Effects of Text Structure Instruction on Japanese EFL Students

Thesis submitted for the degree of

Doctor of Education

at the University of Leicester

by

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January 2014

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Abstract

An instructional approach to replace the traditional *Yakudoku* method is required for the instruction of text comprehension. The traditional *Yakudoku* method focuses on the translation of English into Japanese in a single sentence, which disturbs the flow of text comprehension and results in a loss of meaning. One way to resolve this may direct students' attention to the whole text through the learning of text structure. While the effect of text structure instruction has been exhibited in the L1 context, little empirical research has examined the effectiveness of the teaching of text structure for the Japanese students.

The present study investigated the effects of the teaching of text structure. A mixed methods design was employed with an emphasis on a quantitative approach. Instruction was given to college students over a total of seven lessons. Reading comprehension tests, recall tests, and questionnaires were used as data collection methods, complemented by interviews.

The results showed that the intervention could strongly improve the participants' reading comprehension. Especially, the lower group benefited greatly from the intervention. Recall data collected from all the participants did not indicate a significant increase in the *comparison* organisation although the extracted participants significantly increased the amount of information. No significant increase was produced in the *problem/solution* organisation while the lower experimental participants produced a light increase. The intervention modestly altered students' identification of the two types of the *comparison* and *problem/solution* organisation, especially for the lower experimental participants.

The results also indicated that at the onset, more than half of the participants lacked the knowledge of text structure. Through the intervention, the number of experimental participants who could identify the rhetorical organisation rose. These results suggest that the teaching of text structure is effective for students with low reading ability to read expository text.

Acknowledgements

I would like to thank all those who have supported me along the way.

Firstly, I wish to express my gratitude to Dr Agneta Svalberg, of Leicester University, who provided valuable and helpful comments on my assignments, thesis proposal, and thesis. Her comments led my thesis research in the right direction.

Secondly, I would like to express my heartfelt gratitude to Dr Kevin Armstrong, of Leicester University, whose invaluable perseverance, guidance, encouragement and support throughout my assignment and thesis research periods enabled me to achieve my ultimate goal.

Thirdly, very special thanks and my deepest gratitude go to Niigata University students who participated in this thesis research. Without their cooperation and help, this study would not have realised.

Fourthly, I would like to thank my colleague and friend, Stephan Dulka, of Niigata University, for reading, commenting on, and correcting the preliminary drafts of this thesis.

Finally, thanks must go to my wife Itsuko Hirose and my daughter Ai Hirose for their kind help. Without their patience and support, this thesis study would not have been possible.

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List of Acronyms and Abbreviations

ANOVA	Analysis of Variance
BICS	Basic Interpersonal Communication Skills
CALP	Cognitive/Academic Language Proficiency
CEFR	Common European Framework of Reference for Languages
CUP	Common Underlying Proficiency
EFL	English as a Foreign Language
EIKEN	Jitsuyo Eigo Gino Kentei (Test in Practical English Proficiency)
ESL	English as a Second Language
ESP	English for Specific Purposes
ESRC	Economic and Social Research Council
GO	Graphic Organiser
IELTS	International English Language Testing System
K-R 20	Kuder-Richardson formula 20
K-R 21	Kuder-Richardson formula 21
L1	First Language
L2	Second Language
MANOVA	Multivariate Analysis of Variance
MEXT	Ministry of Education, Culture, Sports, Science and Technology
NR	New Rhetoric
ODH	Orthographic Depth Hypothesis
SD	Standard Deviation
SFL	Systemic Functional Linguistics
SPANOVA	Split-Plot ANOVA
STEP	Society for Testing English Proficiency
TOEFL	Test of English as a Foreign Language

Chapter 1

Introduction

1.1 Introduction

This chapter sets the scene, provides a statement of the research area, makes an outline of the purpose of this research, and includes the sections of research areas, significance of the study, the nature of the research problem, key terminology, participants and context, research aims and research questions, research methodology, and structure of this thesis.

1.2 Research Area
1.2.1 Reading in Japan

Many Japanese people who have studied English believe that they can read English well, even though they cannot speak it fluently (Kitao and Kitao, 1989). Kitao and Kitao (1989) pointed out that many students believe themselves to be good readers since they have spent much time on learning activities in reading classes even though the learning activities are mainly devoted to the translation to Japanese and the task of translation from English to Japanese is usually performed clause by clause, sometimes without reaching whole text comprehension.

In reality, the English reading ability of Japanese learners of English is not as good as they believe it to be. They only achieve a score of 18 out of 30 points in the reading section of TOEFL (Test of English as a Foreign Language) which is below the mean (20.4) (Educational Testing Service, 2011). Reading may seem easier than oral communication because readers can read the text many times if necessary and they can translate the text into their native language while they do not have an opportunity to do so in conversation. However, reading comprehension in English is not such an easy task to tackle successfully for many Japanese people (Ushiro, 2009). This misunderstanding about their reading ability in English seems to have provided false confidence in reading in English to Japanese people who have received traditional English education in Japan.

The purpose of traditional English education in Japan has been regarded only as the

means of passing entrance examinations (Mantero and Iwai, 2005). Because many high school teachers believe that they cannot ignore university entrance examinations, the *Yakudoku* (see Figure 1.1) or Grammar Translation method has been favoured and used to help students pass university entrance examinations that have mainly evaluated reading skills and grammatical knowledge (Suzuki, 1999). The English curriculum in Japan was designed to train students to read English (Ministry of Education, 1958), relying on memorisation of grammatical rules and translation to Japanese as the primary teaching method, which is still a widespread technique in reading classes in Japan. In general, Japanese teachers tend to think that quiet, passive, and obedient students who perform well on tests are good students (Nozaki, 1993). The teaching style is very teacher-centred (Mantero and Iwai, 2005). The *Yakudoku* or Grammar Translation method is matched with this teaching style. Even now a lot of drills are practised and repetitions of grammatical rules are performed as a means to understand a text during reading classes in Japan.

Target English sentence: She has a nice table in her room.

Stage 1: The reader makes a word-by-word translation.

She	has	a	nice	table	in	her	room
kanojo	*motteiru*	*hitotsu-no*	*sutekina*	*teburu*	*naka*	*kanojo-no*	*heya*

Stage 2: Translated words reordered in accordance with Japanese syntax.

Kanojo   kanojo-no   heya   naka   hitotsu-no   sutekina   teburu   motteiru

Stage 3: Recoding in Japanese syntax

Kanojo-wa   kanojo-no heya-no   naka-ni   hitotsu-no sutekina teburu-wo   motteiru

Figure 1.1 Three-stage process of the *Yakudoku* method (Hino, 1992:100)

It is often argued that the *Yakudoku* or the Grammar Translation method has a negative effect on many Japanese learners of English (LoCastro, 1996:51-52). The *Yakudoku* method implemented in English classes is a kind of mental exercise. English sentences are rearranged and put into Japanese word order in the students' minds so that the meaning is grasped in the Japanese language. Hino (1992:108-109) noted that this kind of mental exercise is not the best method to read and understand English text.

Primarily, reading can be defined as "to extract visual information from the page and comprehend the meaning of the text" (Rayner et al., 2012:19). As many researchers have mentioned, defining reading is a hard task since reading can be viewed from

different perspectives that include the affective, cognitive, and sociocultural (Day and Bamford, 1998:11), the purpose of reading is varied (Carrell and Grabe, 2002:233), and reading involves the reader, the text, and the interaction between reader and text in which each of these elements needs to be explored (Aebersold and Field, 1997:5-17).

There are four elements to any definition: the phenomenon, the observers, the phenomenon's label, and clarifying features (Mosenthal and Kamil, 1996:1015). In this research, the phenomenon is reading. The observer is the writer of this thesis. The phenomenon's label is reading. The most important feature of reading that I would like to identify is the interactive process in reading. The interactive process includes an interaction between the reader and the text (Grabe, 1988; Grabe, 2009) and both top-down and bottom-up processing in cognitive psychology (Barnett, 1989; Beck and McKeown, 1986; Carrell and Eisterhold, 1988).

Reading is viewed as "a kind of dialogue between the reader and the text" (Grabe, 1988:56) since reading activates knowledge in the reader's mind and the knowledge may be refined by the new information in the text. During this processing process, the background knowledge that the reader possesses is activated and serves the purpose of understanding the intention of the writer in the text (Tierney and Pearson, 1994). The background knowledge encompasses formal schemata (Aebersold and Field, 1997; Hyon, 2002; Kern, 2000; Urquhart and Weir, 1998) that refer to the text structure of written text that is the teaching item. Knowledge of the text structure is beneficial to the construction of meaning that is achieved by activating the formal schema.

The interactive process also refers to the interaction of top-down and bottom-up processing (Barnett, 1989; Farrell, 2002; Rumelhart, 1994; Stanovich, 1980). The top-down approach is adopted to predict the probable meaning. The bottom-up approach is chosen to confirm whether what the reader predicted is really what the writer intends to say. In the top-down processing, the readers make predictions based on the schemata they have acquired. Formal schemata including text structure are activated during the top-down processing. In order to do this, the formal schema must exist. The need to teach text structure to students who do not have the knowledge comes next.

Thus, reading can be defined in this research as the interactive process in which meaning is constructed through the interaction between the reader and the text and

meaning is extracted from the text itself and from the activation of prior knowledge of the reader.

1.2.2 Teaching of Text Structure

This thesis study investigates the possible effects of the teaching of text structure. The research topic is inspired by a research finding that English education in reading classes in Japan has been dominated by the so called *Yakudoku* method or the Grammar Translation Method (Bamford, 1993; Gorsuch, 2001; Isaji, 2006) in which the focus in the class is placed on the literal translation of English texts into Japanese and grammatical instruction in Japanese. Under such educational circumstances, many Japanese teachers of English are likely to believe that the understanding of single sentences leads to the understanding of the whole text and thus falls short of students' expectations for whole text understanding. As Temma (1989:57-60) and Hagino (2008:2) suggested, Japanese students have a tendency to process text by decoding every verbal unit in sequence and in detail. Such a reading process disturbs the flow of text comprehension and results in a loss of meaning (Field, 2003).

Text types are basically distinguished between narrative and expository texts. These two text types that are also called two families of macro-genres (Grabe, 2002b:251) often appear in textbooks that EFL students read. There are more genres than these two. To cite a case, persuasive texts are found in informational texts such as government reports and research articles (Hoyt and Therriault, 2003:55; Hyland, 2004:29), and argumentative texts are frequently found in essays (Hoyt and Therriault, 2003:55; Hyland, 2004:32). Aesthetic texts that include myths, drama, fables and so on (Monaghan, 2007:7) are read more for appreciation rather than practical reasons and thus are essential reading for students of arts and literature. I opted to focus on the two genres of narrative and exposition that these EFL students are required or expected to read in their studies.

The two text types of narrative and exposition have their own distinctive features. The strength of narrative texts is determined by the drama, believability, and goodness of a story (Grabe, 2002b:253). Its primary mechanisms are plot, character, and perspective. Narrative texts appeal to readers' shared knowledge and are easier to understand than expository texts (Koda, 2005:155). Expository texts, in contrast, follow a logic that is displayed by the expository text itself (Grabe, 2002b:253). They essentially are

informational and intend to induce new insight (Koda, 2005:161). Koda (2005:155) noted that understanding the structural properties of expository texts generally requires considerable training while reading narrative texts does not necessarily need training. Familiarity with and understanding of expository texts is indispensable for students who live in the information age. As regards reading education in the first language (L1), Duke (2003a:3) suggested that the expository text type should be included in reading classes since expository text is the key to success in schooling. In order to become good readers of expository texts, they are required to attend to both the external organisation of text such as the *table of contents* and the internal structure of ideas, i.e., text structure of *cause-effect, problem-solution*, and so forth (Ogle and Blachowicz, 2002:262). Teaching of the text structure can be one method of meeting students' expectations of their understanding of expository texts as a whole.

Writers organize their texts so that more important ideas are highlighted. Studies have indicated the following educational implications (Farrell, 2002:32). (a) Retention of important ideas improves. (b) Good readers use writers' signalling devices to understand texts. (c) Students who are trained to recognize the text structures do better in comprehension. (d) Knowledge of text structure transfers to student writing. If Farrell's (2002) educational implications hold true of Japanese students, training to recognise the text structures will facilitate their text comprehension. To be more precise, students may be able to distinguish between main ideas and supporting details, and understand how the texts are structured and how the texts are rhetorically organised.

The tendency for written text to gain in importance as input will be more pronounced in the university phase of education such as area studies, English for specific purposes courses and so on where students are expected to read extensively and intensively in their L2. Brown (2002:339-340) proposed some strategies for improving text comprehension such as making connections to background knowledge, capitalising on text structure, self-questioning, summarising the most important information, and creating mental images of text content from strategies instruction research. Familiarising students with the common patterns that a writer uses to organise a text may help them grasp how ideas are presented in text. Text structure in this research includes both *paragraph structure* and *rhetorical organisation*. To illustrate, the paragraph structure covers main ideas and supporting details. The major rhetorical organisation contains four types: *comparison, problem/solution, cause/effect*, and

description (Farrell, 2002, 2009; Kern, 2000; Meyer, 1985; Meyer and Freedle, 1984; Meyer and Poon, 2001; Meyer and Ray, 2011; Meyer and Wijekumar, 2007). Acquiring the knowledge of text structures through practice may help Japanese college students tackle their particular field texts.

1.3 Significance of This Study

The importance of this study is based on attention to the differences of paragraph organisation of expository text between English as a target language and Japanese as a native language. Expository text is an informational text intended to induce new insights (Koda, 2005). The possibility of improving the reading comprehension of college students in the English as a Foreign Language (EFL) context in Japan is explored by the teaching of text structure. The EFL context refers to the role of English in countries where it is taught as a subject in schools but not used as a medium of instruction in education or as a language of communication within a country (Richards et al., 1992).

Although a Japanese *danraku* is considered to correspond to a paragraph in English, originally, "the Japanese language does not have the notion of the paragraph, so that we have not understood the fact that the structure of Western languages piles up the meaning by the unit of a paragraph" (Toyama, 2010:41). The Japanese *danraku* is just a major division in a long passage, and embraces no concept of a topic sentence and supporting details that are common in an English paragraph (Shinmura, 2008). Recognising the differences in paragraph organisation between the two languages could be helpful for Japanese students in reading in English as their second language (L2).

An English paragraph and a Japanese *danraku* do not share common functions, which seems to affect the writing of Japanese students. "The critical differences between the paragraph and the *danraku* make Japanese students produce unclear and out of focus paragraphs when they write English" (Kimura, 2003:576). Further, Kimura (2003) pointed out that Japanese students organise a paragraph as they do for the *danraku* without a logical combination. They also put more than two main ideas in one paragraph because this can be allowed in the Japanese *danraku*. The students actually need help in writing, especially with organisation (Shaw, 1996). For Japanese learners, the writing conventions of their first language (L1) seem to affect their L2 writing (Kohro, 2009).

Much Japanese writing seems generally very challenging to understand for native speakers of English. Long sentences and vague statements in Japanese writing can place readers in a maze of confusion. English writing is usually much less problematic because writers try to write more clearly based on their responsibility to make their writing understandable (White, 1987). Sakuma (1983) reported that American college students could reconstruct paragraphs from an un-indented editorial in *The New York Times* much better than Japanese college students could from a Japanese language editorial of *Asahi Shinbun*, one of the major national newspapers in Japan. Sakuma's (1983) report supports Shinmura's (2008) contention that the Japanese *danraku* is just a division and lacks the notion of topic sentences and supporting details as in the English paragraph. Readers who read Japanese texts are burdened with responsibility to understand overly long and unclear sentences.

The different functions of a paragraph between English and Japanese languages seem to affect the reading of Japanese students. Kitao and Kitao (1989) explained students' reading behaviour from their teaching experience that students do not usually pay attention to how the sentences in a passage are related, how ideas are organized, and what the overall idea of the passage is. The maximum unit the students attend to is a sentence. "Most of them do not understand the concept of the English paragraph or how English paragraphs are organized. They do not pay attention to paragraphs while reading" (Kitao and Kitao, 1989:102). "One of the problems for Japanese students is their unfamiliarity with the dominant function of rhetorical norms in English-language paragraphs" (Tayebi et al., 2009:2). Reading experience in students' L1 may muddle their reading comprehension in L2. The necessity to teach the text structure of the paragraph in English arises. In general, reading is central to learning and using second languages in formal educational settings (Grabe, 1986, 2002a; Jensen, 1986; Nuttall, 2005) and is essential for those who have to do an undergraduate thesis at college. If the Japanese students have basic knowledge of the organization of an English paragraph and are familiar with the structure of the paragraph, the reading comprehension of Japanese students may be changed for the better.

Cummins (1979, 1991) proposed a Common Underlying Proficiency model in which the cognitive/academic proficiencies underlying literacy skills in L1 and L2 are assumed to be interdependent. L1 cognitive/academic language proficiency (CALP) refers to the dimension of language proficiency that is related to literacy skills in L1.

This L1 CALP is a major determinant for L2 CALP development (Baker and Hornberger, 2001).   Francis (2000:176-177) specified three aspects of language proficiency that are interdependent: text comprehension proficiencies, formal schemata, and organizational skills.   Formal schemata include text structure (Carrell and Grabe, 2002).   If L1 CALP determines an individual's performance on cognitive/academic tasks such as reading in L2 (Baker and Hornberger, 2001), chances are good that the students who learned to read a Japanese *danraku* would initially approach a paragraph in English in a similar way.   When Japanese students acquire basic knowledge of the organization of an English paragraph and are familiar with the structure of the paragraph, they would then be able to recognise the function of the English paragraph.

Carrell (1985, 1992) and Farrell (2009) suggested that English as a second language (ESL) learners can better understand a text when they can recognise the different types of text structure of a paragraph in English.   Carrell's (1985, 1992) research was conducted in the USA and the participants could be easily exposed to written text outside the class.   The total amount of exposure to the L2 print media and L2 reading that a student experiences seems to differ fundamentally in ESL and EFL contexts.   I am not fully aware of any research on the instruction of text structure that has been conducted on participants with a specific Japanese cultural background.   I will explore the possibility of teaching text structure to Japanese EFL students who have very limited exposure to English outside the class and consider the potentially influential factors on reading comprehension in the EFL environment.

1.4 The Nature of the Research Problem

The tradition of using the Grammar Translation Method is so strong that it has been synonymous with English education in Japan (Bamford, 1993; Gorsuch, 2001; Isaji, 2006).   The Grammar Translation Method mainly allows students to read and translate a text back into their L1 (Lems, Miller, and Soro, 2010).   This teaching method is still the major one for many Japanese teachers of English in college reading classes.   The focus in the reading class is placed on grammatical rules, memorization of vocabulary, translation of texts, and the completion of written exercises.   The students are exclusively involved in activities that transpose the English language word for word and clause by clause into Japanese.   As a result, English passages are hardly remembered in the minds of students because the students are prone to focus on translated Japanese.

