

Chapter Two

Literature Review

2.1 Coherence and Cohesion

The quest for the coherence of discourse has aroused enthusiastic discussion among scholars and, due to the abstract nature of coherence, has led these scholars along different paths. One direction has been to search for coherence in the text itself. According to Halliday and Hasan (1976), coherence, or in their term “texture”, is the combination of semantic configurations of two different kinds: register and cohesion. Register refers to the variety of language that is appropriate for the situation of the speech event. Cohesion, referring to the semantic relations in a text, is in fact the main concern and central focus of Halliday and Hasan’s discussion of coherence. According to Halliday and Hasan, it is cohesion that makes the text cohere. A well-formed text is, therefore, one that is held together by different cohesive devices manifested on the textual surface. From Halliday and Hasan’s (1976) perspective, coherence of a text refers to a kind of semantic “melding” of the text into connected discourse through the effective use of linguistic devices; that is, a coherent text contains what are generally referred to as text-forming devices, which include reference, substitution, ellipsis, conjunction and lexical cohesion. These text-forming devices are words or phrases that enable the writer or speaker to establish relationships across sentence or utterance boundaries, and therefore help to tie a sequence of sentences together, so that a sense of unity is created and these sentences are understood as a text. When a native speaker reads a text, s/he usually knows whether this passage is a collection of unrelated sentences, or whether it forms a unified whole. What makes this difference is the property of coherence, as partly manifested in the cohesive relations among the parts of the text through the so-called cohesive devices. To Halliday and Hasan, ‘cohesive

ties between sentences stand out more clearly because they are the ONLY source of texture' (1976, p. 9); in other words, cohesive devices are the regular means to express the coherence of a text. Cohesion, though not a sufficient condition for the coherence of a text, is a signal for the establishment of cohesive relations and thus contributes to the coherence of a text. That is, cohesion is one manifestation of coherence, which means that a coherent text generally contains such cohesive devices as reference, substitution, ellipsis, conjunction and lexical cohesion.

Although it is generally acknowledged that cohesion exists within a text and is not equal to coherence, it is no easy task to give them straightforward definitions or make a clear-cut distinction between them. One factor that causes discrepancy, according to Stoddard (1991), is whether these concepts are linguistically determined or contextually determined. Eiler (1983, cited from Stoddard 1990:13), for instance, describes cohesion as an evaluative measure by which a text is judged to be “a good or bad text...a mediocre or highly successful text” (p.169). It seems that Eiler regards cohesion contextually as an aid in literary criticism rather than as a linguistic component. In Halliday and Hasan (1976), which contains the most comprehensive description and analysis of cohesion, however, cohesion is considered an observable linguistic phenomenon and can be viewed as an index to coherence. To Halliday and Hasan (1976), the concept of cohesion is a semantic one referring to “relations of meaning that exist within the text” (p.4), that is, a semantic relation between two elements, the presupposing and the presupposed respectively, in which the comprehension of the presupposing item depends on the presupposed one, in a way that one element cannot be effectively decoded without recourse to its presupposition. When this happens, a relation of cohesion is established, and the two elements, the presupposing and the presupposed, are thereby integrated into a text, as illustrated in the example below:

[1] Wash and core six cooking apples. Put **them** into a fireproof dish.

(Halliday and Hasan, 1976:2)

In [1], *them* in the second sentence refers back to the *six cooking apples* in the first sentence. That is, the item ‘them’, the presupposing item, is dependent on another item in the text, ‘six cooking apples’, the presupposed, for interpretation. The ‘them’ has the anaphoric function and thereby gives cohesion to the two sentences, and a unity of meaning in the context is fulfilled. That is why one interprets them as a whole. The relationship between ‘them’ and ‘six cooking apples’ describes a cohesive tie, which refers to the linguistic form that a presupposing item takes, in this case, a pronoun.

In Halliday and Hasan’s view (1976), a text is “a unit of language in use” (p.1)—a passage, spoken or written, of any length, that forms a unified whole, creating a sense of unity rather than consisting of only a collection of unrelated sentences. It is a semantic unit, realized by or encoded in sentences, manifested in meaning rather than in form. The sentences of a text are substantively related to each other by cohesion. Within a text, the interpretation of each sentence depends on its context, namely, the environment in which it occurs, inclusive of its cohesive relations with other sentences, before it or after it. Thus, once the sequence of the sentences is disturbed, the meaning of the text is surely to be distorted or even radically altered. As Halliday and Hasan (1976) round it up:

“Cohesion, therefore, is part of the text-forming component in the linguistic system. It is the means whereby elements that are structurally unrelated to one another are linked together, through the dependence of one on the other for its interpretation. The resources that make up the cohesive potential are part of the total meaning potential of the language, having a kind of catalytic function in the sense that, without cohesion, the remainder of the semantic system cannot be effectively activated at all.” (pp. 27-8)

Halliday and Hasan (1976) identify five general categories of cohesion in text:

reference, substitution, ellipsis, conjunction, and lexical cohesion, which constitute the basis of the present study and will be thoroughly discussed in the following section (2.2).

Reinhart (1980) also sees cohesion as evidenced linguistically. For Reinhart, coherence involves three conditions: connectedness, consistency and relevance. Connectedness requires that the sentences of the text be formally connected, when each adjacent pair of its sentences is either 1) referentially linked or 2) linked by a semantic sentence connector. Consistency is a semantic condition requiring that each sentence be logically consistent with its previous sentence. Relevance is a pragmatic condition that restricts not only the relations between sentences, but also the relations between the sentences and an underlying discourse topic, or theme, as well as their relations with the context of the utterance. Cohesion, in Reinhart's view, is still a necessary though insufficient condition for coherence.

On another path along which the meaning of cohesion and coherence is pursued, however, other researchers, on the basis of schema-theoretical models, claim that cohesion does not lie in the linguistic surface of the text so much as in the mental process of the reader (Carrell, 1982; Morgan & Sellner, 1980; Nunan, 1993; Steffensen, 1981; Stoddard, 1991). Schema theory maintains that processing a text is an interactive process between the text and the prior background knowledge or memory schemata of the listener or reader. In the schema-theoretical view of text processing, what is important is not only the text, its structure and content, but what the reader or listener does with the text. That is, a text cannot be considered separately from the reader; thus, coherence requires successful interaction between the reader and the discourse to be processed. According to this view, the degree to which a reader grasps the intended meaning and underlying structure from text (and therefore finds it coherent) depends, to a large extent, upon whether the reader-selected

schemata are consistent with the text (Johns, 1986). These schemata are grounded in the reader's prior knowledge, both of the content to be introduced and the form it takes. As the reader processes the text, these schemata are modified to establish consistency with text structure or content, for reading is a process of continuous interpretation.

