participation and made reading an active process.

The responses of the students to the questionnaire indicate that students, in general, displayed positive perceptions about reading strategies. Therefore, the answer to the third question is that the students had positive views about the four-week strategy training they received.

Pedagogical Implications

Many studies in the literature have shown that reading strategies can be taught to students. Moreover, when students learn them, strategies improve students' performance on reading comprehension tasks (Carrell, 1985; Carrell, Pharis & Liberto, 1989; Kern, 1989; Pierson & Fielding, 1991). However, no research has been done that investigates the effectiveness of combined strategy instruction in an EFL reading context. Therefore, the findings of this study are important. They provide evidence that explicit combined strategy instruction improves upper-intermediate level EFL students' ability to comprehend texts.

This study confirms the findings of previous studies in both L1 and L2 reading, which have reported that reading strategy instruction fosters reading comprehension and performance (Anderson, 1991; Barnett, 1988; Block, 1986; Carrell et al., 1989; Kern, 1989; Palincsar & Brown, 1984). However, in order for the strategy training to reach its aims, the recommendations made by scholars should be considered, as this study attempted to do. While studies on L2 reading strategies have focused on the

effectiveness of a limited number of strategies, this study sought to provide information about the effectiveness of combined strategy instruction. Regarding developing strategic readers, Bimmel (2001) stated that:

> ….. reading strategy instruction cannot be limited to the training of separate strategic reading activities, but should contribute to students learning what it means to work strategically when executing reading tasks. (p. 276)

Bimmel further emphasizes that instructing students in separate strategies means that "students are only trained in performing a trick" (p. 276). Students should be provided with a set of strategies, from which they can choose particular strategies to apply in order to achieve their objectives. In other words, students should not be restricted to a limited number of strategies. Teachers should also provide instruction aimed at both the cognitive and metacognitive domains. Thus, students will be able to plan their reading processes, by determining, monitoring, and evaluating their strategy applications.

In order for the reading strategy instruction to be effective, first of all, students must be made familiar with a wide repertoire of reading strategies. Teachers should support and help the students to make their own choices from the wide variety of strategies, according to their individual preferences and styles. The main goal of strategy instruction is not only to practice executing strategic activities but also to develop students' ability to decide which strategy to employ. As the results of this study have revealed, it is important to teach students strategies to become self-reliant and autonomous. It is recommended that strategy instruction should be a part of each lesson as an ongoing process throughout the whole curriculum rather than taught separately

(Chamot & O'Malley, 1994; Grabe & Stoller, 2002). Thus, students will be exposed to a great deal of practice in a long-term program. One of the main aims of teachers should be to make students more aware of strategies and inform them about the value and application of the strategies. Overall, the results of this study reinforce the necessity of including a reading strategy instruction program in upper-intermediate level EFL reading courses. Furthermore, the findings of this study provide pedagogical implications for reading strategy instruction, particularly in designing effective tasks that could facilitate L2 students' reading skills.

One other aspect in strategy training is the materials available for strategy instruction. As lack of relevant materials was one of the issues raised by the teachers, it seems to be a good idea for the materials development office to supplement the coursebook with activities that focus on explicit strategy training**.** Moreover, while deciding on a coursebook for the program a coursebook that provides explicit strategy instruction and practice on reading strategies should be chosen.

Limitations of the Study

Although the findings of this study have revealed the effectiveness of combined strategy instruction, several features need to be considered while explaining the results and generalizing the findings. First of all, the participants of the study were EFL students enrolled in an intensive language program at a university. Thus, the findings are limited to participants with a similar profile. Second, the number of participants involved in the think-aloud protocols was limited to four students and the interviews were conducted with only two experimental group teachers. It is also necessary to find out the perceptions of other teachers, program administrators and materials developers.

Finally, it might be considered to be a limitation that the same test was used as the reading pre- and post-test. However, both the experimental and control groups experienced the same conditions so it is not considered to be a serious limitation.

Suggestions for Further Research

Based on the findings, I can suggest three important areas for further research related to combined strategy instruction. First, as there are contradicting views about combined strategy instruction to lower proficiency level classes, I believe data need to be gathered from varying proficiency levels on combined strategy instruction. This study was limited to the upper-intermediate proficiency level so similar research should be conducted on beginner, elementary and pre-intermediate levels. It would be interesting to see if any difference occurs between the effects of combined strategy instruction when applied to different proficiency level classes.