While the Grammar Translation Method seemed to be a good way of extracting meaning from a text written in a language in which a learner has little proficiency, the method seems to be inappropriate for fluent reading.   The writer's ideas and purpose is organised within a text as rhetorical organisation and the instruction of text structure can be one solution to the problem (Carrell, 1985; An, 1992; Meyer and Poon, 2001; Zhang, 2008).   The lack of teaching of text structure has motivated me to focus on this research topic.

Kitao and Kitao (1989:107) described as the reading behaviour of Japanese students that many Japanese students believe that if they understand all the individual parts of a passage, they can understand the whole.   Based on this idea, they try to understand each word and accumulate the meanings of words, sentences and then try to understand the passage.   They seldom anticipate the whole meaning first and then test their hypothesis, as good readers do in their native language (Duke and Pearson, 2002).

1.5 Participants and Context

The participants are conveniently available from pre-existing groups of classes at one university.   All the participants are national university students aged between 18 and 21.   They received formal English language education that starts at the first year of junior high school, at the age of 12, and continues until the third year of high school, at the age of 17.   Although the fifth and sixth graders are supposed to start learning English at school in the present English course curriculum which was revised in 2011, the participants followed the old English course curriculum and did not receive English education in elementary school.   I teach a course in reading for freshmen at college. A sample of nearly forty students is used for each group.   Because the treatment materials and tests are prepared by a teacher who roughly grasps the reading ability of students and are conducted as part of regular classes, the use of intact classes has the possible advantage of enhancing face validity (Alderson, Clapham, and Wall, 1995).

Japanese students learn English language in the English as a foreign language (EFL) context.   EFL students differ from ESL students in that the EFL students are not pursuing their education in an L2 medium institution or cultural milieu (Hedgcock and Ferris, 2009).   As Hedgcock and Ferris (2009) noted, EFL students do not experience culture shock because they are in their home countries and are not exposed to the L2 culture like ESL students who may experience various degrees of culture shock.   Their

motivations and interests may be extrinsically motivated to improve their English language skills.   EFL students may have limited resources such as interaction with native speakers, television and radio, and print materials outside of the class.   The language development of EFL students generally may take place more slowly than ESL students (Brown, 2000).

1.6 Definition of Terms

Reading competence and reading ability can be used interchangeably (Koda, 2005) and are defined in general as "the ability to understand information in a text and interpret it appropriately" (Grabe and Stoller, 2011:11).   The concept stems from the basic assumption that "successful comprehension emerges from the integrative interaction of derived text information and pre-existing reader knowledge" (Koda, 2005:4).   The critical core of competence of this reader and text interaction can be subdivided into three processing clusters: decoding, text-meaning construction, and assimilation with prior knowledge (Carpenter and Just, 1986).   The decoding involves linguistic information that is extracted from print materials.   In the information-building phase, extracted ideas are integrated to uncover text meaning.   The amalgamated text information is then synthesized with prior knowledge.   Concerning the text-meaning construction, macro-propositions, that is, main ideas (Meyer, 1981; Hedgcock and Ferris, 2009) are identified and the rhetorical organization of text into categories such as *comparison*, *problem/solution*, *causation*, *sequence,* and *description* (Meyer and Freedle, 1984; Farrell, 2002, 2009; Meyer and Poon, 2001; Meyer and Wijekumar, 2007) is noted.

The term 'expository text' is defined as an informational text intended to induce new insights (Koda, 2005), and is often contrasted with narrative text, and includes textbooks, essays, and magazine writing (Pearson and Fielding, 1996).   The "main thrust of expository texts is to communicate information so that the reader might learn something" (Weaver and Kintsch, 1996:230), in contrast to the nature of narrative text which is largely a story, pieces written to interest and entertain readers.   "Expository texts have received a large amount of attention because they are an important medium for the acquisition of new knowledge in instructional settings" (Vidal-Abarca et al., 2002:93).   Alderson (2000) suggested that expository texts are harder to process than narrative texts that follow a story grammar that is a system to explain the underlying structure of stories (Flood, 1981), e.g., descriptions of setting, characters, and other

attributes of the story. The vocabulary words in expository texts tend to be less familiar and the concepts are more challenging. Expository texts typically consist of a variety of abstract and logical relations and are organized around rhetorical organisation (McNamara et al., 2007) while a narrative text has a structure that is temporal and causal (Hudson, 2007).

Micro-propositions include the propositions that are idea units (see Appendix D), combining more than one word in a schematic form (Kintsch, 2004) are at the lowest level of text structure. The idea units comprise a single clause and gerundive, nominalised verb phrase, and prepositional phrase (Carrell, 1985). Meyer and Rice (1982) emphasised how the idea units are related to one another in a text. The micro-proposition can be regarded as a microstructure that is at the local level of the text, that is, the structure of the individual propositions and their relations (Kintsch and van Dijk, 1978; Kintsch, 2004).

Macro-propositions are main ideas or gist of portions of the text (Meyer, 1981) and are equivalent to van Dijk's (1977) macrostructure. Whereas at the micro-propositional level the relationships between individual sentences or concepts are at issue, the concern at the macro-propositional level is the relationships among ideas represented in paragraphs. The macro-propositions may be explicitly stated or must be inferred from the micro-propositions. The macro-propositions are maintained longer than the micro-propositions in a reader's memory and help a reader to comprehend (Kintsch and van Dijk, 1978; Hedgcock and Ferris, 2009) or recall key information in the text (Baylor and McCormick, 2003).

The top-level structure of a text (see Appendix F) corresponds to "its overall organizing principle" (Meyer, 1985:20) and is written as rhetorical organisation (Meyer and Poon, 2001). Meyer (1981) presented five basic types of commonly used top-level structures: *antecedent/consequent*, *comparison*, *collection*, *description*, and *response*. Meyer and Rice (1982) also proposed five rhetorical relationships that represent ways of thinking about topics: *collection*, *causation*, *response*, *comparison*, and *description*. Meyer's (1981) *antecedent/consequent* top-level structure was replaced by *causation* in Meyer and Rice (1982). Both the *antecedent/consequent* and *causation* represent the same relationship and show a causal relationship between ideas where one idea is the antecedent or cause and the other is the consequent or effect. Meyer and Freedle (1984) proposed four organizational discourse types that are *comparison*,

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problem/solution, *causation*, and *a collection of description*. Two types of rhetorical organisation of the *collection* and the *description* in Meyer's (1981) and Meyer and Rice (1982) are combined into one because the *collection* and *description* often combine when a collection of attributes, specifics, or settings are given about a topic (Meyer and Freedle, 1984; Farrell, 2002, 2009). This thesis research employs the classification of Meyer and Freedle (1984) and Farrell (2002, 2009).

A distinction is made between two levels of mental activity: conscious and subconscious. Cognitive processes are broadly of two types, controlled and automatic. The former are generally slow, conscious, effortful, and attention-demanding while the latter are fast, subconscious, nearly effortless, and attention-free (Schneider and Shiffrin, 1977). Processes that are controlled are conscious and those that are automatic are subconscious (Field, 2003). Consciousness is associated with awareness and intention (Hampson and Morris, 1996).

Readers use their specific reading strategies consciously or intentionally. A reading comprehension strategy is "a cognitive or behavioural action that is enacted under particular contextual conditions, with the goal of improving some aspect of comprehension" (Graesser, 2007:6). And more specifically, reading strategies are "deliberate, cognitive steps that learners can take to assist in acquiring, storing, and retrieving new information" (Anderson, 1991: 460) and are "the mental operations involved when readers approach a text effectively and make sense of what they read" (Barnett, 1988: 150). Awareness of text structure can be represented as a strategy for those who have not applied the text structure. In order to foster this awareness, the text from Appendix G was presented to students using a graphic organiser so that students could focus on the identification of discourse structures by drawing a diagram to illustrate *cause-effect* rhetorical organisation.

Reading skills are used subconsciously (Anderson, 2009) and are defined as "linguistic processing abilities that are relatively automatic in their use and their combinations" (Grabe and Stoller, 2011:8). For some well-practiced skills, control of actions is not involved. Reading skills are generally represented in categories such as word attack skills or decoding skills, comprehension skills, fluency skills, and critical reading skills (Hudson, 2007). Reading skills are only accomplished by a lot of reading repetition (Carrell, 1998) and are applied by readers automatically.

1.7 Research Aims and Questions of This Study
1.7.1 Research Aims and Objectives

The overall aim of this research project is to find a way to improve the reading comprehension of college students in an EFL context in Japan. Within the overall aim, the specific aims are to teach text structure that includes both paragraph structure and rhetorical organisation to Japanese college freshmen in order to increase the students' consciousness of the text structure, and to examine the effects of the instruction. This research has three research strategies that are pursued so as to achieve these aims. Firstly, I collected a questionnaire enquiring into the reading strategies that Japanese college students utilize when they read expository text. Secondly, I provided focused instruction that highlights the paragraph structure and four types of rhetorical organisation. These are *comparison, problem/solution*, *causation*, and *a collection of descriptions* (Meyer and Freedle, 1984; Farrell, 2002, 2009, see Appendix H for an example taken from Meyer et al., 1989) by a visual representations method (Pearson and Fielding, 1996) to Japanese college freshmen. Thirdly, the instruction was assessed by a questionnaire, a reading comprehension test, an immediate written recall task, and an interview.

1.7.2 Research Questions

This thesis study aims at finding a way to improve the reading comprehension of Japanese EFL college students. With this aim in mind, five specific research questions were raised. Texts included in textbooks that these college freshmen read can be roughly divided into two types: expository or narrative. The expository texts appear to be common these days in textbooks that college freshmen are required to read in general education courses for freshmen. Therefore, this study is dedicated solely to reading comprehension in expository texts. Since paragraph organisation in English differs considerably from that in Japanese, it is vital for students to acquire some knowledge of paragraph organisation in English in one way or another for effective reading.

This study addresses the following five research questions:

1. To what extent does the teaching of text structure alter the reading behaviour of Japanese college students when they read expository texts?

2. To what extent does teaching text structure improve students' reading comprehension?

3. To what extent does the teaching of the text structure improve the reading comprehension of poor readers and good readers?

4. To what extent does teaching the text structure increase the amount of information remembered from the text?

5. To what extent does teaching the text structure alter students' identification of rhetorical organisation?

These research questions can be answered after obtaining information from the participants during this research study.

1.8 Research Methodology

This thesis research uses a mixed methods design. As for quantitative methods, the present research is quasi-experimental and attempts to give an experimental group longitudinal treatment and to objectively assess the effect by looking at the test scores. A questionnaire about reading strategies was given. As for qualitative methods, a narrative research method, namely, interviews were used to obtain views and facts on text structure from three voluntary participants from each of experimental and control groups respectively. This research is conducted predominantly under the umbrella of the post-positivist paradigm (Muijs, 2004).

Recognising the participants' use of reading strategies paints a picture of their reading behaviour. Reading strategies are "deliberate, cognitive steps that learners can take to assist in acquiring, storing, and retrieving new information" (Anderson, 1991: 460). Japanese students are reported to use the translation reading strategy, which pertains to word for word translation and the grammar strategy, which is related to the analysis of each sentence with grammatical knowledge (Iijima, 2000). In order to unveil the participants' use of reading strategies, a questionnaire was prepared. The questionnaire is based on Carrell (1989) and is concerned with participants' metacognitive conceptualization of their reading strategy use (see Appendix C). If the

participants recognise the importance of text structure through the instruction, some changes on an item in the post-questionnaire may be observed by comparing the pre-questionnaire items that were conducted before the instruction.

Both an experimental group and a control group read the same materials with dictionary access and grammar instruction. In the first half of the semester, the instruction of text structure was given only to the experimental group while the control group read the text by themselves. In the second half, after the data collection was completed, the same instruction was given to the control group and the experimental group read the text by themselves. As a whole, time allotment and instruction given during the semester are supposed to be unbiased for both groups.

Explicit instruction of text structure was given by means of visual representations (Pearson and Fielding, 1996; Duke and Pearson, 2002; Dymock and Nicholson, 2007) in which students complete the blanks of a structure diagram for the patterns of ideas structured in the text such as a graphic organiser for *causation* (Jiang and Grabe, 2009, see Appendix G). *Text structure* in this research includes both *paragraph structure*, e.g., *main ideas* and *supporting details*, and *rhetorical organisation* in which the four basic types of rhetorical organisation are *comparison*, *problem/solution*, *causation*, and *a collection of descriptions* (Meyer and Freedle, 1984; Meyer and Poon, 2001; Meyer and Wijekumar, 2007). According to Meyer and Freedle (1984), *collection* is a list of elements associated in some manner and *description* is a specific type of grouping by association. The *description* gives more information about a topic by presenting an attribute, specific, or setting. The *collection* and *description* often combine as a *collection of descriptions* when a collection of attributes, specifics, or settings is given about a topic.

The effect of the instruction was assessed by a reading comprehension test, an immediate written recall task, a questionnaire, and an interview given shortly after the instruction. The participants' reading comprehension was evaluated with the use of pre- and post-reading comprehension tests of the Jitsuyo Eigo Gino Kentei or Test in Practical English Proficiency (EIKEN) (see Appendix A). The awareness and grasp of text structure was estimated by the immediate written recall task (see Appendix B) and interviews with a representative sample of students. The questionnaire (see Appendix C) was used to see if any changes of the use of reading strategies occur.

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The participants were conveniently available from pre-existing groups of classes at a university. A sample of nearly forty students was used for each group. Because the treatment materials and tests were prepared by a teacher who roughly grasps the reading ability of students and were conducted as part of regular classes, the use of intact classes has the possible advantage of enhancing face validity (Alderson, Clapham, and Wall, 1995).

This research adopts the following procedures. One day prior to the onset of the instruction, all the participants were given the pre-questionnaire, the pre-reading comprehension test, and the pre-recall task. The instruction was given within my assigned teaching duties. Approximately one fifth of each session's time was allotted to instruction for the experimental group while the control group read the same reading materials by themselves without any instruction. Both groups basically used the same textbook and teaching procedures except for the additional text structure instruction for the experimental group. Interviews were conducted with voluntary participants individually. After the specific instruction of seven classes over two and half months on text structure for the experimental group was completed, all the participants were given the post-reading questionnaire, the post-reading comprehension test and the post-recall task followed by the interviews with extracted participants.

1.9 Structure of the Thesis

This thesis consists of six chapters: Introduction, Literature Review, Research Methodology, Quantitative Research Findings, Discussion and Analysis of the Interview Data, and Conclusion, including References and Appendices. The Introduction chapter includes the importance of the research, the research problem, the aims and objectives of the research, the research questions, and the construct of the thesis. Following this introductory chapter, the Literature Review chapter reviews key literature on Schema Theory, reading processes in L1 and L2, and text structure in order to present a rationale for this thesis research. Some major findings from empirical research studies on text structure in both L1 and L2 are reviewed. Gaps in previous research are identified and are used to generate research questions.

The Research Methodology chapter explains the research design adopted in this research. The paradigmatic stance of this researcher is identified. This chapter discusses the validity and ethical issues, describes the methods of investigation, justifies

these methods according to the literature, and explains the data analysis method.

The Quantitative Research Findings chapter reports the descriptive statistics and inferential statistics of quantitative data such as reading comprehension tests, the idea unit analyses of immediate written recall tasks, and the results of a questionnaire.

In the Discussion and Analysis of the Interview Data chapter, I draw inferences from the results and discuss the findings in the light of the research questions. The significance and contribution to the teaching of English in Japanese education is mentioned. Key findings from an analysis of qualitative data from interviews are also presented.

Finally, the Conclusion succinctly states what I have done in the thesis research, proposes directions for future research, and indicates the limitations of this research. In the appendices, samples of pre-tests and post-tests reading comprehension tests, a questionnaire, pre-tests and post-tests immediate written recall tests, interviews, and text structure instruction are presented.

1.10 Summary

This introductory chapter introduced this study. Background information about this research was provided so that this chapter becomes a clear signpost to the subsequent chapters. The importance of the teaching of expository texts to Japanese college students was illustrated. The research problem that leads to a need for this research was identified and discussed. Participant characteristics and a distinct context for this research were briefly described. The key terms used in this research were defined. The overall aims, specific objectives and research questions of this research were addressed. Research methodology was briefly outlined. In the next chapter, an in-depth account and review of the literature relevant to this research provide a framework for conducting this study and a benchmark for comparing the findings with other results.

Chapter 2

Literature Review

2.1 Introduction

As I have mentioned in the introductory chapter, this study relates to the research area of reading comprehension, especially investigating the possible effects of the teaching of text structure. This chapter tries to determine the conceptual framework on which this study is based and review the literature of reading processes in L1 and L2, characteristics of good and poor readers, language transfer, text structure, Schema theoretic view of reading and text structure instruction in L1 and EFL/ESL contexts.

2.2 Reading Processes in L1

Research on reading processes in L1 can be considered metaphorically from three major reading approaches: bottom-up approaches, top-down approaches, and interactive approaches (Hudson, 2007; Nuttall, 2005; Stanovich, 2000; Urquhart and Weir, 1998). Although different researchers have had different perspectives on what processes are involved when reading, this section intends to review some previous work on reading processes in L1, which seems to be relevant to the theoretical foundations of this research.

The bottom-up approaches basically assume that "a reader constructs meaning from letters, words, phrases, clauses, and sentences by processing the text into phonemic units that represent lexical meaning, and then builds meaning in a linear manner" (Hudson, 2007:33). That is, the reader starts from the bottom that includes letters and sounds to get to the top that means comprehension (Anderson, 2008). The reader processes each word letter-by-letter, each sentence word-by-word, and each text sentence-by-sentence in a linear fashion (Grabe and Stoller, 2011). This approach of gaining access to text is exactly what Japanese high school students have traditionally done in reading classes (Hagino, 2008:2). To this day, many Japanese high school students think that learning English is to literally translate every English word and sentence in the textbook into the Japanese language and write down the translated Japanese sentences into a notebook (Hagino, 2008:2).

Gough's (1972) model of the L1 reading process described how a reader processed text from the first moment of looking at the printed material to the time when meaning was derived. Kadota and Noro (2001) suggested that Gough's (1972) 'one second of reading' model was the most prototypic model among bottom-up processing models such as Carver (1977), LaBerge and Samuels (1974), Massaro (1975), and Mackworth (1972). Gough's (1972) model attempted to pin down as completely as possible the events that occurred during the first second of reading. The input is sequentially transformed from low-level sensory information into higher-level encodings. More specifically, the input signal is first registered in the icon and then transformed from a character level representation to phonemic representation, lexical level representation, and finally to deep structural representation. Although Gough's model is insufficient to account for actual reading behaviour, the model addresses verifiable research issues by intending to carefully depict the process of one moment of reading.

The top-down approaches are used when the expectations of the reader play a crucial, dominant role in the processing of the text (Urquhart and Weir, 1998). The top-down approaches suggest that readers' previous knowledge, expectations, experience and scripts that is "larger event structure or framework" (Nelson, 1977:222), along with schemes, are used in reading the text (Barnett, 1989). An event sequence describes the interaction of different concepts such as people, places, and things that are organised around a goal, for example, eating in a restaurant, or buying food in a store. Such knowledge of scripts for events enables a reader to predict what, when, and who are in familiar situations. Knowledge structures such as specific scripts have been shown to affect how students comprehend a particular text (Narvaez, 2002). Readers' comprehension is directed by their goals and expectations (Grabe and Stoller, 2011). A passage can be understood even if not all of the individual words are understood. This can be possible by activating background knowledge, making predictions, and searching the text to confirm or reject the predictions that are made (Anderson, 2008).