In the light of schema-theoretical views of reading process, Carrell (1982) regards cohesion and coherence as "an interactive process between the text and the reader" (p.470). Carrell criticizes Halliday and Hasan's concept of cohesion as being incapable of accounting for textual coherence because it fails to take the contributions of the text's reader into consideration. Carrell (1982) asserts that text cohesion is not necessarily a textual property that is manifested through grammatical or lexical ties, but rather that cohesion is an outcome of coherence when readers are able to make sense out of the text through a mental schema that is retrieved from their prior knowledge. Carrell (1982) gives an example to illustrate this:

[2] The picnic was ruined. No one remembered to bring a corkscrew.

(p.484)

This mini-text coheres, Carrell maintains, not because there is a necessary linguistic lexical cohesive tie between *picnic* and *corkscrew*, but rather because we can access a familiar schema for interpreting it; that is, picnics and corkscrews go together naturally. For anyone who cannot access such a schema, the text will fail to cohere. The illusion of lexical cohesion is created by the text's coherence.

Coming from the schema-theoretical orientation, Morgan and Sellner (1980) also argue that it is a mistake to construe cohesive ties as cause rather than effect. They argue that in Halliday and Hasan's (1976:2) example: "*Wash and core six cooking apples. Put **them** into a fireproof dish,*" it is precisely "because we assume the text coherent that we infer that *them* is intended to refer to the apples." (1980:180). This is

especially true with lexical cohesion. Obviously, in Morgan and Sellner's view, a text containing these lexical items will likely be coherent since their use is indicative of a common overall topic. As Morgan and Sellner (1980) claim in the following quote, coherence of a text is a matter of content that happens to have linguistic consequences:

One would expect frequent mention of words like *Churchill, he, him, his*, and so on [in a coherent biography of Churchill]. The source of coherence would lie in the content, and the repeated occurrences of certain words would be the consequence of content coherence, not something that was a source of coherence. (p.179)

Steffensen (1981) studied the interactive effects of both cohesive ties and cultural background knowledge on readers' processing of short prose texts. It was found that when readers were exposed to texts describing aspects of culture that was foreign to them, there was a loss of textual cohesion and a breakdown in comprehension arose. Steffensen argues that textual cohesion represents only a potential that can be fully realized only when a reader appropriately identifies the schema underlying a text. If a reader does not have, or fails to access, the appropriate background schema underlying the text, all the cohesive ties in the world won't help that text cohere for that reader.

Other researchers also hold that coherence is not only text-based with cohesive manifestations but also reader-based with readers exercising their knowledge of the world as well as that of the language. van den Broek (1990, in Hellman 1995:195) argues that coherence is "the result of a complex problem-solving process in which the reader infers relations among the ideas, events and states that are described in the text." (p. 175). Stoddard (1991) maintains that it is the reader who ultimately determines whether writers have succeeded in giving "sufficient, interpretable clues to construct cohesive ties" (p.17). Linguistic signals indicate no more than the potential

for cohesion until readers recognize the intended cohesive ties. Since readers interpret written texts in different ways, cohesion cannot be said to exist on the printed page that never changes. If cohesive elements exist in the physical text and a reader does not interpret them, for whatever reason, cohesion cannot be said to exist at that point for that reader even though another reader may well make a suitable connection and judge it cohesive. Nunan (1993) also believes that understanding a text involves not only formal text-forming devices such as cohesion, but also “using our background knowledge and our knowledge of context so as to understand the functions of individual sentences and utterances within the discourse.” (p.96). In Nunan’s (1993) view, interpreting a text, and thus establishing coherence, is a matter of readers using their linguistic knowledge to relate the discourse world to people, objects, events and states of affairs beyond the text itself. Hellman (1995) also claims that coherence is “the result of discourse processing... a goal that is actively strived for in processing” (p.195).

Despite the emphasis of the reader’s role in interpreting a text, some researchers assert that the value of awareness of cohesive devices in the comprehension of a text still cannot be denied. Rogers (1974) maintains that cohesive devices are often used and seen as one of the indices to coherence of a text, and that an awareness of cohesive devices as signals of relationships between ideas is usually helpful, if not vital, to intelligent reading and intelligible speaking. Though arguing against the idea that cohesion creates coherence and for the proposition that cohesion is at most the effect of coherence, Carrell (1982) makes it clear that there’s still something worthwhile about cohesion studies. After all, the text represents what the writer wishes to convey. Staddord (1991) holds that a reader perceives certain meaning relationships triggered by the physical text and depends at least in part on explicit or implicit syntactic signals, i.e. cohesive devices, for comprehension. Nunan (1993),

though claiming that any piece of language is ultimately interpretable with reference to extra-linguistic context, also opposes the idea that the language itself is irrelevant or unnecessary. Nunan explains that coherence is the process that the reader makes sense out of the text, but “the ability to recognize explicit cohesive relationship enhances comprehension, especially when the text concerns a topic that is not familiar to the reader” (p.64). Therefore, it is suggested that teachers have an obligation to teach cohesive devices comprehensively, so that both the readers and cohesive elements in text are taken into account.

Some experimental studies also demonstrate the importance of cohesive ties in the comprehension of a text, and therefore, imply the value and necessity of explicit instruction of cohesive devices. Chapman (1982) claims that the perception of cohesion is a significant factor in successful reading performance. His research shows that pupils having high scores on standardized reading tests were also most able to perceive cohesive relationships in texts. Nunan (1982, in Nunan 1993:109) also found a high correlation between general reading ability measured by a standardized reading test and the ability of secondary pupils to identify cohesive relationships in secondary school texts.

Bridge and Winograd (1982) employed the think-aloud technique to investigate readers’ awareness of the cohesive relationships existing within a text. The participants, were given a passage with cloze deletions, which involved three types of cohesive ties—referential ties, conjunctive ties, and lexically related ties. It was found that the above-average participants demonstrated better awareness of the cohesive relationships in text, and that there was a difference in the difficulty level of the three types of cohesive ties. Both good and poor readers found the conjunctive items significantly more difficult than either the referential or lexical ties. Based on their findings, Bridge and Winograd urged teachers to be aware that students have

difficulty comprehending conjunctive relationships and to design proper instruction to help their students overcome these problems. Gardner (1983) also found logical conjunctives to be consistently more difficult than other types of cohesion.

Wishart and Smith (1983) investigated the perception of logical connectives by secondary students in two types of texts—history texts and texts on everyday topics. They found that the relationships in the history texts were significantly more difficult for their participants to identify than those in the everyday texts. They conclude, therefore, that if readers are familiar with the content of a text, they can use their background knowledge to comprehend the logical relationships, whether or not these are explicitly marked; if the subject matter itself is unfamiliar, then the explicit markers may facilitate comprehension.