Second, because this study lasted for only four weeks due to time constraints, a larger study should be carried out to analyze students' performances over a longer period of time with more participating classes and teachers. Furthermore, it is necessary to investigate the long term persistence of the effect of strategy instruction. There is a need to conduct a follow-up study which will determine whether the students keep using the strategies over longer periods of time and to find out the changes that may occur in perceptions or the effect of strategy training.

Thirdly, a study which investigates the effects of combined strategy instruction and frequency of strategy use among students according to gender can be conducted. The gender difference was not considered in this study, but in the literature there are

studies that report differences in female and male strategy use (e.g., Young & Oxford, 1997).

Conclusion

This study has revealed that combined strategy instruction has a significant effect on students' reading comprehension. The findings were further investigated through retrospective think-aloud protocols and by asking the students to report their strategy applications by using the coding system provided. This study has also investigated students' and teachers' perceptions of combined strategy instruction by exploring their experiences during the training period. The results showed that strategy instruction had a positive impact on the students. Findings from the teacher interviews and student questionnaires demonstrated that both the teachers and students were in favor of strategy instruction and thought that strategy training was beneficial.

The results of the study and the pedagogical implications discussed in this chapter might assist curriculum planners, coursebook designers and teachers to improve reading strategy instruction.

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APPENDIX A: QUESTIONNAIRE (ENGLISH VERSION)

Dear Students,

I am currently enrolled in the 2007 MA TEFL Program at Bilkent University. I am conducting a research to investigate the possible effects of combined reading strategy training on reading performance. This study also aims at exploring the perceptions of students on strategy training. If you agree to participate in this study, you will be given the reading strategy questionnaire.

Your responses to the questionnaire items will not have any positive or negative effect on your course grade. All data collected will be kept confidential, and used for scientific purposes. Please read the items carefully and give sincere answers. Your responses will greatly contribute to my study.

If you have any questions about the study and the results, you can contact me at banuarpacioglu@yahoo.com. Thank you for your participation.

E. Banu Arpacıoğlu
MA TEFL Program
Bilkent University, Ankara

I have read and understood the above and agree to participate in this study.

Name:
Signature:

Part I:

Please provide the necessary information below.

1. Have you ever received explicit reading strategy instruction in your previous English language courses?

a. Yes b. No

Part II:

In answering the following 4 questions, please refer to the reading classes you are currently attending and circle the number appropriate for your opinion.

1. Strategy instruction program provided in the reading course was efficient

Strongly agree **strongly disagree**

5 4 3 2 1

2. I was given ample encouragement during the classes to use strategies.

Strongly agree **strongly disagree**

5 4 3 2 1

3. I was given ample opportunities during the classes to use strategies.

Strongly agree **strongly disagree**

5 4 3 2 1

4. I was given ample feedback on my strategy use.

Strongly agree **strongly disagree**

5 4 3 2 1

Part III

Please circle the number appropriate for your opinion.

1. Reading strategies improved my performance on exams and quizzes.

Strongly agree **strongly disagree**

5 4 3 2 1

2. Reading strategy instruction improves readers' ability to process information.

Strongly agree **strongly disagree**

5 4 3 2 1

3. Reading strategies foster readers' interest and motivation in a subject.

Strongly agree **strongly disagree**

5 4 3 2 1

4. Reading strategies enable learners' to become proficient and effective readers.

Strongly agree **strongly disagree**

5 4 3 2 1

5. Reading strategies lead to improved class participation.

Strongly agree **strongly disagree**

5 4 3 2 1

6. Reading strategies make reading an active process.

Strongly agree **strongly disagree**

5 4 3 2 1

7. Reading strategies promote a sense of power for the reader.

Strongly agree **strongly disagree**

5 4 3 2 1

8. Reading strategy instruction creates lifelong productive readers.

Strongly agree **strongly disagree**

5 4 3 2 1

9. Reading strategy instruction creates responsible and autonomous readers.

Strongly agree **strongly disagree**

5 4 3 2 1

10. Reading strategies instruction helps learners develop and use a personal reading process.

Strongly agree **strongly disagree**

5 4 3 2 1

11. Reading strategies teach learners that there is more than one right way to do things.

Strongly agree **strongly disagree**

5 4 3 2 1

APPENDIX B: QUESTIONNAIRE (TURKISH VERSION)