The psycholinguistic guessing game model of reading that was proposed by Goodman (1976) is primarily a top-down model. Goodman (1968:15) defined reading as "an interaction between reader and written language, through which the reader attempts to reconstruct a message from the writer." This model suggests that "efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest, most productive cues necessary to produce guesses which are right the first time" (Goodman, 1976:498). In the psycholinguistic guessing game

model, readers use their background knowledge and select the information necessary for perception from the text, and processes in reading that include sampling, predicting, testing, and confirming are repeated.   Since the psycholinguistic model of reading is originally derived from the strategy analyses of good readers in L1 (Kadota and Noro, 2001), it is unclear whether the psycholinguistic model can be applied to L2 learners who do not have the same level of linguistic knowledge as L1 readers do.

The interactive view of reading approaches are regarded as the process of combining textual information with the information a reader brings to a text, that is, the interaction that occurs between the reader and the text (Grabe, 1988; Anderson, 2008).   This suggests that meaning simply does not reside in the text itself and understanding is facilitated by interaction of the background knowledge of readers with the text.   In the interactive approaches, a reader does not necessarily read each word in the text as is assumed in the bottom-up approaches.   The problem that the readers' prediction breaks down if they don't have the scripts of a particular event may be coped with in a satisfactory manner.   As Grabe (1991) pointed out as a key concept of the interactive approaches, fluent reading involved both decoding and interpretation skills.

Rumelhart provided the best example of interactive models of reading (Stanovich, 2000).   Rumelhart (1994:864) regarded reading as a perceptual and a cognitive process as against linear processing such as bottom-up processing.   When producing a most probable interpretation of text, "all of the various sources of knowledge, both sensory and nonsensory, come together at one place and the reading process is the product of the simultaneous joint application of all the knowledge sources" (Rumelhart, 1994:878).

Rumelhart and Ortony (1977) explained an interactive model of reading by Schema Theory.   Schemata "are data structures for representing the generic concepts stored in memory" (Rumelhart and Ortony, 1977:101).   They exist for generalised concepts underlying objects, situations, events, sequences of events, actions, and sequences of actions.   According to Schema Theory, reading is an interactive process in which the author's perspective, points of view, or arguments are all interpreted through the reader's experiences, perspective, cultural orientation, and biases (Barnett, 1989).   Efficient comprehension requires the reader to relate the textual information to one's own knowledge (Carrell and Eisterhold, 1987, 1988).   This point of view of schemata is incorporated into the interactive model of reading.

A distinction is drawn between formal schemata that represent background knowledge of the formal, rhetorical organisational structures of different types of texts and content schemata that denote background knowledge of the content area of a text (Carrell, 1983; Carrell and Eisterhold, 1988; Kern, 2000; Richards and Schmidt, 2010). The formal schemata are closely relevant to this research because the aims of this research are to teach text structure to the participants and to examine how the teaching affects the participants' comprehension. The *text structure* in this research embraces both *paragraph structure* that covers *main ideas* and *supporting details*, and *rhetorical organisation* in which some types of rhetorical organisation such as *problem/solution*, *comparison/contrast* and so on are identified (Meyer and Freedle, 1984; Farrell, 2002, 2009). If students possess the knowledge of the text structure that is encompassed in the formal schemata and familiarise themselves with the use of that knowledge, they may comprehend a text more easily and clearly.

Stanovich (1980) proposed an interactive-compensatory model of reading. In Stanovich's (1980) model, the poor reader may have compensated for a deficit in a lower-level process such as letter or word recognition by relying more on a higher-level knowledge source. This viewpoint is annexed to a conventional interactive model of reading. Stanovich (2000) suggested that it was reasonably well established that bottom-up processing models were inadequate because they failed to account for many important empirical results in the reading literature. Bottom-up processing models usually contain no mechanism whereby higher-level processes can affect lower levels. Stanovich's (1980) model could explain that poor readers exhibited greater sensitivity to contextual constraints than did good readers, as Samuel and Kamil (1984, 1988) pointed out. If poor readers have insufficient linguistic knowledge in orthography and lexis, they intend to compensate for the insufficient knowledge by activating their background knowledge. On the contrary, when poor readers lack background knowledge, they attempt to complement a lack of the background knowledge by drawing on all of the linguistic knowledge.

2.3 Reading Processes in L2

L2 reading can be quite different from L1 reading. Since this research originally derived from the differences of paragraph organisation of expository text between English and Japanese languages, I would like to explore the issues of how L2 reading of

the participants of this research is different from L1 reading from the aspect of linguistic and processing differences

Lexical knowledge is required for comprehension in terms of linguistic resources at the initial stages of learning reading (Grabe and Stoller, 2011). American students typically begin to read formally at the age of 6 in the first grade (Grabe and Stoller, 2011) and already have vocabulary knowledge of 5000 to 7000 English words in the first grade (Cunningham, 2005). In contrast, Japanese students are expected to learn up to approximately 1200 English vocabulary words during three years in junior high school, a number established by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2008) in Japan. It is still believed that the formal English education in Japan is first provided in junior high school although the new curriculum to teach fifth and sixth graders English was introduced in 2011. The MEXT does not specify the number of vocabulary words to be learned for grade school, and expects pupils to have just become familiar with phonics in grade school and to develop basic reading, writing, and conversational abilities by the end of junior high school. There is quite a big difference between the approximately 6000 words learned in the USA and the virtual absence of lexical knowledge in Japan at the start of formal English learning.

L2 grammatical and discourse knowledge is also required for effective reading comprehension (Grabe and Stoller, 2011). L1 students in English implicitly know nearly all of the basic syntactic structures of the language at age six (Grabe, 2009). The Japanese course of study revised by MEXT (2008) required no English syntactic knowledge to be taught in fifth and sixth grade. A quite fundamental sentence pattern (subject + verb) is taught in junior high school for the sentence patterns section (MEXT, 2008). Japanese students must develop L2 linguistic resources while developing L2 reading comprehension skills. Farrell (2009) pointed out the necessity to teach vocabulary items and discourse structure to L2 students from the very beginning of their reading classes, because many L2 readers would not have been exposed to many English language texts like L1 readers who are exposed to many texts in their daily lives. Although the knowledge of discourse organisation is not required to instruct in the course of study for junior high school and senior high school in Japan, the knowledge seems to be very crucial for students who read L2 texts in academic settings like the participants of this research.

The Orthographic Depth Hypothesis (ODH) may be effective for considering the

differences between English and Japanese orthographic systems. The ODH predicts that some writing systems are easier to learn and some are harder to learn (Katz and Frost, 1992). The ODH states that transparent or shallow orthographies are more easily able to support a word recognition process that involves the language's phonology while opaque or deep orthographies encourage a reader to process printed words by referring to their morphology via the printed word's visual-orthographic structure (Katz and Frost, 1992). Transparency means that "one grapheme spells one phoneme and one phoneme only" within alphabetic systems (Birch, 2011:492). Opacity means "the graphemes encode language units in deep and unpredictable many-to-many correlations" (Birch, 2011:489). Orthographic transparency describes how closely the sounds and symbols of a language correspond to each other (Lems, Miller, and Soro, 2010:69). Transparent or shallow orthographies that are closely matched between sounds and symbols include Italian, Spanish, Turkish, Korean, and Dutch. Opaque or deep orthographies in which symbols do not match closely with their phonemes include English, Chinese, French, and Japanese Kanji. Syllabic systems such as Japanese kana are shallow and transparent.

English is regarded as an example of an opaque or deep orthography. The main source of complexity in English derives from its vowel system of about fifteen vowels that are represented by fewer graphemes. Many English words cannot be identified by sounding out the letters across the word (Lems, Miller, and Soro, 2010:78). There are 40 plus phonemes in English (Ellis et al., 2004). They must be represented by only 26 letters. Then the alphabet must be combined in order to represent the sounds of English (McGuinness, 2004). English orthography contains many words that are either irregular or inconsistent (Frost, 2005).

Japanese orthography comprises four types of script: hiragana and katakana (the kana), kanji, and romaji (Kess and Miyamoto, 1999). The Japanese hiragana and katakana are a syllabic system that corresponds with spoken syllables. There is one-to-one correspondence between hiragana and katakana symbols. Syllabic Japanese kana system is orthographically transparent (Ellis et al., 2004). The regularity of the symbol-sound mappings makes hiragana a transparent orthography. Hiragana is mainly used for function words, morphological endings, and the rest of the grammatical scaffolding of Japanese sentences and can be used for writing all native Japanese words. Katakana is mainly used for foreign loan words. Japanese kanji has a logographic system that uses symbols to represent meaning directly and have no or comparatively

few cues to pronunciation.　The ideographic Japanese kanji system that is usually used for content words is orthographically opaque (Ellis et al., 2004).　Romaji that was developed to describe the sound of Japanese in the Roman alphabet is mainly used for the convenience of foreigners who are not familiar with Japanese characters.

The ODH asserts that the continuum of orthographic transparency influences the strategies adopted by readers (Perfetti and Dunlap, 2008).　The more shallow or transparent the orthography the more the reader uses a print-to-sound decoding strategy (Perfetti and Dunlap, 2008).　Nomura (1980) estimated that journals that are published in Japan contain 50% hiragana, 30% kanji, and 10% katakana.　Japanese hiragana and katakana are orthographically transparent while kanji is opaque (Ellis et al., 2004). Thus, Japanese readers who are familiar with journals that include more than half orthographically transparent systems may have a tendency to use the print-to-sound decoding strategy (Koda, 1989, 1990).　The deeper or more opaque the orthography, the more the reader uses a direct look-up of the word without grapheme-speech decoding (Perfetti and Dunlap, 2008).　This direct look-up strategy can be used by the reader when reading English textual materials.　Japanese readers may use orthographically a different strategy between reading a Japanese textual material and reading an English textual material.

The total amount of students' exposure to L2 printed materials is one of the major differences for L2 reading that influences linguistic knowledge differences of L2 students (Grabe and Stoller, 2011:50).　Fundamentally, the participants in this research are supposed to have received English education for six years in junior and senior high school before college enrolment.　The English learning environment of the participants is EFL where English is not the language of communication, and is not the written communication between a reader and a writer, outside of the classroom (Anderson, 2008).　Although there are considerable opportunities for students to be exposed to various English texts through the Internet in this day and age, in general, the number of Japanese high school students who view English-language Internet sites or blogs is confined to less than twenty percent of the students (Naganuma, 2007).　This number is much fewer than Korean high school students who read over the Internet or a blog, approximately seventy percent (Naganuma, 2007).

2.4 Characteristics of Good Readers and Poor Readers

As Pang (2008) pointed out, a variety of terms have been used to describe reader behaviour. These terms that are used to dichotomise readers are *proficient* and *less proficient*, *skilled* and *unskilled*, and *successful* and *unsuccessful*. This research adopts a more comprehensive pair of terms, *good* and *poor* so that readers can be viewed on a continuum with good readers at one end and poor readers at the other end.

Hosenfeld (1977) stated that good readers kept the meaning of the passage in mind during reading, read in broad phrases, that is, in word groups, and skipped words viewed as unimportant to the whole meaning. As contrasted with good readers, poor readers lose the meaning of sentences when they were decoded, read in short phrases, and seldom skip words as unimportant, that is, put the same amount of importance on each word (Hosenfeld, 1977).

In Block's (1986) study, three characteristics were identified as the key to differentiating between good readers and poor readers. They are (a) integration of information, (b) recognition of aspects of text structure, and (c) use of general knowledge, personal experiences, and associations. Readers who can integrate information are generally aware of text structure, focus on the author's ideas, and monitor their understanding consistently. Readers who fail to integrate information tend not to recognise text structure, and rely on personal experiences.

Concerning the reading behaviour of Japanese college students, Kitao and Kitao (1989:102-103) stated from their teaching experience that Japanese college students used an English-Japanese dictionary when they read text in English. As soon as they find an unfamiliar word, they look it up and write down the first translation of that word below the English word without considering whether that translation fits the context. They go on reading until they find another unfamiliar word. They read by replacing all English words with Japanese words one by one. Even if the meaning of the Japanese sentences they make does not make sense, the students may not think anything is wrong. They put the same amount of importance on each word and try to understand a sentence using their knowledge of grammar. When asked to explain the main idea of a passage, some students could not explain it but they could translate it. Reading in English for them is not necessarily related to comprehension. It is their teaching experience that many students do not usually pay attention to how the

sentences in a passage are related, how ideas are organised, and what the overall idea of the sentence is. Many students do not pay attention to the organisation of paragraphs.

It can be presumed that the English-language reading behaviour of Japanese students does not necessarily lead to comprehension. It is a result of the traditional teaching method, known as *yakudoku*, conducted by Japanese teachers. In the *Yakudoku* method, the teacher's job in class is to elaborate a word-by-word translation technique, to provide a model translation, and to correct the students' translations. The goal of reading an English text is to simply render it into a possible Japanese equivalent. As Hino (1992:101) suggested, *yakudoku* is ineffective in that it puts an undue emphasis on each word and meaning is dealt with at the word level only. The *Yakudoku* method is viewed as a way to exert an influence on the reading of Japanese students.

There are some possible reasons for classes that are taught by the *Yakudoku* method despite the revisions of the ministry's curriculum guideline. High school students are often taught in English class only by the *Yakudoku* method (Kanatani, 2004:8). The teaching of reading by the *Yakudoku* method is found in about half of junior high school classes (Kanatani, 2004:106). Kanatani (2011:194-197) pointed out teacher training and entrance examinations as the reason for many Japanese teachers of English to resort to the *Yakudoku* method. There are many Japanese teachers who do not receive training to give lessons in a teaching method other than the *Yakudoku* method in college or after being a teacher. The *Yakudoku* method is believed to be a useful way to prepare for entrance examinations by teachers and parents who experienced the Yakudoku method in high school or college.

Referring to the LaBerge-Samuels Model (LaBerge and Samuels, 1974; Samuels, 1994), Iijima (2000) suggested that Japanese EFL learners decode printed words slowly and laboriously. For even proficient Japanese readers, the process of decoding is not done sufficiently automatically, and attention is still required for decoding and is not adequately directed toward comprehension. The LaBerge-Samuels Model and the Interactive-Compensatory Model (Stanovich, 1980, 2000) are in agreement that fast and automatic word recognition is an important determinant of fluent reading.

Pang (2008) classified readers into good readers and poor readers, depending on three dimensions that include language knowledge and processing ability, cognitive ability, and metacognitive competence.

First, with respect to the language knowledge and processing ability, the process in word recognition is rapid, accurate, and automatic in good L1 readers (McKenna and Stahl, 2009; Stanovich, 2000).   This automatic word recognition process plays a crucial role in L2 reading comprehension.   Nassaji (2003) pointed out that the automaticity of word recognition must not be neglected even in highly advanced ESL readers.   The size of vocabulary is also a crucial predictor of fluent reading comprehension.   A vocabulary of roughly 5,000 words is needed for familiarity with 97% of the words in a text (Hirsh and Nation, 1992).   Japanese students, on the other hand, are supposed to learn approximately 2,500 vocabulary words by high school graduation (MEXT, 2008).   Due to their limited knowledge of vocabulary Japanese students often suffer a lack of understanding.

Second, strategy training is an effective way to improve reading and good readers are strategic readers (Pang, 2008:7).   Good readers use more strategies than poor readers (Block, 1986; Sheorey and Mokhtari, 2001; Wade, Trathen, and Schraw, 1990).   While the use of L1 is in general considered undesirable in L2 reading comprehension, L2 readers are said to actively use their L1 cognitive resources to help them struggle with meaning in an L2 text (Upton and Lee-Thompson, 2001).   To cite an example, cognitive strategies include searching and summarizing (Mokhtari and Perry, 2008:67).   Metacognitive strategies are referred to as comprehension monitoring, which involves deciding whether readers understand and taking appropriate steps to correct comprehension problems that are detected (Baker, 2008:25).   As L2 proficiency increases, L2 readers tend to use L1 resources only when they encounter difficulties in understanding.

Third, reading is a metacognitive process as well as a cognitive process (Pang, 2008:9).   Good readers are strategic.   This means that they are metacognitively aware, knowledgeable about their own reading processes and develop a repertoire of strategies they use to make sense of text (Vacca, 2002:192).   Strategies require intentionality while skills are executed automatically and applied unconsciously (Almasi, 2003:4).   Strategic processing can become automatic and can be transformed into skills if practiced and repeated frequently.

The characteristics of good readers give insight into what readers need to be able to do (Kitao and Kitao, 1989:101).   Good readers in their L1 reading always monitor their

comprehension while they are reading.

Pressley, Gaskins and Fingeret (2006:47) suggested that good readers generally overview text and scan it. Good readers relate their prior knowledge to ideas in the text, notice when they are confused or need to reread and do so, construct images of the content of the text in their mind, and summarise, interpret, and reject or embrace the ideas of an author.

Duke and Pearson (2002:205-207) suggested that good readers have clear goals in mind from the outset and evaluate whether their reading of the text is meeting their goals. Good readers are active readers, look over the text before they read, and make predictions about what is to come. They construct, revise, and question the meanings they make as they read. Good readers try to determine the meaning of unfamiliar words and concepts in the text, integrate their prior knowledge with material in the text, and monitor their understanding of the text. When reading expository text, good readers construct and revise summaries of what they have read.

Regarding the reading of expository text, Ogle and Blachowicz (2002:262) stated that good readers are purposeful and actively engage in what they read, attend to both the external physical organisation of text and the internal structure of ideas, and employ a small set of powerful strategies. The authors used the terms *external* and *internal* as follows. Expository texts have *external* text features such as table of contents, headings, chapters and so on, and *internal* text structure, e.g., *problem-solution*, *cause-effect,* and so forth. The internal text structure corresponds to rhetorical organisation in this research.

Block and Duffy (2008:21) described the characteristics of good readers. Good readers proactively search for meaning as they read, use text cues and their background knowledge, generate predictions, monitor those predictions, and construct a representation of the author's meaning.

As Block and Duffy (2008:29) pointed out, reading comprehension is a matter of being strategic, not of knowing individual strategies. It is possible for teachers to teach individual strategies so that readers can apply individual strategies consciously and depending on the situation. Poor readers, in particular, benefit from the explicit teaching of individual reading comprehension strategies in both achievement and

metacognitive awareness of what they are doing when reading text (Pressley et al., 1992).   In practice of strategies use, a cycle of predicting, monitoring, and repredicting (Block and Duffy, 2008:29) should be taken into consideration.

Reading is viewed as an interactive process in cognitive psychology (Beck and McKeown, 1986:115).   To understand the text, information from the text and the reader's knowledge should act simultaneously.   Using the knowledge of text structure is one of the common strategies used by good readers (Grabe and Stoller, 2011; Meyer and Rice, 1984; Ogle and Blachowicz, 2002).   However, many Japanese students take the analytical way of reading and do not reach text comprehension easily.   Moreover, poor readers do not often engage in comprehension monitoring.   They may not notice that they actually do not understand what they are reading.   Consequently, these poor readers should take a more strategic approach to reading.