McCarthy (1991) comments that matters of cohesion and cohesive devices usually play an important role in English texts, and that they need to be explicitly taught in L2 reading and writing instruction. He points out that demonstrative pronouns and nouns associated with enumeration and causative/resultative relationships of ideas in text require special attention from L2 teachers and learners. McCarthy also reports that many NNSs have difficulty understanding how cohesive and logical ties are constructed in English text, and that L2 instruction needs to address the lexical means of marking causative and resultative relationships, which learners might find confusing.

Chen (1991) investigated whether college-level Taiwanese students had weakness in perceiving cohesion, and found the answer to be positive. It was also found that perception of cohesion was associated with language proficiency: the less proficient a student was, the more serious the weakness was in perceiving cohesion. Chen, therefore, urged EFL teachers to be aware of such weaknesses in their students and recognize the importance of teaching cohesion comprehension. Besides, unlike

the results of Bridge and Winograd (1982) and Gardner (1983) that conjunctions are more difficult than other types of cohesion, Chen's study suggests that lexical cohesion is more difficult to perceive for Taiwanese EFL learners.

Nunan (1993) concludes, after a review of related studies, that the ability to perceive cohesive relationships across sentence boundaries is an important skill that students need to acquire if they are to succeed in comprehending the academic discourse of the classroom. In recognition of the value awareness of cohesive devices has in the comprehension of a text, Nunan strongly recommends the instruction of cohesive devices, especially to ESL students.

Studies of coherence and the use of cohesion devices in ESL writing also reveal that ESL writers of English use coherence and cohesion conventions differently from native-speakers (Chen, 2001; Hinds, 1990; Scollon and Scollon, 1995), indicating that other languages do not use cohesive devices in the same way as English does. For example, in a study of Japanese, Korean, Chinese, and Thai writing, Hinds (1990) found that the samples he examined had a "delayed introduction of purpose" and a quasi-inductive style that "has the undesirable effect of making the essay appear incoherent to the English-speaking reader" (p. 98). Hinds maintains that the defined coherence or incoherence of a text is established through the fit between the knowledge and background experience of the reader, and the organization, content, and argument of the text. Thus, readers of different rhetoric systems from the text would be likely to encounter comprehension difficulties. Scollon and Scollon (1995) also note that the ways in which speakers of Korean and Japanese employ coordinators, such as *and* and *but* in English, often result in confusing constructions when coordinators are employed in contexts where other types of cohesive devices are expected. In Chen's (2001) study, Taiwanese children used significantly fewer English cohesive ties than native speakers of English, and Chen concludes that use of

linguistic devices for discourse cohesion in English poses great difficulty for Taiwanese EFL learners. For example, the manifestation of references in English and Mandarin Chinese is different and can result in Taiwanese students' inability to detect references as significant cohesion in reading comprehension. Therefore, Chen proposes that EFL teachers teach cohesive devices explicitly to activate students' awareness of the importance and manifestation of cohesion in English.

There is also research on the effect of explicit instruction of cohesive devices on reading comprehension. Swales (1990) studied the organization and use of coherence devices in the introductions to research papers and found that teaching ESL graduate students global coherence strategies helped them compensate for difficulties at the local level, particularly for ESL students who were neither familiar nor comfortable with the conventions and expectations of narrative and/or expressive writing. Wang (1998), which took Halliday and Hasan's model of text analysis as a theoretical framework, evaluated the effect of the instruction of text-forming devices on Chinese students' reading comprehension at college level. The results indicate that the experiment group, which received the training of text cohesion, made more improvement than the control group in the posttest.

To sum up, the review on coherence and cohesion in this section reveals that cohesion, though not a sufficient component of coherence, contributes to the coherence of the text, and that awareness of cohesive devices facilitates reading comprehension. Therefore, it is highly recommended that instruction of cohesive devices be included in ESL curriculum to enhance reading comprehension. The effect of such an instruction is proved to be positive in some studies.

2.2 Halliday and Hasan's Model of Cohesion

The present study adopts Halliday and Hasan's (1976) model of cohesive devices for the instruction of cohesion (see Appendix A—Part Two). In addition, 'tense &

aspect', which de Beaugrande & Dressler (1981) claim to signal relationships, is also added as a cohesive device. Furthermore, a list of cohesive devices, taken from Chang (1997) with some items from Liang (1997), is used as a detailed introduction of cohesion (also see Appendix A—Part Two).

Halliday and Hasan (1976) identify five general categories of cohesion in text: reference, substitution, ellipsis, conjunction, and lexical cohesion. Reference, substitution and ellipsis are forms of cohesion realized through grammar, involving closed systems: simple choices of presence or absence, and therefore grammatical. Lexical cohesion, on the other hand, involves a kind of option that is open-ended, manifested through the lexicon, while conjunction is on the bordering of the grammatical and lexical, because “the set of conjunctive elements can probably be interpreted grammatically in terms of systems, but such an interpretation would be fairly complex, and some conjunctive expressions involve lexical selection as well” (Halliday and Hasan, 1976: 303-4).

Reference describes ties that refer backwards (anaphora) or forwards (cataphora) in a text, or ties that occur outside the text (exophora). Both anaphora and cataphora are endophoric, referring to an element in the text itself, while exophora refers to an item outside the text. In Halliday and Hasan's view, exphoric reference, though contributing to the creation of text by linking the language with the context of situation outside of the text, is not cohesive because it does not directly lead to the integration of one part of the text with another. The cohesion of reference, signaling that some element of the text is to be retrieved from elsewhere, consists in the semantic continuity of reference. That is, the referential meaning, “the identity of the particular thing or class of things that is being referred to”(Halliday & Hasan, 1976:31), is to be retained. Example [2] is an illustration:

[2] Three blind mice, three blind mice. See how they run! See how they run.

(Halliday and Hasan, 1976:31)

In the second sentence in [2], *they* means not simply ‘three blind mice’ but ‘the same’ three blind mice that are mentioned in the first sentence. Thus, the cohesion between these two sentences is established, and sense is then achieved.

Referential ties are further subcategorized into personal, demonstrative, and comparative ties (Halliday and Hasan, 1976:37). Personal reference, reference by means of function in the speech situation, through the category of ‘person’, includes personal pronouns, possessive pronouns, and possessive adjectives. Demonstrative reference, reference by means of location indicating the distance of the referent from the speaker, includes determiners, demonstrative adjectives and deictics. Comparative ties, indirect reference in nature, consist of adjectives and adverbs indicating comparison, identity, similarity or difference, such as *same*, *different*, *more + adjective + than*, and *such*. In the following sample texts, all taken from Schneider (1985, p. 7), these three types of referential ties in discussion, i.e., personal, demonstrative, and comparative, appear in [3], [4], and [5] respectively.