Sevgili Öğrenciler,

Ben halen Bilkent Üniversitesi 2007 MA TEFL programına kayıtlı bir yüksek lisans öğrencisiyim. Birleşik strateji eğitiminin, okuduğunu anlama yeteneği üzerindeki etkilerini araştıran bir çalışma yapmaktayım. Bu çalışma aynı zamanda öğrencilerin görüşlerini de incelemektedir.

Bu anket sorularına vereceğiniz cevaplar ders notlarınıza olumlu yada olumsuz hiçbir şekilde etki etmeyecektir. Elde edilen veriler sadece bilimsel amaçlı kullanılacaktır. Güvenilir veri elde edebilmek için sorulara samimi cevaplar vermeniz çok önemlidir.

Bu çalışmanın sonuçları ile ilgili sorularınız olursa bana banuarpacioglu@yahoo.com adresinden ulaşabilirsiniz. Katkılarınız için teşekkür ederim.

E. Banu Arpacıoğlu
MA TEFL Programı
Bilkent Üniversitesi,
Ankara

Yukarıda yazanları okuyup, anladım ve bu çalışmaya katılmayı kabul ediyorum.

İsim ve Soyad:
İmza:

Bu anketi cevaplarken işaretleyeceğiniz numaralar;
5: kesinlikle katılıyorum
4: katılıyorum
3: kararsızım
2 katılmıyorum
1: kesinlikle katılmıyorum, anlamına gelmektedir.

Bölüm I

Lütfen size uygun olan cevabı işaretleyiniz.

1. Daha önce katılmış olduğunuz herhangi bir İngilizce öğrenim programında okuma stratejileri eğitimini doğrudan aldınız mı?
   a. Evet b. Hayır

Bölüm II
Aşağıdaki dört soruyu, lütfen şu anda katılmakta olduğunuz okuma eğitimi dersleriniz için uygun olan seçeneği yuvarlak içine alarak cevaplayınız.

1. Okuma eğitimi derslerinde sağlanan strateji eğitimi verimliydi.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

2. Derslerde stratejileri kullanmam için çokça teşvik edildim.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

3. Derslerde stratejileri kullanmam için çokça fırsat sağlandı.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

4. Strateji uygulamalarım hakkında çokça geribildirim aldım.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

Bölüm III

Lütfen görüşlerinize uygun olan sayıyı yuvarlak içine alınız.

1. Okuma stratejileri sınav ve mini sınavlardaki performansımı artırdı.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

2. Okuma stratejileri okuyucunun okuduğunu anlayıp, işleme yeteneğini artırır.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

3. Okuma stratejileri okuyucunun konuya ilgisini ve motivasyonunu artırır.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

4. Okuma stratejileri öğrencilerin etkili ve usta okuyucular olmasını sağlar.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

5. Okuma stratejileri yoğun ve ileri düzeyde derse katılımı sağlar.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

6. Okuma stratejileri okuma sürecini aktif bir sürece dönüştürür.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

7. Okuma stratejileri güç sahibi olma duygusunu artırır.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

8. Okuma stratejileri eğitimi, ömür boyu verimli okuyucular yaratır.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

9. Okuma stratejileri eğitimi, sorumlu, bağımsız ve öz-düzenleyici okuyucular yaratır.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

10. Okuma stratejileri eğitimi, öğrencilerin kendilerine özgü okuma yöntemi geliştirmelerine yardımcı olur.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

11. Okuma stratejileri, öğrencilere bazı şeyleri yapmanın birden fazla doğru yolu olduğunu öğretir.

Kesinlikle katılıyorum				Kesinlikle katılmıyorum
5	4	3	2	1

APPENDIX C: SAMPLE TRANSCRIPT FROM INSTRUCTOR INTERVIEWS.

R: Researcher

PT: Participant Teacher

R: First of all, thank you very much for taking part in this study and in the interview.

PT: .....

R: Well, I have a few questions about reading strategy instruction. First of all, what do you think about the four-week combined strategy program?