2.5 Language Transfer Influences

In general, some skills are composed of subcomponents that have been learned already. These component skills can be used when learning a new skill and the new skill can be acquired more quickly than if one was newly starting (Hampson and Morris, 1996:142). In the case of language learning, as Koda (2007:17) suggested, L1 learning experience is regarded as a reservoir of knowledge, skills, and abilities that is available when learning literacy skills in L2.   The L1 background is a resource that can help L2 learners if the forms and functions of two languages are similar (Birch, 2011:497).   If two languages differ in the forms and functions, the L1 background may not help L2 learners internalise L2 forms and functions.

Language transfer is defined as "the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired" (Odlin, 1989:27).   Transfer is further distinguished between positive transfer also known as facilitation and negative transfer also known as interference (Gass and Selinker, 2008:94).   These two terms refer to the product of learning, that is, whether transfer results in correct learning or incorrect learning (Gass and Selinker, 2008:90).

The understanding of skill development and of the situations under which transfer will occur can be seen from Schema Theory (Hampson and Morris, 1996:144).   Positive

transfer would create changes that help to develop a schema.   Negative transfer would occur where similar schemata compete or where an inappropriate schema is activated.

The participants of this research are undergraduate freshmen who are supposed to have already received language education in their L1 for twelve years from primary school to high school, have acquired L1 linguistic knowledge, and have considerable L1 literacy experience.   When they encounter L2 reading, these L1 linguistic knowledge and L1 literacy experience may either support the transfer of L1 reading skills to L2 reading or become a source of interference in L2 reading.   The issue of transfer of L1 to L2 needs to be discussed to consider the occurrence of transfer of literacy skills for Japanese EFL students.

The issue whether either L1 linguistic knowledge or L1 general literacy skill is more likely to transfer is discussed.   As Koda (2008:70) put it, what is transferred is linguistic knowledge and the reliance on L1 knowledge is associated with an insufficient grasp of L2 grammatical rules.   The transfer of general literacy skills acquired in L1 would not take place in L2 reading that is a difficult task for students who possess rudimentary L 2 linguistic knowledge.   This limited L2 knowledge hinders students who are highly literate in their L1 from transferring their L1 literacy skills when reading in L2 (Clarke, 1980).   By contrast, Cummins's *Common Underlying Proficiency* model suggested that L1 linguistic knowledge is less-transferable, whereas general literacy skills that are involved in synthesis of meaning are much more transferable across languages (Baker and Hornberger, 2001). A clear consensus as to what actually transfers has yet to emerge (Koda, 2008:71).

Paragraph organisation varies substantially between the Japanese and English languages. In the English paragraph, one paragraph is designed around one main idea while this basic rule of paragraph organisation does not apply to the organisation of Japanese paragraph.   Japanese students organise a paragraph as they do for the Japanese paragraph, *danraku*, and put more than two main ideas in one paragraph since students are allowed to organise *danraku* in this way (Kimura, 2003:576).   The Japanese scholar of English Literature, Shigehiko Toyama (2010:41), wrote, "The Japanese language does not have the notion of the paragraph, so that we have not understood the fact that the structure of Western languages piles up the meaning by the unit of a paragraph."   In this situation of the difference of paragraph organisation, not positive transfer but negative transfer may take place when Japanese students read English text.

Reading experience in L1 would sometimes interfere with L2 reading (Grabe, 2009). L1 literacy skills can cause confusion due to cross-linguistic differences (Koda, 2005) although literacy in L1 is a potential facilitator in literacy development in L2 (August and Shanahan, 2006; Snow et al., 1998). This relationship between L1 and L2 is influenced by the two factors of the distance between two languages involved and the learning context (Koda and Zehler, 2008).

Firstly, the distance between English and Japanese languages involved predicts how similar literacy learning in the two languages will be (Koda and Zehler, 2008:2). To what degree literacy learning in L2 will be facilitated by L1 literacy is determined by the language distance. Less facilitation can be expected to occur when the two languages are distinct than when the two are related (Koda and Zehler, 2008:2). One way to recognise the language distance between English and Japanese is to look at the writing systems of the two languages, which is a subset of language distance and is called orthographic distance (Lems, Miller, and Soro, 2010:27). The two languages use different writing systems. English uses the alphabetic writing system (Birch, 2002:18) and Japanese employs *katakana* and *hiragana* syllabaries in combination with *kanji* logographs (Birch, 2002:13-17). A learner must learn the new writing system from scratch. From the viewpoint of the orthographic distance, L1 literacy experience is unlikely to transfer to L2 literacy learning.

Secondly, students in Japan learn the English language in an English as a foreign language (EFL) context. Formal English language education starts at the first year of junior high school, the age of 12, and continues until the third year of high school, an age of 17. Although the fifth and sixth graders started learning English at school in 2011, the curriculum is designed only to familiarize students with sounds and basic expressions of foreign language (MEXT, 2008). Although English is not a requirement for junior or senior high school graduation, virtually all Japanese students in the public and private education systems study English throughout their six years of junior and senior high school. One of Japanese students' motivations to learn English is that English is a requirement in almost all entrance examinations for senior high schools and for colleges and universities (LoCastro, 1996:46-47).

It is Odlin's (1989:45) contention that speakers of Japanese sometimes have difficulty both with word order and relative clause structure in English. Word order is a major

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contributor to comprehension in English (Grabe, 2009:202). English is usually referred to as an SVO (subject-verb-object) language since a subject usually precedes a verb and an object usually follows the verb in a declarative sentence (Kuo and Anderson, 2008:49). In contrast, Japanese is rigidly verb-final (Gass and Selinker, 2008:508) and is generally referred to an SOV (subject-object-verb) language (Odlin, 1989:44). Japanese students are aware of this difference of word order between English and Japanese languages and "do not at any time produce writing in which the verb is wrongly placed sentence-finally" (Rutherford, 1983:367). The *Yakudoku* tradition of English teaching may make Japanese students create the awareness of this difference of word order. In junior and senior high English classes, Japanese students learned English through the *Yakudoku* method in which the students first make a word-by-word translation into Japanese and then translated words are reordered in accordance with Japanese syntax (Hino, 1992:100).

In addition to word order and relative clause, the English article system might be one of the difficult grammatical items for Japanese learners of English. The Japanese language does not have articles and English articles must be newly learned for Japanese learners of English (Gass and Selinker, 2008:100). The teaching procedure of the English article system seems to not be well established. There is only the teaching of the principles of article use in junior and senior high schools and no systematic repetitive practice of articles during the English lessons. Master (1994) suggested the need to teach the article system in a systematic program of instruction since an explanation that the article system can only be acquired through natural exposure of English is unacceptable for many English learners.

Based on the assumption that the L1 helps the process of learning, Ringbom (2007a, 2007b) stated that the process is facilitated if the learner can perceive many cross-linguistic similarities. Ringbom (2007b:4-5) takes notice of many loan words that Japanese language has from English and proposes that learners should be guided to make use of these loan words for effective learning. In fact, the Japanese language has many loan words from English but these loan words are considerably modified in terms of script and phonological systems. When presenting these loan words in the class, teachers need to provide a guide to how the loan words differ from the original words.

Skills that are specific to a particular language such as orthography and grammatical rules would be less transferable ones while general cognitive processes that are

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involved in the predictions, confirmation and integration of meaning would be more transferable across languages (Kern, 2000:127). Indeed, native language literacy skills affect a number of aspects of second language performance (Odlin, 1989:68). Kubota's (1992) research results on writing suggested that Japanese students actually tended to place the main idea at the end of paragraphs in English writing. It would appear that this is the influence of literacy skills in the students' L1 Japanese writing. Writing styles differ in Japanese and English. In Hinds' (1990:89) distinction, inductive writing is characterized as having the main idea in the final position whereas deductive writing has the main idea in the initial position. English text is typically written in a deductive writing style while Japanese text is often written in an inductive writing style. Students who are educated and literate in their L1 may benefit from becoming aware of typical text organization patterns in the L2 (Hedgcock and Ferris, 2009:101).

Regarding the transfer of L1 Japanese rhetoric to L2 English writing, Miura (2007) investigated the awareness and attitudes of Japanese students towards the unique Japanese rhetorical style of *ki-shoo-ten-ketsu* in L1. *Ki-shoo-ten-ketsu*, originated in the classical Chinese organisation of poetry, is a common organisational framework for Japanese compositions (Hinds, 1983a:188). Hinds (1983b:80) noted that an abrupt shift takes place in *ten* (see Figure 2.1) in which information only indirectly relevant to the major point is given and this causes problems for English readers since they do not expect unrelated information to come up so suddenly. According to the questionnaires in Miura's (2007) study, all 34 subjects were familiar with *ki-shoo-ten-ketsu* and learned it typically in Japanese classes, especially in their studies of ancient Chinese poetry (*kanbun*). The majority of students got to know the style in elementary or junior high school. Some were taught to organise a composition following this style. More than half of the subjects do not follow this style in actual writing. After examining both L1 and L2 essays about the difference between TV and newspapers and the mass media, only one subject followed this unique rhetorical style. Miura (2007) pointed out that the pattern *ki-shoo-ten-ketsu* may not be a style that Japanese speakers have to rigidly follow, and adherence to it may depend on the topic.

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pattern	Chinese character	explanation
ki	起	First, begin one's argument.
shoo	承	Next, develop that.
ten	転	At the point where this development is finished, turn the idea to a subtheme where there is a connection, but not a directly connected association (to the major theme).
ketsu	結	Last, bring all of this together and reach a conclusion.

Figure 2.1 *Ki-shoo-ten-ketsu* organisational pattern of paragraphs

A Common Underlying Proficiency (CUP) model was proposed by Cummins (1979, 1984, 1991). In the CUP model, the cognitive/academic language proficiencies underlying literacy skills in a student's L1 and L2 were assumed to be interdependent although the surface features of the L1 and L2 may be different. In this model, basic interpersonal communication skills (BICS) and cognitive/academic language proficiency (CALP) were distinguished. BICS refers to everyday conversational language while L1 CALP refers to the dimension of language proficiency that is related to literacy skills in L1. This L1 CALP is a major determinant for L2 CALP development (Baker and Hornberger, 2001:131). Aspects of language proficiency that were interdependent and were specified by Francis (2000:176-177) are text comprehension proficiencies, formal schemata, and organisational skills. Among them, formal schemata include text structure (Carrell and Grabe, 2002:245). L1 CALP determines an individual's performance on cognitive/academic tasks such as reading in L2 (Baker and Hornberger, 2001:120). If students learn to read a Japanese *danraku* for L1 reading, they would initially approach a paragraph in English in a similar way to the reading of the Japanese *danraku*. This may result in confusion for students. Thus, the text structure of the paragraph in English might need to be taught. Once Japanese students gain the knowledge of the organisation of an English paragraph and are familiar with the structure of the paragraph through practice, the function of the English paragraph would be recognised and utilised in understanding English texts.

2.6 Text Type and Text Structure

There are two fundamental text types: narrative text and expository text (Grabe, 2002b:253). A narrative is categorized as one of four genres in storytelling in which the other three genres are anecdotes, an exemplum, and a recount (Eggins and Slade, 1997). This study uses the term 'expository text', although there are other terms that refer to nonfiction text, e.g., informational text (Duke, 2003b; Mooney, 2003) and transactional text (Rosenblatt, 1978), because expository texts "expound, inform, explain, interpret, define, persuade-they do everything but tell a story" (Calfee and Patrick, 1995:83).

Narratives are stories that are concerned with protagonists who face and resolve experiences that are regarded as problematic (Eggins and Slade, 1997:236-239). Narrative texts have a specific, predictable structure called story grammar that has a theme, a setting, a plot, characters, a problem, a climax, and a resolution (Dymock and Nicholson, 2007; Moss, 2010). Narrative text is the primary text type to which children are exposed at home and at school and are often internalised the story grammar structure (Almasi, 2003:142). This internalised schema for narrative texts helps students anticipate textual events and enhance comprehension. Narrative texts invite interpretation of the story rather than asking logically what a story means (Bruner, 1990:54-61). In schools in the USA, children are preferably taught to use narrative text structures in reading and writing (Keene, 2008:180). This is generally true with students in Japan (Kishi, Watai, and Taniguchi, 1989). The features of narrative texts have primarily the linguistic use of the past tense, the introduction of characters in the beginning, and the lack of relational processes to indicate text structure (Pappas, 1991).

Table 2.1 Elements of structure in a narrative text

Element	Description
Characters	Who the story was about
Setting	Where and when the story happened
Goal	What the main character was trying to do
Problem	Why the main character took certain actions
Plot or action	What happened to the main character or what she or he did to try to solve a problem
Resolution	How the problem was solved and how the story ended
Theme(s)	General lessons or ideas

In contrast to narrative texts, expository text is an informational text that intends to induce new insights (Koda, 2005:161). Expository texts include textbooks, essays, and magazine writing (Pearson and Fielding, 1996). In reading expository texts, information is communicated so that the reader might learn something (Weaver and Kintsch, 1996:230). Expository texts "are assumed to draw on a frame of logic that is not readily open to a range of interpretations but follows a logic that is displayed by the expository text itself" (Grabe, 2002b:253). Expository texts have distinctive text structure that differs from narrative texts. The linguistic features of expository text include usual use of the present tense and the use of relational processes to indicate text structure (Pappas, 1991). Many expository texts are structured around main ideas and supporting details (McKenna and Stahl, 2009:19).

In English L1 reading, narrative text is very popular among pupils and teachers. Many students come to primary school with an internal representation of story and are able to comprehend basic story elements easily (Stein and Glenn, 1979). Teachers at elementary school seem almost to equate reading with the reading of fiction, stories, and novels (Ogle and Blachowicz, 2002). Informational reading is very infrequent. At primary levels, little expository text is used for instruction (Duke, 2000). At the middle and secondary levels, very little support is provided to students who are confronted with difficult content-area textbooks (Alvermann and Moore, 1996).

Duke (2003b:3) stated two reasons for exclusion of expository text from early schooling in the USA. One is that young children cannot handle expository text. The other is that young children do not like expository text. The problem on the teacher side is that instruction does not become knowledge that pupils can use independently even when the instruction is offered (Dreher, 2002:293). More proficient readers are able to develop their knowledge of text structure as an organisational strategy for encoding and storing information through exposure as well as through direct instruction (Almasi, 2003:142; Goldman and Rakestraw, 2000:323-324). Young children may need the instruction of text structure awareness (Dymock and Nicholson, 2007:19), although the knowledge of text structure may be acquired through extensive reading experience (Koda, 2005:188).

In Japanese L1 reading in Japan, the choice of text types for reading is in a similar

situation as in the English L1 reading.   Teachers at primary school in Japan are more likely to choose narrative text as a Japanese teaching material in preference to expository text since teachers believe that expository text is hard to teach and is unpopular with pupils (Kishi, Watai, and Taniguchi, 1989).   On the other hand, having a grasp of development of a narrative text has been considered important both in Japanese and English classes (Hirai, 2008).   In Japanese language education beginning at the primary school level, knowledge about the teaching of expository text is a little hard for teachers to accumulate compared to narrative text.   As a result, Japanese students do not seem to receive helpful instruction on text structure of the Japanese expository text.

Students who have reading problems also have difficulties perceiving text structures (McKenna and Stahl, 2009:19).   *Text structure* means structural patterns in text that are common to particular genres (McKenna and Stahl, 2009:18).   Knowledge of text structure is related to reading achievement.   A lack of understanding of text structure causes difficulties (Gersten, Fuchs, Williams and Baker, 2001).   Text structure is different in the particular genre of the text: narrative or expository.   Narrative text generally follows a single structural pattern (Mandler and Johnson, 1977).   One can identify setting and characters, problem that major character encounters, goal that major character is trying to achieve, events, and resolution (Pardo, 2010:176).   Narrative text is easier to understand and recall than expository text since it appeals to reader's shared knowledge of the world (Koda, 2005:155).

Meanwhile, expository text has internal and external structures (Fisher and Frey, 2010:46).   This internal structure is organised as *problem/solution*, *cause/effect*, and so forth (Meyer, Young, and Bartlett, 1989; Blachowicz and Ogle, 2008).   The external structure of expository text embraces table of contents, headings, chapters, and the like (Ogle and Blachowicz, 2002:264).   In addition to these, the author's intent in writing text often influences how a reader interacts with the text.   The inherent message as the author's intent is referred to as main ideas in the text (Pardo, 2010:175).   Koda (2005:155) noted that expository text generally required considerable training for the acquisition of knowledge to help in the understanding of a text.   The method, duration and materials of training in the ESL context should be considered.

The purpose of the reading of expository text is to get meaning from a text.   In order to achieve this purpose, readers use the information in the text.   The information includes

the text's content as well as its structure in expository text.   In this research, text structure involves both *paragraph structure* and *rhetorical organisation*.   The *paragraph structure* contains *main ideas* and *supporting details*.   The *rhetorical organisation* of text refers to a text's organisational pattern, which reflects the logical connection in the text such as *comparison*, *problem/solution*, *causation* and *description* (Blachowicz and Ogle, 2008; Meyer and Freedle, 1984; Farrell, 2002, 2009; Meyer and Poon, 2001; Meyer and Wijekumar, 2007).

Table 2.2 Structures of expository text

Structure	Description	Example
Description	What something looks, feels, smells, sounds, tastes like, or is composed of	Characteristics of a hurricane
Problem/Solution	What went wrong and how it was or could be fixed	Hurricane Katrina destroyed homes and stores, so groups like the Red Cross had to bring food and medicine from other parts of the US
Cause/Effect	How one event leads to another	What happened to the people who lived in Louisiana after Hurricane Katrina
Compare/Contrast	How things are alike and Different	How hurricanes are the same as or different from Tornadoes

Source: The list of structures was derived from Duke et al. (2011:70).

There are some different types of the structural information in a text.   Students can use the titles, subheadings, boldfaced words and pictorial information to generate predictions (Brown, 2002:340).   Discourse markers that signal the sequence of events such as *first*, *next*, and *then*, are beneficial in identifying supporting details of the text (Nuttall, 2005:95).   Markers that signal the writer's point of view, e.g., *as a result*, *arising from this*, and *consequently* (Nuttall, 2005:96) are useful as a means of understanding rhetorical organisation or logical connection among the ideas in the text

(Meyer and Poon, 2001:141).

Structural information is usually processed automatically for comprehension (Williams, 2008:172).   But some novice readers in the EFL context who do not acquire these skills need to apply the structural information consciously as strategies.   Some novice readers may acquire these skills by making use of the resources of the L1 and L2 as a strategy while reading in the L2 (Cook, 2001; Koda, 2005:142-143) or by extensive reading experience (Koda, 2005:188).   Text structure needs to be taught to students as strategies that the students will be able to apply (Pressley and McCormick, 1995) when students do not have the knowledge.   Students who learn to use the text structure of expository text are better able to understand and retain the information found in the text (Goldman and Rakestraw, 2000; Brown, 2002).