[3] One of Jackson’s goals as President was the complete removal of Indian nations from east of the Mississippi. *His* first opportunity to act came soon after *he* took office.

[4] In 1830 Congress passed the Removal Act. *This* legislation provided funds to negotiate treaties that would force the southern Indians off their lands.

[5] By the 1830’s all white males were eligible to vote for the first time.

Furthermore, as voters they seemed *more* anxious to use their power *than* in previous years. Voting rose from 56 percent of eligible voters in 1828 to 78 percent in 1840. *Such* widespread participation was new in national politics.

In [3], both *his* and *he* refer to *Jackson*, who is the only male human mentioned in the first sentence. Although these words are structurally independent of each other, the reader identifies *his* and *he* as *Jackson* because these words are referentially related. Similar reasoning is applied to [4] and [5].

Substitution, the second category of cohesion, involves the replacement of one item in the text by another that is not a pronoun. In contrast to reference that presents a relationship on the semantic level without the restriction to the same grammatical class, substitution is subject to strict grammatical conditions: the substitute must be of the same grammatical class as the item for which it substitutes. Halliday and Hasan identify three types of substitution: nominal, verbal, and clausal. Nominal substitution involves the replacement of the head of a noun phrase with *one/ones* or *same*; in verbal substitution, a lexical verb is replaced with a form of *do*, and clausal substitution replaces a clause with *so* or *not*, depending on the polarity of the clause. These three types of substitution are exemplified in [6], [7], and [8] respectively.

[6] Those biscuits are stale.- Get some fresh *ones*.
(Halliday and Hasan, 1976: 92)

[7] I don't know the meaning of half those long words, and what's more, I don't believe you *do* either. (Halliday and Hasan, 1976: 130)

[8] Is there going to be an earthquake?- It says *so*.
(Halliday and Hasan, 1976: 130)

In [6], *ones*, substitutes for *biscuits* as the Head of a nominal group; in [7], *do*, replaces the VP *know the meaning of half those long words*, and becomes the Head of a verbal group; in [8], *so* presupposes the clause *there's going to be an earthquake*.

Ellipsis, another grammatical cohesive tie closely related to substitution, refers to the omission of an item, required and recoverable, from the text. In fact, ellipsis and substitution are basically the same process—"ellipsis can be defined as substitution by zero, [and]...substitution as explicit ellipsis" (Halliday and Hasan, 1976:317). Ellipsis occurs in the same contexts as substitution, namely, nominal, verbal, and clausal, depending on the constituent where it occurs. In nominal ellipsis, the head of a noun phrase is omitted and a preceding modifier takes on the function of the head as in [9].

In [9], the NP *Native Americans* is omitted, resulting in the fact that *most* and *a few* are raised to new Heads.

[9] Most Native Americans in the Southeast worked the land. Although *most* \emptyset were subsistence farmers, *a few* \emptyset were prosperous.

(Schneider, 1985: 8)

Verbal ellipsis, in which one or more elements of a verb phrase are missing, is further divided into lexical ellipsis and operator ellipsis. Lexical ellipsis is ellipsis ‘from the right’, the omission of the final or lexical verb, while operator ellipsis is ellipsis ‘from the left’, with the initial verb element or finite operator omitted. Examples of either type of verbal ellipsis appear in [10] and [11] respectively, adopted from Schneider (1985, p. 9). In [10], lexical ellipsis occurs where the lexical verb phrase *resisting the forced removal from their lands* is omitted. In [11], on the other hand, there is operator ellipsis where the finite operator *were* is omitted.

[10] Some Indian nations, namely, the Cherokee and the Seminole, resisted the forced removal from their lands. Most tribes did not \emptyset .

[11] In 1838 soldiers drove the remnants of the southern Indian west to Oklahoma. Along the way, known as the Trail of Tears, hardship, sickness, and death were rampant. Throughout the journey some were grieving silently; others \emptyset crying aloud.

The third type of ellipsis, clausal ellipsis, occurs when all or all but one element of a clause is omitted from the text as in [12], also taken from Schneider (1985, p. 9). In [12], the second sentence actually states *He simply wanted to know when the forced removal would take place*, with the dependent clause except *when* omitted.

[12] Jackson cared little about how the forced removal would take place. He simply wanted to know when \emptyset .

Conjunction, the fourth category of cohesion, as defined by Halliday and Hasan, is somewhat different from the three types of grammatical cohesive ties mentioned above. Instead of simply describing an anaphoric relation, conjunctions mark the semantic links between sentences; that is, conjunctive elements usually signal the

nature of the relationship between ideas in text, and therefore systematically relate “what is to follow...to what has gone before” (Halliday & Hasan 1976:227).

According to Halliday and Hasan, conjunctions are divided into the following subtypes: additive, adversative, causal and temporal, as exemplified in [13]:

[13] For the whole day he climbed up the steep mountainside, almost without stopping.

- a. *And* in all this time he met no one. (additive)
- b. *Yet* he was hardly aware of being tired. (adversative)
- c. *So* by night time the valley was far below him. (causal)
- d. *Then*, as dusk fell, he sat down to rest. (temporal)

(Halliday and Hasan, 1976: 238-9)

The final category of cohesion is lexical cohesion, which refers to the selection, frequency and placement of words to effectively establish a linking network of ideas and relations in text. Halliday and Hasan (1976) classify lexical cohesion into two types: reiteration and collocation. Reiteration, involving the repetition of a lexical item, functions as cohesive ties that help to make the relationship between ideas throughout the text more explicitly. Reiteration can be (a) repetition of the same item, (b) use of a synonym or near-synonym of the item (car/automobile), (c) use of a superordinate of the item (e.g., *tree* as a superordinate of *elm*), and (d) use of a general term referring back to an item mentioned in the prior text. These four subtypes of reiteration, repetition, a synonym, a superordiante, and a general noun, are respectively demonstrated in (a), (b), (c), and (d) in [14]:

[14] (a) I turned to the ascent of the peak. *The ascent* is perfectly easy.

(b) I turned to the ascent of the peak. *The climb* is perfectly easy.

(c) I turned to the ascent of the peak. *The task* is perfectly easy.

(d) I turned to the ascent of the peak. *The thing* is perfectly easy.