PT: I think strategy instruction was valuable and beneficial for me as a teacher and for my students, and I am planning to keep on providing strategy instruction for the following educational year.

R: Had you ever taught strategies before?

PT: To be honest, I had never taught strategies explicitly before in my classes. However, some of the coursebooks I have used in my classes provided strategy training implicitly. After having taught strategies explicitly, I now believe that explicit strategy instruction is an essential component of language classes.

R: So, you think that teachers should teach strategies explicitly in their classes?

PT: Yes, teaching strategies explicitly enables the learners to become aware of what helps them to learn the target language most efficiently. This four-week strategy training program made me realize that it is very important to teach strategies explicitly as it is a good way to demonstrate and explain to the students how beneficial and valuable strategies are in their reading processes. Unless strategies are explained, modeled or reinforced by the teacher, students may not be aware that they are using strategies at all. However, I must say that first we, teachers, should be trained on strategies and strategy

instruction through seminars, workshops etc. Teachers are not trained to teach strategies. More effort needs to be put in training teachers to prepare them for teaching strategies. So, the curriculum office should be informed about the necessity of strategy training in classes.

R: Do you think strategy instruction should be integrated into the regular language curriculum.

PT: Yes, definitely. If the institution develops curriculum which provides a rationale of strategy use by implementing strategy instruction in an organized way across different levels, then it will be possible to provide strategy instruction consistently to the students at all levels.

R: Do you think this four-week combined strategy instruction was beneficial for your students?

PT: It is obvious from their test results that they benefited much from this program.

R: What can you say about the impact of strategy training on your students and their reading comprehension.

PT: I observed in my classes that student involvement in learning improved and students became more motivated and active readers. They are more positive about reading now. Strategies helped my students to become efficient readers. For example, before the strategy instruction when they came across unfamiliar words they used to either ask me the meaning of the words or ask their friends sitting near them. They thought that it was only possible to comprehend the text only if they knew the meaning of every single word in the text. However, whenever they encounter an unfamiliar word now they try to find a way to deal with it. They even tell me not to give them the

meaning of the word as they want to see whether they can guess the meaning by using contextual clues. I believe that the mini discussions we conducted while checking students' strategy use for their homework every week created independent readers. The students eventually became aware of their own thinking and learning approaches, they were able to identify what a text entailed and arrange the strategies that met the demands of the text. Strategy instruction created autonomous readers and I believe the role of the teacher is also very important at this point. It's the teacher's responsibility to show the students how valuable strategies are in their success and improvement.

R: What do you think of the amount of strategies you instructed during this four-week period?

PT: I think my students did not have any trouble dealing with the amount of strategies provided. I think this kind of strategy instruction would be appropriate for all proficiency level students. Combined strategy instruction was effective in my class. I think it had a tremendous influence on students' reading comprehension. I realized that the students started making use of strategies in other contexts too. In other words, they were transferring the strategies to other skills. It is apparent that strategy instruction should be expanded and instructed for all skills.

R: Have you encountered any problems in your class during the four-week strategy instruction?

PT: No, not really. Limited time was a little problem. I wish we had had more time to spend on strategy instruction. As you also know, our weekly programs are really heavy and I sometimes had the fear of falling behind the program. ……..

As I want to continue teaching strategies to my students, I believe lack of materials providing strategy instruction may be a problem. A few language textbooks provide strategy-embedded activities and explicit explanations of the benefits and applications of the strategies they address. I believe such coursebooks should be chosen by my institution to be carried out in our classes. One advantage of using textbooks with explicit strategy training is that students do not need extracurricular training. The textbooks reinforce strategy use across both tasks and skills, and encourage students to continue applying them on their own.

APPENDIX D: LESSON PLAN

Class level: Upper-intermediate
Language: EFL
Language Objectives: Read and comprehend a text
Strategies: Using background knowledge for prediction
Confirming and disconfirming predictions
Summarizing with own words
Strategy Objectives:
Use prediction, confirming/disconfirming and summarizing to prepare for and check understanding of a reading text.
Review strategies:
Using background information
Overviewing the text (read the title and headings to understand what the text is about, look at the diagrams, tables, graphs and illustrations)

Procedures

Preparation:

- Begin the lesson by discussing about reading different genres such as comedy, romance, mystery, horror etc. Discuss how genres and students' knowledge of them influence their expectations when reading.