2.7 Schema Theoretic View of Reading

The cognitive definition of schema appear to come from Bartlett (1932: 202) who first proposed Schema Theory and claimed "an active organisation of past reactions, or of past experiences, which must always be supposed to be operating in any well-adapted organic response".   Schema Theory was developed for research in the field of reading by Richard Anderson and his colleagues at the Illinois Centre for the Study of Reading (Pressley and McCormick, 1995:61).

The implications of Schema Theory in the teaching of reading are the role of prior knowledge in processing (Pearson, 2009).   A reader's background knowledge is often essential to an understanding of a text (Bernhardt, 2005; Carrell, 1983, 1984a; Chang, 2006; Field, 2003; Shen, 2008).   The notion of background knowledge still remains an important focus for research studies, e.g., Brantmeier (2005); Chan (2003); Pulido (2004, 2007); Uso-Juan (2006).   The role of background knowledge is applied to reading instruction (Hauptman, 2000; Miller, 2002; Pressley, 2000; Shen, 2008; Yu-Hui et al., 2010; Zhang, 2010; Zhaohua, 2004).

According to Schema Theory, a text only provides directions for readers as to how they should retrieve or construct meaning from their own previously acquired knowledge. This previously acquired knowledge is called the reader's background knowledge (Barnett, 1989:42-43).   Comprehending a text is an interactive process between the reader's background knowledge and the text (Carrell and Eisterhold, 1987:220).

Efficient comprehension requires the reader to relate the textual material to the reader's own knowledge. In Schema Theory, the previously acquired knowledge of things, events, and situations in abstract mental structures is called *schemata* (Rayner et al., 2012:252). Schemata represent typical instances of things and ideas (Kern, 2000:32). Carrell (1983:84) further divided the schemata into two types of schemata: *formal schemata* and *content schemata*. Formal schemata include the background knowledge of the formal, rhetorical organizational structures of different types of texts. Content schemata refer to the background knowledge of the content area of a text.

In relation to comprehension, Lynch and Mendelsohn (2002:197) described the term *schema* as "a package of prior knowledge and experience that we have in memory and can call on in the process of comprehension". If a reader fails to activate an appropriate formal or content schema during reading, it results in various degrees of incomprehension. This failure may be due to a mismatch between what the writer expects the reader can do to extract meaning from the text and what the reader is actually able to do. For text comprehension, the appropriate schemata to identify main ideas and text structure that the writer used and understand the text content must exist in the mind of the reader and must be activated during text processing (Carrell and Eisterhold, 1987:223).

Formal or rhetorical schemata have been investigated in two areas: story grammars that represent the rules of structural regulations of a story, and top-level structures that represent a text's "overall organizing principle" (Meyer, 1985:20) and the relationship of rhetorical organization of expository prose (Barnett, 1989; Meyer and Poon, 2001; Pearson and Camperell, 1994). A story grammar is designed to present the relationships among story components such as setting, episode, and beginning (Kintsch, 1977; Carrell, 1984a). L1 children have developed sensitivity to the story grammar before they start school (Williams, 2008:172). On the other hand, expository text often involves unfamiliar content in complex logical relationships (Keene, 2008:179). This logical relationship, that is, the top-level structures of expository text are covered in this research because knowing those top-level structures may help Japanese college students who come from several subject areas read texts in their subject area and may lack awareness of noticeable differences of paragraph organisation between Japanese and English.

2.8 Research on Text Structure and Reading Comprehension

This section will deal with the review of some research on the text structure of expository text and reading comprehension, which is closely relevant to this research. Literature on the teaching of text structure in L1 and L2 will be reviewed in more detail so that the discussion could be expanded in the Discussion chapter.

Texts are central to learning at all levels of education. This fact stimulates the discussion of the role of text in reading comprehension. Written texts can be approached and studied in a variety of ways. One of the approaches is genre (Hyland, 2010:198). Genres not only are categorisation of text types but also connect kinds of texts to kinds of social actions (Bawarshi and Reiff, 2010:3). As an extension of the latter concept, genre refers to socially constructed discourse (Johns, 2002:6) and involves the context of culture in which a text occurs (Bruce, 2008:16).

There are three approaches to genre: Systemic Functional Linguistics (SFL), English for Specific Purposes (ESP), and New Rhetoric (NR) studies (Hyland, 2004:24-25; Hyon, 1996:694). Australian approaches to genre have developed in the tradition of SFL. SFL stressed the importance of the social purpose of genres and of describing the rhetorical structures that evolved to serve these purposes (Hyland, 2002:115). The approach of SFL was concerned with the relationship between language and its functions in social settings (Bawarshi and Reiff, 2010, 29). A definition of genre that was given by Martin (1984:25) explained genre as 'a staged, goal oriented, purposeful activity in which speakers engage as members of our culture' (cited in Eggins and Slade, 1997:56). SFL emphasised the purposeful, interactive, and sequential character of different genres and the ways that language is systematically linked to context (Hyland, 2002:115). Genre was located in relation to register so that genre and register related to and realised each other in important ways (Bawarshi and Reiff, 2010:33). Register encompassed *field* (the activity going on), *tenor* (the relationships between participants), and *mode* (the channel of communication) (Matthiessen, Teruya, and Lam, 2010). Register referred to broad fields of activity and genre was a more concrete expression of *field*, *tenor*, and *mode* so that readers can recognise writers' purposes (Hyland, 2004:27). In Australia, genre-based applications have been centred in L1 schools and adult immigrant education (Hyon, 1996:699).

NR studies drew on postmodern social and literary theories (Freedman and Medway,

1994:6) and on North American research into L1 rhetoric, composition studies, and professional writing (Hyon, 1996:696).   NR focused on the situational contexts in which genres occur.   NR researchers have used ethnographic research methods drawn from anthropology to study such instances as writing in professional fields, e.g., the documents produced by tax accountants (Freedman and Medway, 1994:1).   NR studies have influenced universities and L1 composition (Hyon, 1996:704; Hyland, 2002:114).

Common to both the SFL and NR approaches to genre was the explicit recognition of the primacy of the social in understanding genres and of the role of context (Freedman and Medway, 1994:9).   Freedman and Medway (1994:9) suggested that the striking difference between the two arose from different interpretations of genre, that is, genre was interpreted in terms of the implicit static vision in SFL while New Rhetoric emphasised the dynamic quality of genres.

The ESP approach to genre is implied by what the term ESP includes.   ESP was often used as an umbrella term to include more specialised areas of study such as English for Academic Purposes (EAP), English for Occupational Purposes (EOP), and English for Medical Purposes (EMP) (Bawarshi and Reiff, 2010:41).   As is shown by the inclusion of ESP, genre was used as a tool for understanding writing in academic and professional contexts (Bruce, 2008:29).   The students' ability to understand and write competently is often connected with access to career opportunities.   What the participants in this study require is a basic knowledge of a paragraph organisation rather than professional skills.   Providing a few common examples of paragraph organisation in English, explicit instruction on paragraph organisation would help the participants become aware of the differences in organisation between Japanese and English paragraphs and understand text in English.

In the study of Hewings and Henderson (1987), by providing an analysis of the genres of the economics textbooks and bank review articles, students were able to perceive a difference in their forms and functions.   Such an analysis may be effective in understanding and producing a specific genre for L1 college students.   However, the participants are EFL college freshmen who usually read simple texts that are used in many EFL contexts in one of the courses in the liberal arts.   For EFL students who have already grasped the basics of how text in English is organised, an analysis of genres such as economics textbooks and bank review articles might help make their reading academic and professional.   EFL college freshmen remain far from attaining

professional skills. It is much more likely that basic knowledge of text structure would satisfy the needs of the participants of this research.

Researchers have looked at the structure of text in rather different ways. Grosz and Sidner's (1986) discourse theory, Mann and Thompson's (1988) rhetorical structure theory, Knott and Dale's (1994) coherence relations, and Meyer's (1981) adaptation of Grimes' (1975) framework of text structure have been proposed. Grosz and Sidner's (1986) work is from artificial intelligence computation and natural languages, and is concerned with developing an abstract model of discourse structure. Mann and Thompson's (1988) work is best known in linguistics. Knott and Dale's (1994) model is a psychologically plausible model of text structure (Ikeno, 2002). Meyer's (1981) framework seems to fit this thesis research because as Hatch (1992) suggested, Meyer's (1981) work has been very influential in the field of reading research.

Some research examining text was mainly concerned with text structure (Meyer and Rice, 1984). Text structure includes both rhetorical organisation that takes *comparison*, *problem/solution*, *causation*, *description*, for instance, and paragraph structure such as *main ideas* and *supporting details* (Meyer and Poon, 2001; Meyer and Wijekumar, 2007). Text structure has been employed for the research on reading comprehension in both L1 (Meyer et al., 2002; Williams, 2007) and L2 (Nakamura and Hirose, 2009; Zhang, 2010) contexts. Research on text structure focused on how text aids and organization influenced text comprehension (Nist and Simpson, 2000:648).

Goldman and Rakestraw (2000:324) pointed out that generally speaking, even native readers of English appeared to have rather incomplete knowledge of the rhetorical structures of expository text by the end of high school. It is highly possible that L2 college students lack the knowledge of the rhetorical structures. Many high school students in Japan actually place their learning behaviour emphasis about reading in English on the preparation for a university entrance examination (e.g., grammatical rules, memorization of vocabulary). This suggests the need to give explicit instruction on the rhetorical structure of text and to examine the impact of the instruction.

The knowledge that the reader brings to the text as well as information in the text is crucial to comprehension. The knowledge that the reader depends on for the construction of meaning includes the knowledge of the language, the structure of texts, knowledge of the subject of the reading, and a broad-based background or world

knowledge (Day and Bamford, 1998:14). Among the knowledge that leads to the construction of meaning, text structures are represented as formal schemata in Schema Theory. From the standpoint of reading fluency, sufficient knowledge about text structure may assist in comprehension.

The importance of top-level structure that corresponds to its organising principle (Meyer and Rice, 1984) in reading comprehension has been mentioned by Brown, Day and Jones (1983); Winograd (1984); Dole et al. (1991); Leon and Carretero (1995); Pearson and Fielding (1996); Goldman and Rakestraw (2000); Meyer and Poon (2001); Grabe (2004). Meyer (1981) noted that L1 readers processed and recalled certain types of rhetorical organisation of expository text differently from other types. The reader's task is to construct a cognitive representation of the text that is similar to that intended by the writer (Meyer and Rice, 1982). Meyer, Brandt and Bluth (1980) pointed out that the use of text structure was a characteristic of skilled L1 reading. Raymond (1993) also suggested that the use of text structure was a characteristic of skilled L2 reading. If this is valid, skilled readers have already known and used the text structure, and the training may be effective only for less skilled readers. In order to further improve the reading comprehension of skilled readers, it is conceivable that they are practiced for speed of decoding processes, speed of identification of word meanings, and speed of overall meaning construction including making inferences. Assuming that formal schemata and organisational skills are interdependent between L1 and L2 (Francis, 2000), the way it is read in Japanese *danraku* in which it embraces no text structure as in an English paragraph (Shinmura, 2008) may interfere with the comprehension of Japanese students.

Instruction about text structure has yielded positive effects for reading comprehension (Meyer and Wijekumar, 2007). The research work in this area has been conducted in both L1 and L2 studies. Examples of the L1 studies are Meyer, Brandt and Bluth (1980); Meyer and Freedle (1984); Meyer, Young, and Bartlett (1989); Meyer and Poon (2001); Meyer et al. (2001); Williams (2007). Some studies in L2 are Flick and Anderson (1980); Carrell (1984b, 1985, 1992); An (1992); Sharp (2002); Zhang (2008). The research of Raymond (1993) and Leon and Carretero (1995) was conducted in other languages besides English.

Text structure could be taught so that students could recognise the paragraph structure and rhetorical organisation of text and use them in helping their comprehension (Meyer,

Brandt, and Bluth, 1980; Meyer and Poon, 2001; Taylor, 1982). L1 students with a better awareness of text structure recalled more information from the text (Meyer, Brandt, and Bluth, 1980; Meyer and Poon, 2001). Likewise, L2 students who recognised and made use of text structure showed inclination to comprehend better and recall more information than those who did not (Armbruster, Anderson, and Meyer, 1991; Armbruster, Anderson, and Ostertag, 1987; Carrell, 1984a, 1984b; 1985; McGee, 1982; Richgels et al., 1987; Taylor, 1992; Taylor and Beach, 1984).

The L1 studies that included research on text structure are helpful in examining the L2 studies. The studies of Meyer, Brandt and Bluth (1980); Meyer and Freedle (1984); Slater, Graves, and Piche (1985); Meyer, Young, and Bartlett (1989); Meyer and Poon (2001); Meyer et al. (2001); Meyer et al. (2002); Williams et al. (2005); Williams (2007); Williams et al. (2007); Williams et al. (2009) are reviewed in order.

Meyer, Brandt, and Bluth (1980) investigated ninth-grade students' use of the structure strategy that focused on the organisational structure of text in order to determine what is important to remember. The study did not include a text structure training session. 102 ninth-grade students participated in the study. Passages with *comparison* and *problem/solution* rhetorical organisation were selected as materials. Each participant received a booklet consisting of two passages that included a *comparison* passage and a *problem/solution* passage. Each passage had two versions in which one version contained signalling words (e.g., the words "problem" "solution" in the *problem/solution* passage) and the other version did not embrace signalling words. Four findings were revealed. First, less than half of the ninth-grade students utilised text structure at least once in their reading and recall tasks. Second, most participants with high reading comprehension skills used the same rhetorical organisation for organising their recall protocols as the author of the passage, while most participants with low reading comprehension skills did not. In order to use the same rhetorical organisation as the author, the attention of the participant needs to be directed toward comprehension, which would allow participants with high reading comprehension skills to employ rhetorical organisation. Third, participants who employed this strategy of text structure recalled much more information from the passage than those who did not. A schema is activated to interpret information (Narvaez, 2002). It is believed that by the activation of formal schemata, information in the passage is well organised in readers' mind. Fourth, participants who used this strategy of text structure could discriminate better between information consistent with the contents of the passage and

intruded information on the same topic than students who did not employ this strategy.

Meyer and Freedle (1984) examined whether discourse organised in different ways differentially affected memory by two studies. Study 1 had no text structure instruction. Four passages that were written with identical information and structure except for rhetorical organisation were used as materials. Each passage consisted of the relationships of either *a collection of descriptions*, *causation*, *problem/solution*, or *comparison*. Participants compared and rated the four versions on ease of learning and memory. The experiment was conducted in two sessions. In the first session, each group of 11 participants listened to a recording of one of the four passages. After listening to the passage, a written free recall test was administered. In the second session, one week later, the participants were again administered a free recall test. A recall protocol was scored for the presence or absence of idea units. Recall frequency data on the idea units from the four discourse types were analysed with a two-factor analysis of variance (ANOVA). There was a statistically significant tendency for participants who listened to the *comparison*, *causation*, and *description* passages to write protocols with the same rhetorical organisation as that of the original passage. I never thought that participants would write protocols with the same rhetorical organisation as the original passage in the above three passages, but they did. McCormick (2003) suggested that the *cause/effect* structure is difficult because of the complex comprehension skills (e.g., making inferences, judging sequences, and so on) involved in the interpretation of this rhetorical organisation. Participants who listened to the *problem/solution* passage tended to produce protocols with rhetorical organisation different from *problem/solution*. If the *problem/solution* passage included signalling words such as "problem" "solution", a different result might be produced.

Study 2 conducted by Meyer and Freedle (1984) collected twenty graduate students as participants. Study 2 lacked text structure instruction. Two passages were written on the topic of whales. One was organised in a *comparison* structure. The other was organised as *a collection of descriptions*. The participants were assigned to two groups. Procedures for the immediate free recall condition were identical to that in Study 1. Recall data were analysed with an independent t-test. The *comparison* passage facilitated recall more than the passage organised as *a collection of descriptions*.

Slater, Graves, and Piche (1985) pointed out the helpfulness of graphic organisers, examining the effects of providing participants with prior information about the organisation of expository passages.   This study had no text structure training session. Participants, 224 ninth-grade students, were randomly assigned to one of four groups: (a) structural organiser with outline grid, which consisted of information on the organisation of the passage and a skeleton outline depicting the passage organisation; (b) structural organiser without outline grid; (c) control condition with note taking; or (d) control condition without note taking.   Target passages were organised with *description*, *comparison*, *cause/effect, problem/solution* patterns.   The results indicated that the structural organiser with outline grid statistically significantly facilitated participants' comprehension and recall, that note taking alone statistically significantly facilitated comprehension and recall, and that the structural organiser without outline grid statistically significantly facilitated comprehension but not recall.   These effects were similar across the three ability groups (high-, middle, and low-ability), and across the four organisational patterns.

Meyer, Young, and Bartlett (1989) attempted to determine if instruction focusing on an effective prose learning strategy could improve the reading comprehension and memory of young and old adults.   A total of 107 young and old adults participated in the study. The training program taught participants to employ a deliberate strategy for remembering what they read.   In reading, participants were taught to choose the rhetorical organisation used by the writer to organise the writer's ideas.   In remembering, they were taught to use the same rhetorical organisation.   The training program included five sessions over two weeks.   Each session lasted one and a half hours.   The participants in the experimental group who learned text structure were superior to the control group in describing the structure of texts and sorting texts according to structure.   Instruction with text structure increased the amount of information remembered after reading.   Meyer, Young, and Bartlett (1989) noted that instruction with text structure help identify the rhetorical organisation of text and increase the amount of information remembered besides the comprehension of texts. As Meyer, Young, and Bartlett (1989) demonstrated, awareness of text structure aids readers' comprehension and memory (Smolkin and Donovan, 2002:151).

Meyer and Poon (2001) conducted empirical research on the effects of structure strategy training.   Variables comprise age, training condition (structure strategy training, interest-list strategy training, or no training), and signalling (texts with

signalling or texts without signalling).   Participants were 56 young adults and 65 older adults.   Materials included tests of vocabulary, working memory, reaction time, cognitive status, reading comprehension, questionnaires, and summary and recall performance tasks.   Participants participated in 9 hours of structure strategy training, interest strategy training, or no training.   In structure strategy training, participants learned to identify and use basic rhetorical organisation to organise ideas (*description*, *sequence*, *causation*, *problem/solution*, and *comparison*).   Instruction involved two steps: reading and recalling.   In reading, the participant found the overall structure used by the writer and the main idea or ideas organised by that structure.   In recalling, the participant used the same organisation as a strategy to improve memory.   In interest-list strategy training, participants learned to evaluate their interest in an article and to use this information to monitor and increase their motivation for reading articles. Both trained groups reported positive changes in reading, but only the structure strategy group showed increased total recall from a variety of texts.   Text structure training increased the amount of information remembered as well as recall of the most important information.   Meyer and Poon (2001) supported the results of Meyer, Young, and Bartlett (1989) in terms of reading comprehension and the amount of information remembered.