(Halliday and Hasan, 1976: 279)

Collocation is the cohesion achieved through the use of lexical items in close proximity within the text that regularly co-occur. Unlike reiteration that refers to an identifiable semantic relationship between pairs of words, collocation relies more on a

shared lexical context between thematically related words. Words related through collocation are not necessarily limited to the same grammatical category or a pair of words, but can occur in long consecutives over successive sentences. According to Halliday and Hasan, all lexical ties that are not a form of reiteration are considered cohesion of collocation, as illustrated in the following excerpt, in which a chain of collocational cohesion can be identified: *mountaineering... Yosemite... summit peaks... climb... ridge*:

[15] ...In all my *mountaineering*, I have enjoyed only one avalanche ride...One fine *Yosemite* morning after a heavy snowfall, being eager to see as many avalanches as possible and wide views of the forest and *summit peaks*...I set out early to *climb* by a side canyon to the top of a commanding *ridge*...
(Halliday and Hasan, 1976:286)

As Halliday and Hasan point out, the effect of lexical, especially collocational, cohesion on a text is ‘subtle and difficult’ to determine. Unlike grammatical cohesion, i.e., reference items, substitutions and conjunctions, whose effect is relatively clear and which explicitly presuppose some other element in the text, lexical items by themselves do not always carry a cohesive function. However, this does not imply that lexical cohesion does not have a meaning or contributes nothing to text cohesion.

Halliday and Hasan (1976) further elaborate as follows:

Without our being aware of it, each occurrence of a lexical item carries with it its own textual history, a particular collocational environment that has been built up in the course of the creation of the text and that will provide the context within which the item will be incarnated on this particular occasion. This environment determines the ‘instantial meaning’, or text meaning, of the item, a meaning which is unique to each specific instance. (p.189)

Therefore, the lexical environment of any item includes not only the words related to it in some way but also all other words in the preceding or following sentences in the passage, thus giving it its specific interpretation in the particular instance, and at the same time, providing textual cohesion and thus giving to the passage the quality of

text.

Besides elaborating on the categories of cohesion, Halliday and Hasan also discuss the complexity of the cohesive tie. A simple idealized tie refers to “a single tie between a pair of elements in adjacent sentences, in which the second item presupposes the first and the first does not presuppose anything” (1976:329).

However, in actual texts, the patterning of cohesion is much more complex. For one thing, any sentence may have more than one tie in it, which, as a matter of fact, is the usual pattern in connected texts. Even such a short sentence as the second one in [16] contains two cohesive ties. In addition to the reference item *it*, which presupposes *the plan*, there is lexical cohesion of *succeed* and *try*:

[16] A little provoked, she drew back and, after looking everywhere for the Queen (whom she spied out at last, a long way off), she thought she would *try* the plan, this time, of walking in the opposite direction. *It succeeded* beautifully.

(Halliday and Hasan, 1976:330)

For another thing, the distance of cohesive ties may be quite divergent. Halliday and Hasan classify the distance of cohesive items into four tie spans: (1) immediate ties, the simplest form of presupposition, which relate the sentence to the one which immediately precedes it, (2) mediated ties, which contain chains of three or more cohesive ties across adjacent sentences, (3) remote ties, in which one or more intervening sentences separate the cohesive elements, and (4) mediated-remote, which is a combination of mediated and remote ties so that chains of sequential ties may be interrupted by one or more sentences. The following passage exemplifies these four types of cohesive ties in terms of proximity:

[17] (1) The last word ended in a long bleat, so like a sheep that Alice quite started. (2) She looked at the Queen, who seemed to have suddenly wrapped herself up in wool. (3) Alice rubbed her eyes, and looked again. (4) She couldn't make out what had happened at all. (5) Was she in a shop? (6) And was that really –was it really a sheep that was sitting on the other side of the

counter? (7) Rub as she would, she could make nothing more of it.

(Halliday and Hasan, 1976:330)

In sentence (2), the pronoun *she* refers to *Alice* in sentence (1). This is an ‘immediate tie’. Similarly, the pronoun *she* in (4) refers to *Alice* in (3). But the pronoun *she* in (5) has another instance of *she* in (4) as the target of its presupposition, and to find out what *she* represents, the occurrence of *Alice* in (3) has to be tracked. This is called a ‘mediated tie’. The clause, *Rub as she would*, in (7), uninterpretable if taken by itself, must cohere with *Alice rubbed her eyes* in (3). This is a ‘remote tie’ since there are three intervening sentences between them. Finally, a tie may be both ‘mediated and remote’. The *she* in sentence (7) presupposes nothing in (6) but refers back to sentence (5), and therefore is a ‘remote’ tie. At the same time, the presupposed item in (5) is again *she*, which has to be followed through to the *she* in (4) and eventually to the *Alice* in (3), so it is also ‘mediated’.

2.3 Paragraph Organization

It is generally recognized that reading and writing are actually two sides of a coin. It follows that an awareness of how a piece of writing is composed can contribute to more effective reading, especially when the rhetorical style of the target language is different from that of L1. As mentioned in the previous section (2.1), different languages employ different rhetorical styles of paragraph development (Hinds, 1990; Johns, 1990). Therefore, to help ESL students comprehend an English text, it is necessary to ensure that they understand the conventional paragraph organization of an English text.

According to conventional textbooks of writing, a paragraph is a group of sentences that discuss one main idea, or topic; it often has the main idea stated in a topic sentence, which usually (but not always) comes at the beginning of the paragraph; it has a body that explains and exemplifies the topic idea; it has a

conclusion that reinforces the topic idea and may end with a punch; most of all, it has unity—all the sentences develop the topic idea. In conclusion, a strong paragraph has two major elements: unity and coherence (Meyers, 2000; Wiener & Eisenber, 1998; Wingersky, Boerner, & Holguin-Balogh, 1995). ‘Unity’ means that each idea relates to the one and only main point of the paragraph; ‘coherence,’ as discussed in 2.1, means that all the supporting sentences are clearly and logically connected to each other, and that one idea leads smoothly and logically to the next. It is generally agreed among rhetoricians that certain connecting words or phrases are necessary to form relationships between supporting ideas and the topic idea as well as among adjacent sentences. For ESL readers, it is essential to keep the paragraph structure in mind for the detection of the unified idea and the logical order of the supporting sentences, especially when they take the “Discourse Structure” test.

To substantiate students’ concept of paragraph structure, teachers may adopt several types of practice. For example, to recognize the unity of a paragraph, students are asked to choose an appropriate topic sentence for the paragraph, or to cross out the irrelevant sentence(s) from a piece of writing. Several practices are effective in familiarizing students with the notion of coherence: for instance, the practice of “alternatives in context” proposed by Bardovi-Harlig (1990) and the filling-in of cohesive devices (Chen, 1999). This present study adopted these types of practices in the instruction section to reinforce the notions of unity and coherence.