Presentation:

- Present and demonstrate the strategy 'prediction' by modeling it in a reading text.
- Name and define the strategy and explain why and when it is useful.

"When I read, I think about what I am going to be reading before I start. For example, if I am going to be reading a mystery, I think about what kinds of characters and ideas might be in the story. There are going to be good guys and bad guys. The good guy may be a detective. There is going to be some kind of problem. The bad guy has probably caused some sort of trouble. The good guy is going to try to solve the mystery, end in the end he will succeed. The bad guy will eventually get punishment. Usually, there is some romantic involvement with the good guy that also has a happy ending. You can make predictions based on your background knowledge or by looking at the title, heading, pictures etc."

- Ask the students to comment on your predictions and whether they would make different predictions. Explain the strategy rationale. Explain that good readers make predictions, or guesses, about what will happen in a story. Explain making predictions can help people make decisions, solve problems, and learn new information. Emphasize that making predictions is more important than whether the prediction is right, or confirmed.

- "Prediction is a strategy we use before we start reading so that we can think about what we are going to read. It is useful because it helps the reader get ready and feel like s/he is part of the story.

Practice 1

- Tell the students that they are going to read a tale. Ask them to overview the text to make general predictions about the tale they will read.

Presentation 2

- Before students begin reading, introduce the strategy *confirming/disconfirming prediction* so students can follow through on their predictions and evaluate their comprehension.

Practice 2

- Have students read the text. Remind them to make, revise, and confirm predictions as they read. Have students think about the prediction they made before reading. Invite them to share whether they confirmed, revised, or made a new prediction. Encourage them to continue to make, revise, and/or confirm predictions as they read the rest of the story.

- Assure students that inaccurate predictions are not wrong answers. They are just a way of helping them think about and understand a story.

Presentation 3

- Explain the strategy *summarizing.*

"Confirming/disconfirming predictions can be done by summarizing what you have read. By restating the main ideas of what you read, you can decide how well you understood and can help yourself remember the information"

Practice 3

"Read the story. After you have finished reading**,** complete the following chart by writing summaries of what actually happened in the beginning, middle, and end of the story"

	PREDICTIONS BEFORE READING	SUMMARIES AFTER READING	CONFIRMING (HOW ACCURATE WERE THEY?)
IN THE BEGINNING			
IN THE MIDDLE			
IN THE END			

Evaluation

- Ask students to share their predictions and summaries of the tale.

"Did your predictions match your summaries?"
"If there were differences, why do you think this happened?"
"Do you feel you understood the story?"
"Do you think the strategies helped your comprehension of the story?"
"Would you use the strategies again or differently?"