Meyer et al. (2001) investigated whether a strategy of text structure can be taught to older adults who did not have strong reading skills.   Participants consisted of ten rural African American adults and 12 urban African American adults.   In training, participants learned to identify and utilise five types of basic rhetorical organisation (*problem/solution*, *comparison*, *description*, *sequence*, and *cause/effect*) used by authors to organise their ideas.   The training involved two steps: reading and recalling.   In reading, the learner found the overall structure used by the writer and the main idea(s) organised by that structure.   In recalling, the learner used the same organisation as a strategy to improve memory.   The six training sessions were spread over three weeks. One training session lasted one and a half hours.   There were no significant differences between the rural and urban groups on their self-appraisal of the effectiveness of the structure strategy training program.   In terms of pre-test to post-test gains in amount of information recalled, both groups made substantial improvement.   Text structure training enabled older adults to better cope with some of the cognitive declines associated with aging such as slowing and reduction in working memory.

Meyer et al. (2002) assessed the impact of using text structure as a base for an Internet

tutoring program in which older adults trained in the structure strategy to help teach fifth-grade children to learn this strategy with expository text. Voluntary participants included 12 older adult tutors and 83 fifth-grade children. Older adults first participated in eight 90-min training sessions, learning the structure strategy, basic computer skills, and tutoring tips. Children were assigned to one of three groups: (a) a tutoring group, in which children worked on the Web-based instruction in the structure strategy with a tutor; (b) a group in which children worked independently on the same Web-based instruction without a tutor; and (c) a control group, in which children did not receive instruction in the structure strategy. The structure strategy training was effective in teaching the tutors the strategy and increasing their recall; these improved reading skills were maintained over the duration of 6-month study as the older adults helped children learn the reading strategy. The structure strategy group with tutors have improved recall in comparison with the control group. Although most students in both structure strategy groups made progress in learning text structure, the structure strategy group with help from tutors tended to make more progress in mastering the strategy than the group without tutors. It is desirable that the expert offers carefully prepared instruction with text structure.

Williams et al. (2005) investigated the effectiveness of an instructional program designed to teach second graders how to comprehend *compare/contrast* expository text. Along with introducing new content (animal classification), the program emphasised text structure via clue words, a sequence of questions, and a graphic organiser, and via the close analysis of specially constructed exemplar paragraph. The program was compared with (a) more traditional instruction that focused only on the new content and (b) a no instruction control. Classroom teachers provided the instruction. The text structure program was taught in 15 sessions, 2 per week. It consisted of a series of nine lessons. Lessons one through three were each taught in a single session. Lessons four through nine were each taught in 2 sessions. The program improved students' ability to comprehend *compare/contrast* texts. Students were able to demonstrate transfer to uninstructed *compare/contrast* texts though not to text structures other than *compare/contrast*. Moreover, the text structure instruction did not detract from their ability to learn new content. The results provided evidence that explicit instruction in comprehension is feasible and effective as early as the second grade. One thing to note here is that second grade students could successfully apply what they learned in the training program to the other new text. The other thing is that text structure could be learned well by using cue words and graphic organisers.

Williams (2007) developed an instructional program for second graders whose goal was to improve the reading comprehension of *compare/contrast* expository text. Three strategies were taught to students. They were (a) cue words to identify a text as a *compare/contrast* text, (b) a graphic organiser to lay out the relevant information in the text, and (c) a series of questions that would help students focus on the important information in the text. The program consisted of nine lessons, which were taught in 15 sessions. Each lesson contained the following seven sections: (a) cue words, (b) trade book reading and discussion, (c) vocabulary development, (d) reading and analysis of target paragraph, (e) graphic organiser, (f) *compare/contrast* strategy questions, (g) summary; and (h) lesson review. The results indicated that second graders can benefit from explicit instruction.

Williams et al. (2007) extended the findings of Williams et al. (2005) to the content area of social studies. Williams et al. (2007) evaluated the effectiveness of a comprehension program integrated with social studies instruction designed for second graders. The program included instruction in *cause/effect* text structure, emphasising clue words and graphic organizers. This program was compared to (a) a content-only program that focused on social studies and did not include text structure instruction and to (b) a no-instruction control. The program improved the comprehension of *cause/effect* texts, and there were transfer effects on some comprehension measures. In addition to the *compare/contrast* text structure, the *cause/effect* text structure could be learned effectively by explicit instruction at the primary-grade level.

Williams et al. (2009) evaluated the effectiveness of reading comprehension training embedded in a program that taught science content to 2nd graders. The program included instruction about the rhetorical organisation of *compare/contrast* expository text. Clue words, graphic organisers, generic questions, and the close analysis of well-structured text exemplars were emphasised in the instruction. This program was compared with a program that focused on the science content but included no *compare/contrast* training as well as with a no-instruction control. The study replicated acquisition and transfer effects found in Williams et al. (2005). The program led to better performance on written and oral response measures. The findings reveal that explicit instruction is effective in comprehension as early as the primary grade level.

Secondly, some studies in L2 that are related to text structure are reviewed: An (1992); Connor (1984); Carrell (1984a, 1984b, 1985, 1992); Foo (1989); Hirai (2008); Leon and Carretero (1995); Nakamura and Hirose (2009); Raymond (1993); Sharp (2002); Zhang (2008).

Connor (1984) examined the differences between first and second language readers' recall of a written English passage. Participants consisted of 11 native speakers of Japanese, 10 of Spanish in the ESL sample, and the 10 native English speakers. Participants were asked to read the passage, and immediately after the reading, to write a paraphrase of what they had read. The comparison of the students' recall protocols revealed that the native English speakers outperformed the ESL students in terms of total recall. In the recall protocols, the Spanish and English speakers followed rhetorical organisation of the text. Yet, a very low percentage of the Japanese speakers explicitly followed rhetorical organisation. Connor (1984:252) pointed out that the Japanese speakers' performance might be the result either of interference from L1 discourse conventions or of lack of instruction in English text conventions, or of a combination of those two factors. The interference from L1 might happen since a Japanese *danraku* that is considered to correspond to a paragraph in English differs considerably from an English paragraph. Originally, "the Japanese language does not have the notion of the paragraph" (Toyama, 2010:41). The Japanese *danraku* is just a major division in a long passage and embraces no concept of a topic sentence and supporting details that are common in an English paragraph (Shinmura, 2008). Recognizing the differences in paragraph organisation would be helpful for students in reading in their L2. The *Yakudoku* method of teaching English that is defined as a technique for reading a foreign language in which the target sentence is first translated word by word, and the resulting translation reordered to match Japanese word order is a long established tradition in Japan (Hino, 1992), and instruction in English text conventions was kept untouched.

Carrell conducted a series of research studies on how readers' expectations about the rhetorical organisation (readers' formal schemata) affect comprehension. Carrell (1984a) reported an empirical study of the effects of story structure on L2 comprehension. Carrell (1984b) reported the results of a study of the effects of rhetorical organisation of different types of expository prose on intermediate ESL readers of different native languages. Results indicated that certain more highly structured English rhetorical patterns are facilitative of recall for non-native readers in

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general.

Carrell (1984b) studied advanced ESL students' reading processes and examined the effects of rhetorical organisation knowledge on text comprehension. The participants were college-level ESL learners with mixed L1 backgrounds. Recall performance on four types of expository texts that involve *problem/solution*, *comparison*, *causation*, and *a collection of descriptions* were compared. The data collected indicated that a considerably higher proportion of text concepts was recalled when students used the information of text structure. The four text types all affected recall performance. Specifically, Asian students (Korean and Chinese) showed that they recalled twice as much information from the *problem/solution* and *causation* texts as from the other two text types.

Carrell (1984b) drew three conclusions. Firstly, the tightly organised types of organisation of *comparison*, *causation*, and *problem/solution* tended to aid recall of text ideas more than did a loosely organised type of *collection of descriptions*. Secondly, readers from different native language groups seemed to find certain English discourse types more or less facilitative of recall. Finally, if ESL readers possessed an appropriate formal schema for a particular text and if they organised their recall protocols according to that formal schema, they retained more information. This suggests that the amount of information recalled can be increased by fully utilising textual knowledge learned.

Carrell (1985) further reported a controlled training study designed to answer a related question for L2 reading: Can we facilitate ESL reading by explicit teaching of text structure? The results indicate that training at the top-level rhetorical organization of expository texts facilitated ESL students' reading comprehension, as measured by the quantity of information recalled.

In Carrell's (1985) study, subjects were a group of 25 high-intermediate proficiency ESL students. Training was conducted during a one-week period in five successive one-hour sessions. The training covered four of the major expository discourse types: *comparison*, *causation*, *problem/solution*, and *collection of descriptions*. The subjects were told that the researcher would be teaching them a strategy that should improve their understanding of what they read and their ability to recall it. It was also emphasized that by teaching the subjects about the ways in which expository texts are

typically organized, the researcher hoped to teach them how to use this knowledge. Explicit training in recognising and analysing the four expository text types could facilitate ESL students' reading comprehension as measured by quantity and quality of recalled information.

Carrell (1989) investigated the relationships between readers' judgment about various types of reading behaviour and their reading ability in both their L1 and L2. For reading in the L1, local reading behaviour tended to be negatively correlated with reading performance. The results from a questionnaire revealed that language learners at lower proficiency levels tended to take on the reading behaviour which focussed on grammatical structures, sound-letter, word meaning, and text details. On the other hand, learners at advanced proficiency levels tended to take on the reading behaviour which focussed on background knowledge and text organisation.

Foo (1989) carried out an experiment to study how the rhetorical organisation of expository texts influenced reading comprehension. The experiment was modelled on Carrell (1984b), who investigated whether different organisational plans had a different impact on reading recall. The study did not include training. Participants were 40 Chinese ESL college students. Two versions of a passage with identical content were used as materials. Text A followed the *problem/solution* structure and Text B the *collection of descriptions* pattern. The two test groups were arranged based on students' proficiency in English. Students were given two minutes to read the text and then were required to recall the passage. The recall scores for the *problem/solution* pattern were higher than those for the *collection of descriptions* pattern. Foo (1989) supported the results of Carrell (1984b).

An (1992) examined the effects of instruction focusing on text structures on EFL students' comprehension for expository prose. Two classes of twelfth grade students in a Korean high school participated in the study. One of the classes was assigned to the experimental condition, in which a reading strategy based on text structure was taught, and the other to the control condition, in which a conventional reading lesson was given. To assess the instructional effect a pre-test-post-test design was employed. The instruction contained five one-hour sessions. The results of this study indicated that teaching text structures markedly improved the Korean students' reading comprehension of expository texts. The language education situation in Korea is very similar to the Japanese one. Whether or not the teaching of text structures to Japanese

college freshmen facilitates reading comprehension engages my academic and professional interest.

Raymond (1993) investigated whether training readers to use a text structure strategy helped them to recall the content of the text better. Using university students in Canada (English L1, French L2), she set up a five-hour systematic strategy-training program that consisted of discussing a text structure strategy for an experimental group. The students' comprehension of the text was measured before and after the training. Raymond noted that although the experimental group scored higher on the post-test than did the control group, good language learners probably did not benefit from the training as much as their less skilled counterparts. Good readers possess a greater store of knowledge, including textual knowledge (e.g., rhetorical organisation and paragraph structure) (Almasi, 2003; Duke et al., 2011). Thus, good readers may be already acquainted with and make use of the textual knowledge. Further, Raymond claimed that readers who already have the knowledge of the text structures don't develop their ability to use the information about the rhetorical organisation of texts for reading performance after treatment.

Leon and Carretero (1995) analysed a reading comprehension instructional programme in two complementary studies. The programme was designed to improve knowledge and use of text structure as a comprehension strategy. In the first empirical study, intervention was carried out through an instructional programme applied to a group of high school students (aged 14-15) at two different reading ability levels. The performance of good and poor readers was contrasted with the results obtained from two control groups. The study indicated that the readers trained in this programme benefitted from improved text comprehension in comparison with their counterparts in the control groups. The aim of the second study was to determine if this improvement could be maintained with a different text structure. The question addressed was if the participants in the instructional programme transferred their newly acquired knowledge to a text with a structure that had not been previously taught. The results indicated that this was the case. It would appear that the transfer of textual knowledge to new texts in L2 occurs as happened in the L1 studies (Williams et al., 2005; Williams et al., 2007).

Sharp (2002) conducted an experiment in which four rhetorically different texts with identical subject matter were read by ESL students. There was no text structure

training time. Participants were four hundred and ninety Hong Kong Chinese school children. The mean age was 14.1. Participants were divided into four English ability groups. The four rhetorically different texts were distributed to each of the four ability groups. Each student read one text (either *description*, *cause/effect*, *listing*, or *problem/solution*), took a cloze test on the same text, and filled in a questionnaire. Cloze testing indicated significant differences between the four rhetorically different texts. The most loosely organised texts (*description*) scored significantly higher. The results of the recall protocols based on the number of idea units recalled (a quantitative measure) indicated no significant difference among the text types. In terms of the amount of information recalled, Carrell (1984b) showed that Asian students (Korean and Chinese) recalled twice as much information from the *problem/solution* and *causation* text as from the *comparison* and *description* text. When considering the qualitative/importance rating recall, the more loosely organised texts (*listing* and *description*) scored most highly. From cloze and qualitative level recall scores, the results suggest that the rhetorically different texts affect reading comprehension. The L1 of the participants was Korean and Chinese (Carrell, 1984b) and Chinese (Sharp, 2002). The L1 and English education for Japanese participants might affect research about text structure. The Japanese language has unique paragraph and text organisation (e.g., a possible two main ideas, *ki-sho-ten-ketsu*) and English education in Japan underscores translation into Japanese and grammar teaching.

The unique Japanese rhetorical style of *ki-shoo-ten-ketsu* may exert some influence on Japanese readers of English. Since the *ten* part has a connection but not a direct association to the rest of the text (Hinds, 1983b:80), Japanese expository text seems incoherent to a reader who is not used to the organisation (Connor, 1996:41). Japanese readers of English who become familiar with the organisation of Japanese text, especially novice readers may be bewildered by English expository text following a linear development. Confusion may lie in the place of thesis statement. English-speaking readers expect that an essay will be organised according to the deductive style (Hinds, 1990:90). As Kobayashi (1984) reported, Japanese writing favours the specific-to-general pattern, having the thesis statement in the final position. Japanese readers of English may need to gain an appreciation of the rhetorical differences between English and Japanese at the initial stage of reading English text.

Hirai (2008) explored the effect of providing Japanese EFL readers with two different

rhetorical structures (*temporal order*, and *problem/solution*) and revealed which rhetorical structure these EFL readers find more easily understandable.   Moreover, the effect of paragraph order (original and scrambled) on their reading comprehension was examined.   There was no text structure training session.   An immediate written recall was conducted for 148 Japanese EFL learners in order to measure their reading comprehension.   The results indicated that the upper group recalled significantly more information than the lower group even when the rhetorical structures and paragraph orders were changed.   In addition, the readers recalled more information in *problem/solution* structures than in the *temporal order* structure.

Zhang (2008) explored the effects of formal or rhetorical organisation patterns on reading comprehension through detailed analysis of a case study of 45 non-English majors.   The study did not include text structure training time.   The participants were divided into three groups.   Each group was asked to recall the text and finish a cloze test after reading one of three versions of a passage with identical content but different formal schemata, that is, rhetorical organisation: *description*, *comparison/contrast*, and *problem/solution*.   A cloze test and a recall protocol were employed to measure participants' reading comprehension.   Both quantitative and qualitative analyses of the recall protocol indicated that participants displayed better recall of the text with highly structured organisation than the loosely organised texts.   Zhang's (2008) study led to opposite findings from those of Sharp (2002) and is rather close to the results of Carrell (1984b).   Suggestions were made that rhetorical organisation patterns had a significant effect on written communication and the teaching of the rhetorical organisation patterns to students was necessary to enhance their reading ability.

Nakamura and Hirose (2009) attempted to clarify the effect of content schema and formal schema on Japanese EFL college students' reading ability.   Participants were ninety-three first-year nursing students at a college.   The participants were divided into an experimental group and a control group.   The training was conducted once weekly, ten times in all.   In each training session, the participants in the experimental group enriched the background knowledge of the content area of the nursing text from the Internet individually, and the teacher explained the paragraph organisation of the text such as a topic sentence and supporting details and the rhetorical organisation, for example, *comparison*.   In contrast, the participants in the control group read the same text using a dictionary and answered the same multiple-choice questions as the experimental group did.   The role of the teacher for the control group was to explain

about the text focusing on word-for-word translation of each sentence and its grammatical structures. The results indicated that although both groups improved their reading ability, the experimental group statistically improved their reading ability through ten times teaching sessions more than the control group. The teaching of Nakamura and Hirose (2009) was a combination of content and formal schemata. The allocation proportion of the teaching of two types of schema is not specified. Detailed description of teaching procedures is not provided.

2.9 Summary

This chapter has reviewed literature and research that motivated me to embark on this research and generated research questions addressed in this thesis. Literature was concerned with six areas of particular importance in this thesis research. Firstly, reading processes in L1 were considered from three reading approaches: bottom-up, top-down, and interactive. The bottom-up approaches are the way Japanese students have traditionally performed in reading classes (Hagino, 2008). I think that processing each sentence word-by-word is important to some degree for Japanese students since they generally lack a sufficient amount of vocabulary and grammatical knowledge. In contrast, the top-down approaches drew on previous knowledge, expectations, and experience in order to understand text. More than half of the participants were deficient in knowledge about text structure. This knowledge was provided as intervention in order to build formal schemata. L2 reading can be quite different from L1 reading. Where L2 students differ from L1 students in terms of lexical, grammatical, and discourse knowledge should be taken into consideration in teaching reading in English.

Secondly, the characteristics of good and poor readers were associated with the first research question. As Kitao and Kitao (1989) suggested, reading in English fails to reach an adequate level of comprehension for Japanese college students. Students' attention is directed to recognising words and working out sentence structure. I decided to investigate whether Japanese students' reading behaviour was altered by the teaching of text structure. Students' reading in English may lead to comprehension by bringing the organisation of paragraphs as well as decoding to their attention.

Thirdly, literature on language transfer influences contributed to understanding of whether the L1 background of Japanese students facilitates or obstructs L2 reading

when they learn literacy skills in L2. The L1 background can help L2 learners if the forms and functions of two languages are similar (Birch, 2011). Paragraph organisation varies substantially between the Japanese and English languages. The transfer of literacy skills acquired in L1 is not supposed to take place in L2 literacy learning. Knowledge about text structure needs to be integrated into formal schemata.

Fourthly, regarding text type and text structure, two text types, narrative and expository text, were considered. Teachers are predisposed to teach narrative text both in Japanese and English. College freshmen generally encounter expository text more often than narrative text in and out of class. Expository text was adopted as a text type. Text structure involved *paragraph structure* and *rhetorical organisation*. The intervention included, for example, reading the *comparison* text and identifying main ideas in a paragraph.