2.4 Think-aloud

Since Thorndike (1917) pioneered the emphasis of the processes, rather than the products, of reading, researchers have been interested in studying the cognitive processes involved in reading. Block (1986) promotes the importance and necessity of reading teachers’ understanding of their students’ internal reading process by asserting,

The thoughts that wander or rush through the minds of readers, the searches and struggles for meaning, the reflections and associations, are hidden from the outside observer. Yet this struggle and search for control are the core of reading comprehension...For teachers, knowledge of the components and management of this internal process is extremely important...Knowledge about the process, not just the product of reading is needed if we are to move from head-scratching to designing programs which truly meet the needs of our students.

(pp. 463-464)

The think-aloud technique, which has been a very important component of psychological investigation, has been widely used as a research tool for data collection to explore the invisible mental activity during reading. (Baumann, Seifert-Kessell, & Jones, 1992; Block, 1986; Bridge & Winograd, 1982; Johnston & Afflerbach, 1983; Olson, Duffy, & Mack, 1984). In fact, the think-aloud technique has been used for thousands of years to reveal thinking. For example, Aristotle and Plato encouraged people to talk about what was on their minds, which is exactly what the think-aloud studies ask the participants to do as they perform a task (Pressley & Afflerbach, 1995). In practice, the think-aloud technique requires the readers to describe aloud what they are thinking while solving a problem. The resulting protocols are then analyzed in an attempt to isolate and describe the covert thought processes of the readers.

In conducting the think-aloud technique, Ericsson and Simon (1993) present some specific theoretical recommendations. First, think-aloud data should reflect exactly what is being thought about. Instead of giving descriptions or explanations of their behavior, the participants should be instructed and encouraged to report the content of their immediate awareness. Also, it is risky to ask participants to talk about their cognitive experiences after the fact. That is, participants should be asked to report what they were thinking about on line, not what they remembered thinking about some time ago. The reason Ericsson and Simon hold is that memory is too

fallible to allow for accurate reporting of earlier mental states. In addition, directions to think-aloud can be rather open ended, or they can direct participants to report a specific type of information that they have in working memory. Furthermore, in Ericsson and Simon's view, people do not require training in order to think aloud; however, they caution that there are individual differences in ability to provide think-aloud reports and there are also individual differences in thinking.

Besides, the advantages and limitations of the think-aloud technique have been widely discussed. According to Afflebach and Johnston (1984), one major advantage of verbal reports is that their validity relies on different cognitive processes. This allows them a valuable role in the collection of converging data sources. Second, under certain circumstances, verbal reports provide veridical descriptions of cognitive processes that otherwise could only be investigated indirectly. A third advantage of verbal reports is that they provide access to the reasoning processes underlying higher-level cognitive activity. Fourth, retrospective reports are sometimes the only available avenue for historical or genetic analysis of mental processes. Finally, verbal reports allow an analysis of the affective components of reading processes.

Olson, Duffy and Mack (1984) also point out three merits of the think-aloud technique. First, think-aloud behavior, under at least some situations, appears to correlate with other forms of reading behavior, such as sentence-by-sentence reading time. Additionally, think-aloud data in general prove to be useful materials for studying individual differences in higher-level cognitive processes, which echoes Ericsson and Simon's (1993) view that there are individual differences in thinking. Furthermore, information gathered from think-aloud can reveal the higher-level processes in reading comprehension, i.e., inferences, predictions, schema elaborations, and other complex cognition that occur as part of skilled reading. Other research has also demonstrated that verbal protocols obtained from think-alouds have provided key

insights into the process involved in reading, which is invisible to other methods (Afflebach & Johnston, 1984; Olson, et al., 1984; Pressley & Afflerbach, 1995).

With all the above-mentioned advantages of think-alouds as a research tool, researchers have been concerned about its potential limitations (Bereiter & Bird, 1985; Ericsson & Simon, 1993; Hayes & Flower, 1983; Olson et al., 1984). First of all, the think-aloud task is sensitive to instructional variables. Therefore, the instructions have to be precise and have to be carefully thought out and delivered in relation to one's research goals and target participants. Secondly, the think-aloud task seems to work better for some text types than for others. Third, think-aloud data are difficult to analyze, for they contain a continuous stream of behavior over long intervals of time. The transcription, coding, and categorization of think-aloud protocols are extremely time-consuming. Fourth, there appears to be big differences among participants in their ability to provide informative think-aloud data. Some are good talkers while others can provide little verbal information. Young participants might especially have difficulty getting the gist of the think-aloud technique. Lastly, the think-aloud task might interfere with the reading process and slow down the comprehension process.

Despite all these potential limitations of applying the think-aloud technique as a research tool for data collection, quite a few researchers are positive that the think-aloud technique can serve as an effective instructional and learning tool (Bereiter & Bird, 1985; Block, 1986; Wilhelm, 2001). Bereiter and Bird (1985) state that despite some serious flaws as far as developing a complete theory of the reading process is concerned, think-alouds can serve wonderful instructional functions. They claim,

Although the strategies revealed through reading protocols may be only a special subset of the strategies involved in skilled reading, they might also be the most teachable. They evidently came into play during momentary breaks in the automatic flow of reading –breaks during which control was temporarily

shifted to a conscious level. The more covert reading processes may correspondingly be less accessible to conscious control, or may be of such a nature that they cannot be attended to consciously without disrupting the reading process. (p. 132)

With her own experiences of implementing think-alouds, Block (1986) is positive that the think-aloud technique can be an important learning tool. Featuring in learner-centeredness, think-alouds do help readers realize what they do understand and be able to concentrate their attention on what they need to make clear, thereby encouraging them to explore better strategies to tackle the comprehension obstacle. Wilhelm (2001) highly recommends use of the think-aloud technique in the reading classroom. He believes that think-aloud, talking-through of an endeavor is a natural and central way we help ourselves achieve—“by saying aloud new steps until they become a part of our ‘inner voice’ of knowledge” (p. 19).

As for the think-aloud technique used in reading research, variation is found depending on the theoretical and empirical goals of a specific study. According to Olson et al. (1984), there are at least three commonly used think-aloud procedures: sentence-by-sentence talking with general or focused instruction, selective talking, and after-the-fact talking. In the sentence-by-sentence task, the participant is asked to talk whenever s/he finishes reading one sentence. Two types of instructions are used in this sentence-by-sentence type: general instructions and focused instructions. With general instructions, the participants are typically given a list of examples of the types of things they are expected to talk about. With focused instructions, the participants are asked to talk about only one type of thing, which is theoretically motivated for a specific study.

The selective talking type is to have participants talk at only particular points in a text, which are usually indicated by red dots. This type is used when the researcher

follows a process theory that pinpoints certain places in a text as crucial tests of some aspect of the theory. The after-the-fact talking type is restricted to examining the general strategies used to comprehend short texts, which are only three or four sentences long. This method is less useful for exploring the processing of longer texts, especially if the investigator is concerned with evaluating the contribution each sentence makes in the comprehension process.