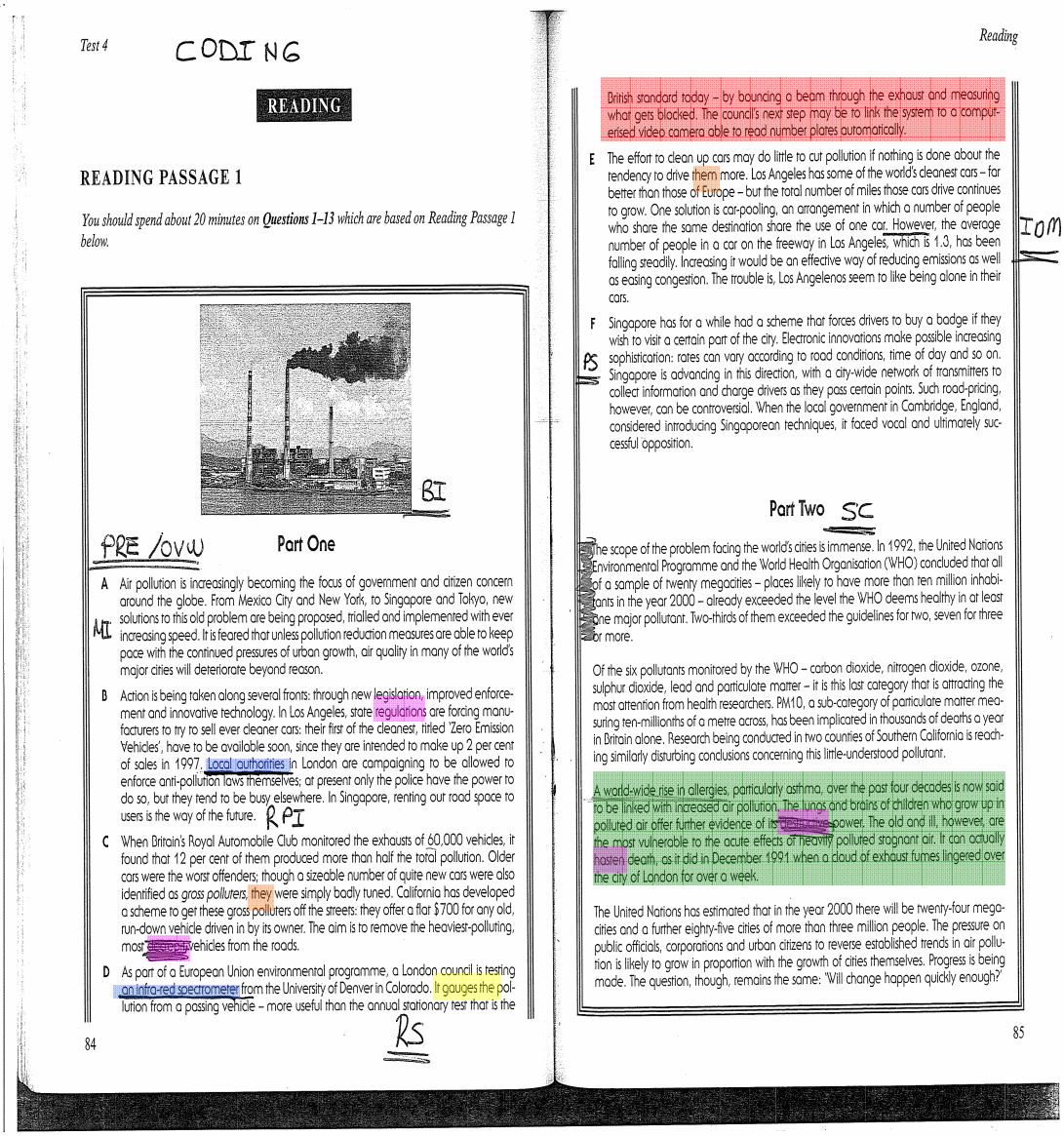
Expansion

As a homework assignment, have students apply the strategies to another text. The next lesson, have a mini discussion on their strategy application while checking the homework.

APPENDIX E: CODING SCHEME

Strategy	Code/Color
Using background knowledge for prediction	Blue
Guessing about the meaning of unknown words using clues from the text	Pink
Summarizing with own words	Green
Questioning the text	Red
Confirming and disconfirming predictions	Yellow
Identifying cohesive elements and determining what they refer to (pronouns etc.)	Orange
Creating pre-reading expectations	PRE
Overviewing the text (read the title and headings to understand what the text is about, look at the diagrams, tables, graphs and illustrations)	OVW
Understanding the relationship in the texts (cause/effect, addition, compare/contrast)	UR
Recalling background information	BI
Identifying the organizational pattern of the text to provide framework for their comprehension	OP
Identifying the topic sentences of the paragraphs and the supporting details	MI
Predicting the subsequent information in the text	PS
Identifying discourse markers (e.g. therefore, however) to clarify relationships among text components.	IDM
Semantic mapping (identifying key words, phrases and arranging them).	SM
Skipping unimportant details.	SD
Setting a purpose for reading.	SP
Skimming through the texts, looking at subheadings and graphics in order to get a general idea of what the text will be about.	S
Scan for specific information.	SC
Backtracking/ referring back to the previous sentences.	RPI
Evaluating the text	ET
Restatement/ trying to rephrase difficult texts in simpler terms.	RS
Decoding the components of the words for meaning.	DC

APPENDIX F: SAMPLE CODING



Test 4

CODING

READING

READING PASSAGE 1

You should spend about 20 minutes on ***Questions 1–13*** *which are based on Reading Passage 1 below.*

BI

PRE/OVW

Part One

A Air pollution is increasingly becoming the focus of government and citizen concern around the globe. From Mexico City and New York, to Singapore and Tokyo, new solutions to this old problem are being proposed, trialled and implemented with ever increasing speed. It is feared that unless pollution reduction measures are able to keep pace with the continued pressures of urban growth, air quality in many of the world's major cities will deteriorate beyond reason.