Fifthly, the role of Schema Theory in the teaching of reading was considered. According to Schema Theory, previously acquired knowledge is called the reader's background knowledge (Barnett, 1989). Comprehending a text is an interactive process between the reader's background knowledge and the text (Carrell and Eisterhold, 1987). For the participants, formal schemata that include the background knowledge of the rhetorical organisational structures of text are thought to be insufficient since more than half the participants lacked knowledge about text structure. In order to develop the formal schemata of the participants, knowledge about text structure was provided.

Finally, some key findings from previous empirical research studies on text structure in L1 and L2 were reviewed. In the L1 studies, Meyer, Brandt, and Bluth (1980) revealed that use of the same rhetorical organisation as the author of the passage divided students with high reading comprehension skills from students with low reading comprehension skills and use of text structure facilitated recall of information. Their research did not include text structure instruction. Rhetorical patterns that they employed were restricted to two types. Meyer and Freedle (1984) highlighted how discourse organisation affected memory. It was revealed that it was difficult to recall the *problem/solution* organisation and the *comparison* organisation facilitated recall. The rhetorical patterns that they used were of four types. Their research did not have text structure instruction. The text structure interventions exerted a positive effect on comprehension and recall (Meyer, Young, and Bartlett, 1989; Meyer and Poon, 2001;

William et al., 2005).

In the L2 studies, although the studies of Connor (1984), Carrell (1984b), Carrell (1989), Foo (1989), Sharp (2002), Hirai (2008), and Zhang (2008) did not offer training, they presented the following important results. A very low percentage of the Japanese students followed rhetorical organisation (Connor, 1984). The tightly organised types of organisation aided recall of text ideas more than did a loosely organised type (Carrell, 1984b). Poor readers focussed on grammatical structures, word meaning, and text details while good readers focussed on background knowledge and text organisation (Carrell, 1989). The recall scores for the *problem/solution* pattern were higher than those for the *description* pattern (Foo, 1989). The rhetorically different texts affect reading comprehension (Sharp, 2002). Readers recalled more information in *problem/solution* structures than in the *temporal order* structures (Hirai, 2008). Readers displayed better recall of the text with highly structured organisation than loosely organised texts (Zhang, 2008).

The studies of Carrell (1985), An (1992), Raymond (1993), Leon and Carretero (1995), and Nakamura and Hirose (2009) involved training. The training in recognising and analysing the expository text types could facilitate reading comprehension (Carrell, 1985). The teaching of text structure improved the Korean students' reading comprehension (An, 1992). Text structure instruction had a positive effect on the students' recall protocols (Raymond, 1993). The students in the instructional programme transferred their acquired knowledge to a text with a structure that had not been previously taught (Leon and Carretero, 1995). A combination of content and formal schemata improved reading comprehension (Nakamura and Hirose, 2009).

The L2 studies that included training were not sufficient in number. Empirical research involving Japanese students who engaged in research was Carrell (1985) and Nakamura and Hirose (2009). There were only three Japanese students in Carrell (1985). It was not clear which group (experimental or control) they belonged to. The training covered four of the rhetorical patterns but the tests embraced only two of the four patterns in Carrell (1985). The rhetorical organisation patterns used were not specified in Nakamura and Hirose (2009). Whether Japanese students improve their reading comprehension through the teaching of text structure appears to be a question yet to be addressed. In order to ascertain whether Japanese students exhibit the same tendency as other L2 students, this research involved the training sessions and

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encompassed four rhetorical patterns both in training and testing sessions. In the previous research, the results were not analysed to compare good readers and poor readers. This research analysed reading comprehension of poor readers and good readers through the use of tests of reading comprehension and recall. Intervention was evaluated by either recall tests or reading comprehension tests. This research attempted to evaluate intervention through both recall tests and reading comprehension tests. The participants' identification of rhetorical organisation in the text relates to their awareness of the rhetorical organisation. The next chapter describe the research methodology in detail.

Chapter 3

Research Methodology

3.1 Introduction

The purpose of this chapter is to illustrate and give details of the research methodology used in this study, and to present the methodological approach and research design suitable for the examination of the research questions.   Major research paradigms and approaches are overviewed and discussed followed by the paradigmatic position of this research.   A research design that fits this research is explained in Section 3.3.   A pilot study that was implemented ahead of this research provides an explanation of the refinement of data collection and analysis.   The procedures of data collection and analysis are described in regard to research instruments with their validity and reliability.   The ethical issues that I abide by are also addressed.

3.2 An Overview of Research Paradigms and Approaches
3.2.1 Research Paradigms

A paradigm is defined as "a basic set of beliefs that guides action" (Guba, 1990:17). The paradigm selected guides the researcher in philosophical assumptions about the research and in the selection of tools, instruments, participants, and methods used in the study (Denzin and Lincoln, 2000).   Paradigms "are the source not only of theoretical ideas but also of ontological and epistemological assumptions" (Blaikie, 2010:96). Guba and Lincoln (1994) proposed that there was a limited number of competing paradigms in social and educational research which researchers followed.   Each set of research methods is based on a particular paradigm, a patterned set of assumptions concerning reality (ontology), knowledge of that reality (epistemology), and the particular ways of knowing that reality (methodology) (Guba, 1990).

Ontology, epistemology, and methodology are related.   Ontology is concerned with the nature of reality or the nature of the known, that is, the issue of whether reality is a given out there in the world or the product of individual's mind (Cohen and Omery, 1994:137).   Thus, ontology is the starting point of research (Denzin and Lincoln, 1994:99).   The ontological position is followed by epistemological and methodological stances.   Epistemology is associated with providing a philosophical grounding for

deciding what kinds of knowledge are possible and how a researcher can ensure that they are both adequate and legitimate (Maynard, 1994:10). The nature of knowledge, its possibility, scope and general basis (Hamlyn, 1995:242) are dealt with, with reference to its validity (Cohen and Omery, 1994:137-138). Methodology is the general research strategy, plan of action, process or design lying behind the choice of particular research methods and links the choice and use of the methods to the desired outcomes (Crotty, 1998:3). The methodology demands not only a description of the methods but also an account of the rationale it provides for the choice of methods (Crotty, 1998:7). The methodology is different to methods in that research methods refer to the more practical issues of implementing an appropriate research design (Hesse-Biber, 2010:210).

The paradigms are sometimes subsumed under two main worldviews of positivism and interpretivism (Blaikie, 2010; Cohen, Manion, and Morrison, 2007). The key idea of positivism is that the researched world exists externally and aspects of it can be measured objectively (Ponterotto, 2005). Meanwhile, the interpretivist paradigm holds that reality is constructed in the mind of the individual rather than it is an externally singular entity (Hansen, 2004). These two basic research paradigms often act as frameworks for researchers (Middlewood, Coleman, and Lumby, 1999).

Different research approaches are underpinned by different research paradigms. The research approaches in education and social sciences are often divided into two main types: quantitative and qualitative approaches (Blaikie, 2010; Denscombe, 1998). In one of the main paradigms, positivism, the quantitative approach is likely to be used (Oxford, 2011). The other paradigm known as interpretivism is likely used when the qualitative approach is preferred (Altheide and Johnson, 1994; Bergman, 2008). Rather than quantitative or qualitative, I take mixed methods approach to provide a depth and breadth that a single approach may lack by itself.

Each of the quantitative and qualitative approaches involves its own methods of collecting and analysing data. In the quantitative approach, numerical data is collected and statistically analyzed in an objective and unbiased manner to prove or disprove a hypothesis so that the results can be generalised from a sample to a larger population (Ivankova and Creswell, 2009:137). Quantitative research draws on numerical warrants like frequency and probability, and makes use of numerical or countable data (Freeman, 2009). On the other hand, qualitative research tries to understand

participants' experiences with the central phenomenon in a natural setting, using research methods such as ethnography or case study. Instead of numbers, qualitative researchers collect text such as interviews or observation notes and images, pictures or audio-visual footage about the phenomenon of the study (Croker, 2009:5; Ivankova and Creswell, 2009:137).

3.2.2 The Paradigmatic Stance of This Study

This thesis research uses a mixed methods design that involves "collecting, analysing, and mixing quantitative and qualitative approaches at many phases in the research process, from the initial philosophical assumptions to the drawing of conclusions" (Creswell and Plano Clark, 2007:18). This mixed methods design results in the collection of more than one type of data. The use of different methods in this research was necessary to have a comprehensive view of students' use of text structure in comprehending a text. At the data collection phase, quantitative data derives from reading comprehension tests and responses on Likert-scale questionnaires, and individual interviewing was employed as a qualitative data collection method. The philosophical assumptions of this research will be discussed in this section.

A mixed methods design is based upon three main characteristics: (a) timing, or the sequence or order of collecting and analysing quantitative and qualitative data in a study; (b) weighting, or the priority given to one type of data in the study; and (c) mixing, or the way quantitative and qualitative data and results are integrated during the research process (Creswell and Plano Clark, 2007).

Mixed methods research refers to "studies that combine methods that are used within different ontological and epistemological assumptions" (Blaikie, 2010:219). According to Guba and Lincoln (1994; 2005), the paradigms are defined first and foremost by beliefs on the level of ontology, epistemology, and methodology. Creswell and Plano Clark (2011:38) suggested that mixed methods researchers not only were aware of their philosophical assumptions but also clearly articulated their philosophical assumptions in their mixed methods projects. In mixed methods research, it would be necessary to ensure consistency between ontology, epistemology, and methodology at the start of the study.

There seem to be three main stances regarding philosophical assumptions in mixed

methods research that have been discussed in the literature (Greene and Caracelli, 1997; Greene, Caracelli, and Graham, 1989; Mark, Feller, and Button, 1997; Rocco et al., 2003; Tashakkori and Teddlie, 1998). One of them is the purist stance that emphasizes the differences that exist in ontology, epistemology, and axiology among the paradigms (Guba, 1987; Guba and Lincoln, 1994). Two other stances are the pragmatist stance that focuses on what works as the truth regarding the research questions (Tashakkori and Teddlie, 2003:713) and the dialectical position that assumes that the use of multiple paradigms contributes to greater understanding of the phenomenon under study (Teddlie and Tashakkori, 2009:99).

There are two perspectives on the purist stance (Rocco et al., 2003). One is articulated by the positivists and postpositivists. The other is associated with the constructivists and interpretivists. While researchers who take the purists stance disagree on which paradigm, positivism (postpositivism) or constructivism (interpretivism), is more appropriate for mixed methods research, the purists from both competing paradigms hold in common that the two paradigms embody fundamentally different understandings of the world and what constitutes legitimate truth or knowledge claims that they should not be mixed within a single study (Rocco et al., 2003:21).

The purist stance holds that different paradigms involve incompatible assumptions on ontological, epistemological, and axiological grounds (Denzin and Lincoln, 1994; Lincoln and Guba, 1985). The incompatibility thesis states that it is inappropriate to mix quantitative and qualitative methods due to fundamental differences in the paradigms (Guba, 1987). This paradigmatic stance accepts and emphasizes the divergent qualities attributed to each paradigm (Bergman, 2008). Mixing inquiry paradigms is not feasible or sensible (Mark, Feller, and Button, 1997). The paradigm that a researcher should rely on is selected depending on the design of mixed methods research (Creswell and Plano Clark, 2011).

Creswell and Plano Clark (2011) suggested that the selection of a paradigm is related to the type of mixed methods design used. They gave an example concerning the choice of a paradigm. If a study begins with a survey, the researcher is implicitly using a postpositivist paradigm to inform the study beginning with specific variables and empirical measures (Creswell and Plano Clark, 2011:45). This research is predominantly quasi-experimental and begins with the pre-tests of reading comprehension and written recall. This research should take the position of the

postpositivist paradigm.

Pragmatism is a philosophical tradition that originated in the United States. Three American thinkers who articulate this philosophical tradition are John Dewey, William James, and Charles Sanders Peirce. Basic elements of pragmatists include induction, the importance of human experience, and the relationship between science and culture (Glover, 2001:6).

The use of pragmatism in mixed methods research has been advocated mostly by Johnson and Onwuegbuzie (2004), Tashakkori and Teddlie (1998, 2003), and Teddlie and Tashakkori (2009). The major characteristic of pragmatism is the search for practical answers to questions that intrigue the investigator (Johnson and Onwuegbuzie, 2004:18). Teddlie and Tashakkori (2009) attempted to associate pragmatism with mixed methods research. Teddlie and Tashakkori (2009:73) stated that pragmatism rejected the either-or choices from the positivism-constructivism debate as a major reason that pragmatism was the philosophical partner for mixed methods research. However, pragmatism is not based on a particular ontological and epistemological stance (Creswell, 2009:10). In other words, pragmatism has no predetermined view of what reality or knowledge is. Pragmatism is difficult to apply as an antidote to incompatibility (Bergman, 2008:12). In this viewpoint, I have a reluctance to follow pragmatism as the research paradigm of this research.

The dialectical position states that multiple paradigms may be used in mixed methods research (Greene and Caracelli, 1997). This dialectical perspective recognises that using competing paradigms gives rise to contradictory ideas and contested arguments (Migiro and Magangi, 2011). An important component of this stance is the ability to think dialectically (Teddlie and Tashakkori, 2009:100). This stance makes use of the tensions generated by juxtaposing two opposing paradigmatic viewpoints. The choice of mixed methods is likely to be based on values rather than methodological concerns (Mark, Feller and Button, 1997:56). This position on mixing paradigms in mixed methods studies holds that richer and more accurate understandings are achieved through a synthesis across different research methods (Greene and Caracelli, 1997).

Sale, Lohfeld, and Brazil (2002) proposed a solution to the problem in mixed methods research that quantitative and qualitative methods represent two different approaches and research paradigms that underpin the approaches are incommensurate. Sale,

Lohfeld, and Brazil (2002) stated:

> Qualitative and quantitative research methods have grown out of, and still represent, different paradigms. However, the fact that the approaches are incommensurate does not mean that multiple methods cannot be combined in a single study if it is done for complementary purposes. Each method studies different phenomena. The distinction of phenomena in mixed-methods research is crucial and can be clarified by labelling the phenomenon examined by each method.

> (Sale, Lohfeld, and Brazil, 2002:50)

Blaikie (2010:225) suggested that the use of quantitative and qualitative methods together was allowed, provided both types are used with the same ontological assumptions. Different methods can be used to explore aspects of the same reality. While postpositivism's ontological assumptions embrace critical realism that assumes that objective reality can be apprehended only imperfectly and probabilistically (Guba and Lincoln, 1994, 2005), the interpretivist paradigm rests on the relativist ontology that assumes that reality is multiple (Guba and Lincoln, 1988:93). There are great differences between the ontological assumptions of postpositivism and those of interpretivism. An apprehendable reality can be divided into parts, and can be studied separately from the whole. Due to this divisibility, postpositivist researchers can use the property of variables that possess a measurable characteristic to test hypotheses and study research questions. In contrast, the multiple realities exist only in the minds of human actors. The realities cannot be divided and must be examined holistically.

von Zweck, Paterson, and Pentland (2008) employed a mixed methods design to fully address all aspects of a research question and attain a comprehensive view of the barriers and enablers affecting the workforce integration of international occupational therapy graduates in their study. They maintained that important aspects of a research problem might be ignored by relying on a single approach and that mixed methods strengthened the quality of the research findings (von Zweck, Paterson, and Pentland, 2008:120). A review of literature led to the choice of hermeneutics as the principal approach. Situated in the interpretivist paradigm, their study sought to gain an understanding of experiences of international occupational therapy graduates.

Quantitative data gained from a survey of all international graduates to supplement the qualitative data was gathered in other study phases. A sequential exploratory strategy that involved the use of quantitative results was used to assist with the interpretation of qualitative findings.

This research was conducted under the umbrella of the postpositivist paradigm. The research questions of this study include whether Japanese college students have and use the knowledge of the rhetorical organization of English expository text and what the effects of the teaching of text structure might be. In order to explore the perception and use of text structure of participants, both quantitative data and qualitative data were collected and analysed. However, the emphasis was placed on the quantitative approach. Quantitative data was primarily gathered and analysed while the qualitative approach was employed only for the supplementary purpose, as suggested by Sale, Lohfeld, and Brazil (2002).

3.3 Research Design

This research adopted a research method that combines both quantitative and qualitative approaches. Specifically, reading comprehension test scores, immediate written recall protocols, and a questionnaire were used along with student interviews to create a multidimensional view of the use of text structure knowledge in comprehending a text. As a quantitative approach, the present research is quasi-experimental and attempts to give an experimental group longitudinal treatment on text structure and to objectively assess the effect by looking at the reading comprehension test scores and written recall protocols. A questionnaire about the reading behaviour of the participants when they read silently in English was given to all students. Regarding a qualitative approach, a narrative research method, namely, interviews were used to obtain views and experiences on reading comprehension in L2 from a few students arbitrarily extracted from both experimental and control groups. The type of mixed methods research design that this research follows will be mentioned in this section.

Although many designs have been discussed in the mixed methods literature (Creswell and Plano Clark, 2011; Creswell, Plano Clark, and Garrett, 2008; Creswell, Plano Clark, Gutmann, and Hanson, 2003; Greene, Caracelli, and Graham, 1989), mixed methods research is classified into four major types: *triangulation*, *embedded*, *explanatory*, and

exploratory (Creswell and Plano Clark, 2007; Ivankova and Creswell, 2009).   The *triangulation* design involves collecting and analysing quantitative and qualitative data concurrently, and merging the two sets of data.   The *embedded* design consists of embedding one qualitative or quantitative method within a larger study guided by the other quantitative or qualitative method.   The secondary method addresses a different question and enhances the implementation and interpretation of the primary method.   The *explanatory* design involves two distinct phases.   This design starts with quantitative data collection and analysis and is followed by qualitative data collection and analysis.   The qualitative results are used for explaining the initial quantitative results.   The *exploratory* design also consists of two phases.   However, this design first explores a topic using qualitative data before measuring and testing it quantitatively.

This research follows the Explanatory Design in which quantitative and qualitative data are collected and analysed in sequence, and qualitative findings are used to help explain, clarify, or expand quantitative results.   This study collected and analysed quantitative data first and then chose three participants from each group to conduct follow-up qualitative interviews in order to explore quantitative results more deeply.   The emphasis is given to quantitative data since the quantitative data collection process is more central to this study and the results of quantitative data analysis are discussed more extensively.   At the interpretation stage of the research results, the findings are discussed from the two phases of quantitative results and qualitative results.

The aims and benefits of mixed methods research design appear to take the best of qualitative and quantitative methods and combine them (Bergman, 2008:11).   A mixed methods design offers different perspectives from the term *multimethods* that refers to "the mixing of methods by combining two or more qualitative methods in a single research study or by using two or more quantitative methods in a single research study" (Hesse-Biber, 2010:3).   All methods have limitations and biases inherent in one single method could neutralise the biases of other methods.

Hesse-Biber (2010) noted that methodology provided the theoretical perspective that linked a research problem with a particular method or methods and stated:

> Methodologies are derived from a researcher's assumptions about the nature of existence (ontology).   These assumptions, in turn, lead to their perspective

philosophy or set of philosophies on the nature of knowledge building (epistemology) regarding such foundational questions as: Who can know? What can be known? We can think of methodology as a theoretical bridge that connects the research problem with the research method.