Olson et al. (1984) suggest that these descriptions of the think-aloud technique by no means exhaust all of the possibilities. One's specific theoretical and empirical goals would dictate which variant of the think-aloud technique would be most useful and appropriate. In other words, the procedure could be flexibly modified to serve the purpose of a specific study.

As a research tool, the think-aloud technique has been applied to the study of on-line strategies used by readers during reading (Bereiter & Bird, 1985; Block, 1986; Olson, Duffy & Mack, 1984). Olson et al. (1984), believing that any sophisticated reader is aware of much cognitive activity that occurs during reading, adopted the general sentence-by-sentence think-aloud task to collect data for their study. From the think-aloud protocols, eight reading strategies are identified, and the results show that the places where the participants generated more talking in the think-aloud task, especially predictions and inferences, were the same places where they slowed down while reading silently. This supports the claim that the think-aloud data are related in an important way to what readers are doing during ordinary types of reading. Bereiter and Bird (1985) also conducted an experimental study using think-aloud with ten expert readers to identify teachable reading strategies. Bereiter and Bird commented that although many participants were initially skeptical about the possibility of verbalizing thoughts while reading, all easily mastered the technique. Four main strategies were identified, which served as the basis for designing teachable

reading-comprehension strategies in a following study, which would be discussed below.

Block (1986) adopted the think-aloud technique to examine the comprehension strategies used by college-level students in remedial classes, including three native speakers of English and six nonnative speakers. “Poor” readers were chosen for the study because Block believes that think-alouds would be most informative when readers have problems understanding what they are reading. That is, the automatic use of comprehension strategies by fluent readers would not reveal as much as that by poor readers. By the analysis of the verbal protocols, Block identified two consistent and distinctive patterns of strategy use among these nonproficient readers, namely, the “integrators” and the “nonintegrators”. What differentiated these two types of readers included integration, recognition of aspects of text structure, use of general knowledge, and response in extensive versus reflective modes. The results show no difference between the use of strategies by ESL speakers and that by native speakers of English. Also, it was found from the responses of the participants that think-alouds can be an important learning tool. The participants appeared to be instructing themselves through think-alouds because the task of thinking aloud helped them focus their attention on what they understood and what they needed to know. By saying aloud what they understood, they would come to realize what they did not comprehend, thus allowing self-instruction toward better comprehension.

Besides being used to identify reading strategies, the think-aloud technique has been employed to examine cognitive and affective responses to the use of authentic and edited texts. Young (1993) asked four levels of American college students learning Spanish to read a Spanish authentic passage as well as three edited ones silently, followed by the think-aloud technique and an interview. Results indicate that all participants comprehended significantly more from the authentic passage than

form the edited ones. Most participants also responded more favorably to the authentic passage than to the edited ones.

The think-aloud technique has also been used to compare the performance of good and poor readers. Kavale and Schreiner (1979) used the think-aloud technique to identify reasoning strategies used by above-average and average readers in responding to standardized measures of reading comprehension. The results indicate significant differences between above-average and average readers in magnitude and variety of reasoning strategies used. Specifically, the above-average readers revealed the ability to use alternative reasoning strategies for question type and responded correctly. In contrast, the average readers, though using similar strategies, showed greater variability in strategy use and fewer applications of more efficient reasoning strategies. They seemed more likely to produce decoding errors that violated passage meaning and failed to correct such inappropriate errors. Therefore, Kavale and Schreiner suggest that less skilled readers be taught the reasoning strategies in a reading situation, and that teachers model the reasoning process to provide a concrete example of the thinking process.

Kletzien (1991) utilized after-reading self-report of reasoning processes to investigate strategy use by good and poor readers in a cloze task. Forty-eight U. S. high school students, half of them good readers and the others poor, were asked to read three expository passages of increasing difficulty, in each of which twelve context-dependent content words were deleted for blanks. The results show that the two groups used the same types of strategies and had an equal frequency of strategy use on the easy passage, but as the passage difficulty increased, good readers used more types of strategies and used strategies more often than poor ones.

Bridge and Winograd (1982) might be the first study to employ the think-aloud technique to investigate readers' awareness of the cohesive relationships

existing within a text. After listening to a demonstration tape in which the think-aloud technique was modeled, the participants were asked to do a think-aloud task with the selected cloze passage, in which they were encouraged to report what word should go in the blank and explain what clues in the passage helped them decide on the choice. Several findings are revealed. First, the participants, especially the above-average readers, demonstrated awareness of the cohesive relationships in text. Second, the participants varied their use of intrasentential and intersentential information based upon the type of cohesion involved in the cloze. Third, there was a difference in the difficulty level of the three types of cohesive ties. Both good and poor readers found the conjunctive items significantly more difficult than either the referential or lexical ties. Therefore, Bridge and Winograd suggest that teachers design appropriate instruction to help their students comprehend conjunctive relationships in particular. As for the think-aloud technique, Bridge and Winograd are quite positive about its role in enhancing the participants' awareness of which clues they were using to supply the cloze deletions.

Moreover, the think-aloud technique has been used as an instructional tool in the EFL context. In Chern's (1993), the think-aloud technique was used as an instructional tool to study reading comprehension among sixteen Taiwanese freshmen of two different EFL proficiency levels. The results indicate that think-aloud facilitated lower EFL proficiency readers' comprehension, which calls attention to the incorporation of verbal reports in the remedial instruction of reading, which echoes Block's (1986) appeal discussed above.

Hsu (2002) investigated the effect of pair think-aloud procedures on Taiwanese senior high school students' EFL reading comprehension and metacognitive awareness. In Hsu's study, forty-two first-year senior high students of high and low English proficiencies were paired up for the pair think-aloud activity. After a session

of two weeks' training of pair think-aloud, several findings were revealed. First, pair think-aloud procedures were effective in enhancing EFL students' reading comprehension, with a significant difference in the improvement of reading comprehension for the low-proficiency group. Second, the low-proficiency participants benefited more from the pair think-aloud technique by learning effective reading strategies from the model of the high-proficiency participants. Third, the High participants, though benefited less, were still positive about the beneficial effect of the think-aloud procedures—saying aloud what they were doing helped them become more aware of what they understood and what they did not as well as the reading strategies they were using. Fourth, based on a questionnaire survey, the participants' responses to the pair think-aloud procedures showed that thirty-six (86%) of them considered the pair think-aloud procedure a viable approach to enhance their English reading ability and would suggest including this activity in regular English classes. Based on her findings, Hsu (2002) concluded that the pair think-aloud procedures could be an alternative approach in teaching L2 reading in a senior high school classroom.