ML

B Action is being taken along several fronts: through new legislation, improved enforcement and innovative technology. In Los Angeles, state regulations are forcing manufacturers to try to sell ever cleaner cars: their first of the cleanest, titled 'Zero Emission Vehicles', have to be available soon, since they are intended to make up 2 per cent of sales in 1997. Local authorities in London are campaigning to be allowed to enforce anti-pollution laws themselves; at present only the police have the power to do so, but they tend to be busy elsewhere. In Singapore, renting out road space to users is the way of the future.

RPI

C When Britain's Royal Automobile Club monitored the exhausts of 60,000 vehicles, it found that 12 per cent of them produced more than half the total pollution. Older cars were the worst offenders; though a sizeable number of quite new cars were also identified as *gross polluters*, they were simply badly tuned. California has developed a scheme to get these gross polluters off the streets: they offer a flat $700 for any old, run-down vehicle driven in by its owner. The aim is to remove the heaviest-polluting, most [illegible] vehicles from the roads.

D As part of a European Union environmental programme, a London council is testing an infra-red spectrometer from the University of Denver in Colorado. It gauges the pollution from a passing vehicle – more useful than the annual stationary test that is the

RS

British standard today – by bouncing a beam through the exhaust and measuring what gets blocked. The council's next step may be to link the system to a computerised video camera able to read number plates automatically.

E The effort to clean up cars may do little to cut pollution if nothing is done about the tendency to drive them more. Los Angeles has some of the world's cleanest cars – far better than those of Europe – but the total number of miles those cars drive continues to grow. One solution is car-pooling, an arrangement in which a number of people who share the same destination share the use of one car. However, the average number of people in a car on the freeway in Los Angeles, which is 1.3, has been falling steadily. Increasing it would be an effective way of reducing emissions as well as easing congestion. The trouble is, Los Angelenos seem to like being alone in their cars.

IOM

F Singapore has for a while had a scheme that forces drivers to buy a badge if they wish to visit a certain part of the city. Electronic innovations make possible increasing sophistication: rates can vary according to road conditions, time of day and so on. Singapore is advancing in this direction, with a city-wide network of transmitters to collect information and charge drivers as they pass certain points. Such road-pricing, however, can be controversial. When the local government in Cambridge, England, considered introducing Singaporean techniques, it faced vocal and ultimately successful opposition.

MS

Part Two

SC

The scope of the problem facing the world's cities is immense. In 1992, the United Nations Environmental Programme and the World Health Organisation (WHO) concluded that all of a sample of twenty megacities – places likely to have more than ten million inhabitants in the year 2000 – already exceeded the level the WHO deems healthy in at least one major pollutant. Two-thirds of them exceeded the guidelines for two, seven for three or more.

Of the six pollutants monitored by the WHO – carbon dioxide, nitrogen dioxide, ozone, sulphur dioxide, lead and particulate matter – it is this last category that is attracting the most attention from health researchers. PM10, a sub-category of particulate matter measuring ten-millionths of a metre across, has been implicated in thousands of deaths a year in Britain alone. Research being conducted in two counties of Southern California is reaching similarly disturbing conclusions concerning this little-understood pollutant.

A world-wide rise in allergies, particularly asthma, over the past four decades is now said to be linked with increased air pollution. The lungs and brains of children who grow up in polluted air offer further evidence of its [illegible] power. The old and ill, however, are the most vulnerable to the acute effects of heavily polluted stagnant air. It can actually hasten death, as it did in December 1991 when a cloud of exhaust fumes lingered over the city of London for over a week.

The United Nations has estimated that in the year 2000 there will be twenty-four megacities and a further eighty-five cities of more than three million people. The pressure on public officials, corporations and urban citizens to reverse established trends in air pollution is likely to grow in proportion with the growth of cities themselves. Progress is being made. The question, though, remains the same: 'Will change happen quickly enough?'