Since the think-aloud technique, the verbal reporting task, is novel to most readers, modeling and training of the think-aloud technique are considered important elements for rich data collection and effective instruction. In fact, when the think-aloud technique is used as an instruction tool, explicit modeling is highly promoted by many researchers (Bereiter & Bird, 1985; Block, 1986; Davey, 1983; Duffy, Roehler, & Herrmann, 1988). Davey (1983) reasons that students often learn more effectively when they can watch a good model. Based on this rationale, Davey suggests that the teacher models the kinds of strategies skilled readers use during reading and point out specifically how they cope with a particular comprehension problem. Davey points out that poor readers frequently approach a text as if it were a

code to crack rather than a message to be understood—that is, they lack a “meaning orientation” to print. According to Davey, there are five aspects of a skilled reader’s thinking that are frequently lacking among poor readers: (1) the ability to form good hypotheses about the text’s meaning before reading it; (2) the ability to organize information into mental images while reading; (3) effective use of their prior knowledge about the topic; (4) the ability to monitor how well they are comprehending as they read along; (5) possession of active ways to fix up comprehension problems. In the classroom practice, Davey suggests that students listen to several modeling reading, work with partners to practice think-alouds, and finally are encouraged to practice thinking aloud independently. Davey also found that many of her poor readers were particularly motivated by having her—their teacher—think through her comprehension difficulties. In modeling, Davey maintains that the teacher should demonstrate not only how to read, but also why and when to use certain strategies. The rationale of the modeling process is that through these think-aloud activities, the readers can “see” how a mind responding to a specific passage, and that they can realize that reading should make sense and that they can fix things up when reading does not make sense. The following remarks best summarize Davey’s (1983) theory:

A major instructional focus for poor readers should be to enhance a meaning orientation to print. Specifically, readers need to see that print should make sense, monitor their ongoing comprehension, and apply appropriate fix-up strategies when their comprehension breaks down. Teacher modeling and student practice of cognitive processes through think-alouds provides a motivating opportunity for students not only to experience effective reading and problem solving, but to move these strategies into their independent reading.

(p. 46)

Bereiter and Bird (1985) conducted an experimental study using the think-aloud protocols of expert readers to serve as a basis for designing teachable

reading-comprehension strategies. Significant advantages were found in both target strategy acquisition and reading comprehension for a treatment that combined thinking-aloud strategy modeling and practice with instruction in identification and use of the target strategies. The sole use of strategy modeling without any explicit instruction was not effective. As Bereiter and Bird state, “Direct instruction appears to be important for getting students to attend to what is relevant in cognitive modeling” (p.153). That is, students would not readily acquire cognitive strategies simply by imitating models; they need direct, explicit instruction in the strategies to be able to benefit from the thinking aloud modeling, which provides a means for the teacher to demonstrate the reading strategies to be taught. By appropriate modeling, the teacher can not only activate relevant prior knowledge, but also demonstrate how skilled readers cope with reading difficulties. In conclusion, Bereiter and Bird indicate that thinking aloud have value both for demonstrating strategies and for practice in recognizing and using the strategies. Based on Bereiter and Bird (1985), Baumann, Seifert-kessell, and Jones (1992) also found that explicit, teacher-led instruction in think-aloud was an effective means to enhance students’ comprehension monitoring abilities.

Like Davey, Duffy, Roehler and Herrmann (1988) also point out, “Poor readers often do not discover the cognitive processes crucial for successful reading” (p. 762). They suggest that explicit, teacher-led modeling in think-aloud can be a teaching technique that informs students about the flexible reasoning processes undergirding strategic reading. With recent emphasis on the strategic and metacognitive aspects of reading, they highlight the need for modeling not only the physically observable aspects of reading but also the invisible mental processes that are at the core of reading. They suggest that modeling, by providing explicit information of the mental activity, minimizes the chance of instructional ambiguity when students would

misinterpret the teacher's intentions. By making explicit the invisible cognitive reasoning processes, think-aloud modeling can help poor readers to see how expert readers make sense out of text. In mental modeling through think-alouds, Duffy et al. emphasize that the teacher should focus on transferring metacognitive control, in which the student consciously direct the reasoning process of strategic reading. This is what traditional comprehension instruction cannot accomplish. As Duffy et al. (1988) state,

When students are conscious of the reasoning involved, they can access and apply similar reasoning in future reading situations. However, comprehension instruction does not always provide students with enough information about the reasoning (of expert readers) for them to assume metacognitive control...Consequently, they are able to direct their own inferential reasoning when independently reading their own text in the future. (p. 763)

Duffy et al. (1988) also caution that in mental modeling, the teacher should model mental processes rather than procedural steps, which involve telling students directions or steps to follow in completing a specific task. They further note that mental processes associated with strategic reading cannot be reduced to a finite set of steps, because each individual processes information differently.

The results of several studies on pair think-aloud also demonstrate the value of metacognitive modeling. Block (1986), for example, suggests, "teachers themselves might model the behavior of a competent reader, so that learners could extend their resources" (p.488). Besides, teachers can encourage their students to talk to each other about what they do and do not understand as they read. These paired readers can then share problems, knowledge, and strategic resources. In exploring Taiwanese EFL senior high school students' lexical inferencing behavior in English reading, Yang (1997) showed that the participants who read with pair think-aloud achieved better in both the guessing ability and reading comprehension tests than those who performed

the think-aloud technique individually. Hsu (2002) also found that the High student, who made her reading processes explicit and concrete through pair think-aloud practice, played the role of an “expert reader” and thus modeled to the Low student the effective strategy use. Results show that participants of low English proficiency benefited quite a lot from the modeling of reading strategies by their peers of high English proficiency.

Besides, Kavale and Schreiner (1979) recommend the use of teaching strategies that follow a psycholinguistic approach. They assert, “Actual strategy use might be fostered by activities where teachers model the procedures for responding to a question with a particular reasoning strategy” (p.125). Irwin (1991) suggests that when students think aloud or hear others think aloud, their metacognitive awareness of options for responding to text increases. It can also help them to become aware of how much thinking goes into the comprehension of a text. Anderson (2001) indicates that it is often revealing to hear what other readers have done to comprehend a passage. Furthermore, Wilhelm (2001) mentions that he would sometimes use more able readers to tutor less able ones by using think-alouds. He states, “I find that even able readers benefit from using think-alouds (both in the role of student and more expert peer) to name and consolidate their own current strategy use and to find ways of extending and elaborating on that use” (p. 16).

To conclude, the think-aloud technique has widely been recognized as an effective instructional and learning tool as well as a valid research tool of specific purposes. The present study used the think-aloud technique as both, to investigate the effect of think-aloud modeling and practice on students’ performance on “Discourse Structure” tests and to compare the protocol analysis of four participants of different English proficiency levels.