(Hesse-Biber, 2010:11)

Methodology leads the researcher to ask certain research questions and prioritize what questions and issues are most important to study. Quasi-experimental inquiry in the spirit of postpositivism seeks to establish cause-and-effect relationships. Methods lie in the service of methodologies. The methods of quasi-experimental inquiry include measurement and scaling (Crotty, 1998). Qualitative methods can be also used within this postpositivist paradigm (Mertens, 1998:10). Qualitative data from interviews is collected largely to supplement quantitative data. I mainly used methodologies that privileged causality as the most important goals, which represents the postpositivist paradigm. The emphasis of this research methodology was laid on the quantitative approach that shaped my choice of data collection and analysis methods that involved measurement and statistical analysis.

QUAN	**QUAN**	**Connect**	**Qual**
Tests of 2 groups of college students	Descriptive /inferential statistical analysis	Selecting participants for qualitative follow up	Follow up interviews

Qual	**Interpret**
Data analysis	Interpretation based on QUAN and Qual results
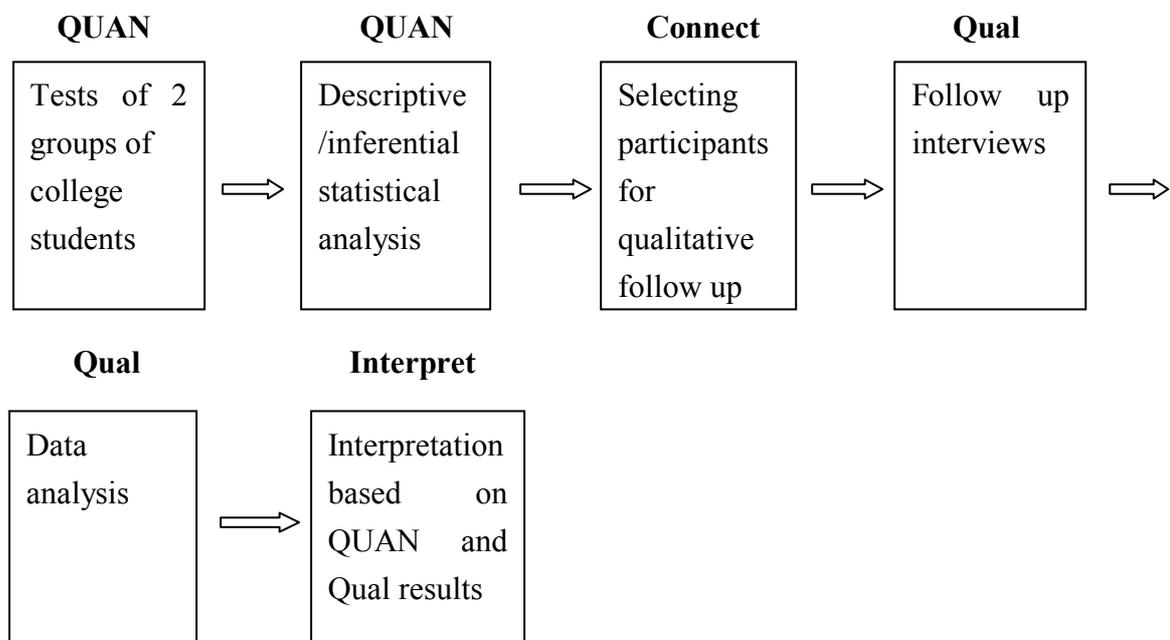
Figure 3.1 Explanatory design procedures of this study

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The sequential explanatory design adopted is the most straightforward design (Creswell, Plano Clark, Gutmann and Hanson, 2003) among mixed methods and is used extensively in applied linguistics research (Ivankova and Creswell, 2009). In this mixed methods design, the emphasis was placed on quantitative data. Then, I first collected the quantitative data, supplemented with face-to-face interviews with participants.

This research adopted the following procedures that are divided into three phases. In phase 1, one day prior to the onset of the instruction, all the participants were given the pre-questionnaire, the pre-reading comprehension test, and the pre-recall test. In the pre-recall test, as well as recalling information from text, all the participants were asked to identify the rhetorical organisation pattern of the text.

The pre-test needed to be conducted in one lesson (ninety minutes). The pre-test took fifty minutes for the reading comprehension test, thirty minutes for the recall test, and ten minutes for the questionnaire. Within this time constraint, the recall test for all the participants was restricted to two types of text structure (*comparison* and *problem/solution*). The other two types of rhetorical organisation (*causation* and *description*) were provided for volunteer participants, three participants from the experimental group and three from the control group (see Table 3.3). These selected six participants voluntarily took the recall test out of class. Regarding the role of text structure knowledge in L2 text comprehension, Carrell (1984b) showed that Asian students (Korean and Chinese) recalled twice as much information from the *problem/solution* and *causation* texts as from the *comparison* and *description* texts. In order to consider whether Japanese students exhibit the same tendency in recalling information, I decided to employ one rhetorical organisation from the *problem/solution* and *causation* texts and to use one from the *comparison* and *description* texts for all the participants during the class.

Phase 2 contained intervention for the experimental group. Phase 2 lasted over a total of 7 lessons. In this phase, instruction was given to the experimental group within my assigned teaching duties over two and half months. Approximately one half of each lesson's time (45 minutes) was allotted to the instruction for the experimental group while the control group read different reading materials from a textbook. For the control group, the teacher focused on word-for-word translation of each sentence and its grammatical structures as the participants had received conventional teaching on

reading.

In Phase 3, the post-test for the experimental group and the control group was carried out.   All the participants were given the post-reading questionnaire, the post-reading comprehension test and the post-recall test.   In the post-recall test, as well as recalling information from text, all the participants were asked whether they identified the rhetorical organisation pattern of the text.   All the participants took the post-recall test in the rhetorical organisation of *comparison* and *problem/solution* while a selected group of six participants took the post-recall test in the rhetorical organisation of *causation* and *description*.   Approximately two weeks after the post-recall test, a delayed recall test that was supposed to be administered two or more weeks after the post-test (Haynie, 1997) was conducted only for the selected six participants in order to measure the long-term retention of knowledge (Gass and Mackey, 2007:196).   The delayed recall test was administered only to a small number of volunteers since I thought that the pre-test and the post-test for reading comprehension and recall were demanding tasks for the participants and I instead focussed on ways to reduce the stress of testing for the participants.   Thus, I solicited applicants voluntarily to join the delayed test and ended up asking three participants from the experimental group and three from the control group.   I adjusted the schedule to reflect the availability of the selected six participants out of class.   One day, approximately two weeks after the post-test, I arranged a classroom to perform the delayed test after school.

Stimulate recall interviews were individually conducted with the selected six participants out of class.   There was a problem with conducting a one-on-one interview with the whole class since I faced a time constraint.   I decided to ask the selected six participants who joined the delayed tests to be interviewed about the recall tests.

In Phase 4, the same instruction as the experimental group received was presented to the control group so that it made teaching fair for the students from the experimental and control groups.   Both groups used the same textbook, teaching materials, and teaching procedures.

Table 3.1 Chronological order of the procedures of this study

	Experimental group	Control group
Phase 1	questionnaire	questionnaire
	reading comprehension test	reading comprehension test
	immediate written recall test	immediate written recall test
Phase 2	Intervention 1~7	
	Intervention 1 (paragraph)	
	Intervention 2 (cause/effect)	
	Intervention 3 (problem/solution)	
	Intervention 4 (description)	
	Intervention 5 (comparison)	
	Intervention 6 (practice)	
	Intervention 7 (practice)	
Phase 3	questionnaire	questionnaire
	reading comprehension test	reading comprehension test
	immediate written recall test	immediate written recall test
	interviews	interviews
	delayed recall test	delayed recall test
Phase 4		Intervention 1~7
		Intervention 1 (paragraph)
		Intervention 2 (cause/effect)
		Intervention 3 (problem/solution)
		Intervention 4 (description)
		Intervention 5 (comparison)
		Intervention 6 (practice)
		Intervention 7 (practice)

3.4 Participants

All participants in this research were a group of national university EFL freshmen studying at a university in Niigata prefecture that is located in north-western Japan and faces the Sea of Japan, aged between 18 and 21. The participants who enrolled in an English class for freshmen in which I teach were conveniently available from pre-existing groups of classes at the university. A total of 91 university students

participated in this study, 45 in the experimental group and 46 in the control group. Among the participants, 3 were chosen at random from each group as interviewees and extra immediate written recall test takers.   Participants who did not answer the questionnaire, did not take the reading comprehension tests, or did not complete the recall tasks were excluded from the analysis.   As a result, data from 80 participants, 40 in the experimental group and 40 in the control group, were finally analysed.   The participants were furthermore divided into two proficiency levels, upper (n=21 in the experimental group, n=19 in the control group) and lower (n=19 in the experimental group, n=18 in the control group), based on the pre-reading comprehension test.

The participants were all native speakers of Japanese and had been studying English as a foreign language for over six years.   Their English education started at the first year of junior high school, at the age of 12, and continued until the third year of high school, at 17 years of age.   No participants had studied at overseas high schools in English-speaking countries or lived abroad long-term.

3.5 Pilot Study

A pilot study was conducted in order to assess the quality of instruments to be used in this research so that the instrument could be revised and improved before they are used with the participants of this thesis research.   I collected information in the pilot study about reading comprehension tests, immediate written recall tests, and a questionnaire.

Voluntary applicants, eight undergraduate students of Japanese EFL and college freshmen and who were interested in my research project, were students at a university in the same geographical area as the university that this thesis research is undertaken. The participants comprise four male and four female students.   Officially, they had been learning English as a foreign language for six years.

The participants were divided into two groups.   Four participants comprising two male students and two female students were allocated to an experimental group that I taught text structure to and provided in practice and the other four participants were assigned to a control group in which the participants read texts without any teaching of text structure.   The participants from both groups were further divided into two groups of a higher reading ability group and a lower reading ability group according to the scores of the pre-test of reading comprehension.

As for the reading comprehension tests, an EIKEN pre-second grade test was applied (see Section 3.6 in this chapter). The test battery was pilot tested by administering it to eight participants. Most participants got higher scores than I expected and the test scores were likely to leave little room for improvement. Consequently, the EIKEN pre-second grade test was upgraded to an EIKEN second grade test.

Secondly, immediate written recall tests that comprise eight texts for all participants were pilot tested. As a result, two texts, "You Are What You Eat" and "Visions", were removed from an immediate written recall test battery since even the participants from the higher reading ability group could not identify the rhetorical organisation of these texts.

Thirdly, the questionnaire asked whether the participants already knew about organizational patterns of expository text. Only two of the eight participants already had some knowledge of rhetorical organization of expository texts. One participant had gained this knowledge from a high school English teacher. An English teacher at a cram school taught rhetorical organization of expository texts to the other participant. Although such a simple questionnaire is enough just to enquire about the possession of the specific knowledge, I would also like to understand students' perspectives on reading in English. For this purpose, Carrell's (1989) questionnaire was combined with this simple questionnaire.

Fourthly, although stimulated recall interviews were not conducted in the pilot study, I decided to hold such interviews in the main study to reinforce other kinds of data from the questionnaire, reading comprehension tests, and immediate written recall tests. In the pilot study, I could obtain quantitative data. While analysing the quantitative data, I thought that I would like to hear opinions and feelings about how the students read expository text, how they identified text structure, and so on directly from the participants. Stimulate recall interviews were small-scale due to time constraints but in-depth analysis was possible.

3.6 Data Collection

It was decided that the quantitative data collection and analysis phase required three research instruments, a reading comprehension test, an immediate written recall test,

and a questionnaire and that the qualitative data collection and analysis phase required only one instrument, an interview.

There are some English language tests that are administered in Japan including reading comprehension such as IELTS (International English Language Testing System), TOEFL (Test of English as a Foreign Language), and the EIKEN test in Practical English Proficiency that is produced and administered by a non-profit foundation, the Society for Testing English Proficiency (STEP).   Among these English language tests, the EIKEN test, the most popular and widely used in Japan, was employed.   There are seven tests within the EIKEN framework, each representing a different ability level. The levels are called grades and are given on a pass-or-fail basis.   Each EIKEN grade is a separate test with a unique set of test items and tasks designed for that level.   The grade suitable for the participants is relatively easy to locate.   To cite a case, Grades 2 and pre-2 show MEXT benchmarks for high school graduates.   EIKEN is backed by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT).

The reading section of an EIKEN second grade test employed in this study consists of one passage with five vocabulary multiple-choice test items and three passages with fifteen comprehension multiple-choice test items (see Appendix A).   Second EIKEN grade tests correspond to the Common European Framework of Reference for Languages (CEFR) B1 level and an IELTS score of 4.5-5.0, and are recognized as MEXT (2003) benchmarks for high school graduates in Japan.

A free-recall test (Alderson, 2000), which is also called an immediate written recall test (Chang, 2006) was used for examining whether the instruction brings about a change in the amount of information and the change of recall organisation.   This recall test is called an immediate written recall test since writing recall is conducted immediately after reading a passage.   The immediate written recall task has been increasingly used in L2 reading research as a measure of comprehension (Bernhardt, 1991; Alderson, 2000) and is described as the "most straightforward assessment of the result of the text-reader interaction" (Johnston, 1983:50).

A rationale for the use of the immediate written recall task is that students who are knowledgeable about and follow the author's structure in their attempts to recall a text remember more than those who do not (Meyer, Brandt, and Bluth, 1980).   In practice, participants were asked to read a text, put it to one side, and write down everything they

can remember from the text.   Two passages of expository texts were used by all the participants for the pre-test and post-test respectively.   The first passage is organized in a *comparison* structure while the second is organized in a *problem/solution* structure. These structures can be more easily identified by discourse markers than a collection of descriptions (Meyer and Freedle, 1984).

The recall test needs to be carried out in the native language of the participants so that participants' reading comprehension is not masked by their limited L2 production (Chang, 2006).   An assessment through recall remains a reading test and does not turn into a writing test (Bernhardt, 2011).   As Chang (2006) suggested, the advantage of the immediate written recall test is not to influence readers' understanding of the text during the comprehension process.   The instructions of the recall test were given in Japanese and the participants were asked to write down everything in Japanese so as to be a true measure of comprehension.

Test materials for immediate written recall were taken from existing publications. Seven passages of expository texts that include *Nuclear power plants*, *Water*, *Computer*, *Air pollution*, *The Early Railroad*, *Energy Crisis*, *The Purpose of Guilds* are taken from An (1992), one text *The EU* taken from Ishitani, Wallis, and Embury (2003), one text *To Your Health* taken from Knudsen (2010), and three texts *Warming Up*, *Global Warming*, *Picking Up Rubbish* taken from Dymock and Nicholson (2007) served as reading materials for immediate written recall tests.   The seven passages taken from An (1992) were parsed in her study according to the prose analysis procedure developed by Meyer, Young, and Bartlett (1989) in order to clarify the rhetorical organisation of each passage.   One text, *The EU* was classified as the organisation of *cause/effect* and the graphic organiser was presented in Ishitani, Wallis, and Embury (2003:46).   With regard to the text *To Your Health*, I discussed the organisation with a colleague and reached an agreement that the text was organised as *description*.   Three texts, *Warming Up*, *Global Warming*, and *Picking Up Rubbish* were shown with their graphic organisers in Dymock and Nicholson (2007).   The twelve passages used in the immediate written recall tests in Table 3.2 embrace three passages of *comparison*, three passages of *problem/solution*, three passages of *causation*, and three passages of *description*.   Two passages for pre-test, two passages for post-test, and four passages for delayed test are just for the elicited participants (see Appendix B).

Table 3.2 Readability indices of texts

text (structure type)	Flesch Kincaid Reading Ease	Gunning Fog Score
Computer-The brain machine (*comparison*), for all the participants, pre-test	**50.9**	**14.7**
Air pollution (*problem/solution*) for all the participants, pre-test	**60.8**	**12.6**
The EU (*causation*) for extracted participants, pre-test	**37.5**	**14.9**
To Your Health (*description*) for extracted participants, pre-test	**53.8**	**13.1**
Nuclear power plant (*comparison*) for all the participants, prost-test	**52.1**	**12.1**
Water (*problem/solution*) for all the participants, post-test	**55.0**	**13.3**
Warming Up (*causation*) for extracted participants, post-test	**69.8**	**9.8**
The Purpose of Guilds (*description*) for extracted participants, post-test	**64.7**	**9.5**
The Early Railroad (*comparison*) for extracted participants, delayed test	**53.8**	**11.3**
Energy Crisis (*problem/solution*) for extracted participants, delayed test	**56.6**	**13.8**
Global Warming (*causation*) for extracted participants, delayed test	**58.7**	**10.9**
Picking Up Rubbish (*description*) for extracted participants, delayed test	**71.9**	**10.4**

The adoption of materials for immediate written recall tests were considered in terms of text difficulty. Table 3.2 shows readability indices of the twelve texts that are used in the pre-test, post-test, and delayed test. Flesch Kincaid Reading Ease rates texts on a 0-100 scale. A high score means the text is easier to read. Low scores mean the text is complicated to understand. Zero to 40 ranges from very difficult to difficult reading. Eighty and above varies from easy to very easy reading. The scores of many standard texts fall between 60 and 70 (Stockmeyer, 2009). The four texts for all the participants range from 50 to 61 and the scores represent that they are not difficult or easy texts. Gunning Fog Score includes the indication of the number of years of formal education that a person requires in order to easily understand the text on the first

reading.   As for the Gunning Fog Score, the lower the score, the easier the document is to read.   An average journal article would generate a score of 14-16 and a tabloid newspaper article would generate a score of 10 (Byrom et al., 2003).   The texts for all the participants are approximately considered as standard texts.

The twelve texts that were shown in Table 3.2 were used in the pre-test, post-test, and delayed test in the following manner (see Table 3.3).   Two passages of expository texts that covered *Computer* (*comparison*) and *Air Pollution* (*problem/solution*) were used as the pre-test for the whole group including extracted participants (three participants from each group).   Two passages that encompassed *The EU* (*causation*) and *To Your Health* (*description*) were used as the pre-test just for extracted participants.   Two passages that included *Nuclear Power Plant* (*comparison*) and *Water* (*problem/solution*) were used as the post-test for all the participants.   Two texts that incorporated *Warming Up* (*causation*) and *The Purpose of Guilds* (*description*) were used as the post-test for extracted participants.   Four texts, *The Early Railroad* (*comparison*), *Energy Crisis* (*problem/solution*), *Global Warming* (*causation*), and *Picking Up Rubbish* (*description*) were used as the delayed test for extracted participants.

Table 3.3 Texts used for recall tests and participants

Participants / Recall test	All the participants	Extracted participants
Pre-test	Computer (*comparison*) Air Pollution (*problem/solution*)	The EU (*causation*) To Your Health (*description*)
Post-test	Nuclear Power Plant (*comparison*) Water (*problem/solution*)	Warming Up (*causation*) The Purpose of Guilds (*description*)
Delayed test	No recall test provided.	The Early Railroad (*comparison*) Energy Crisis (*problem/solution*) Global Warming (*causation*) Picking Up Rubbish (*description*)

At the end of the recall tests, all the participants answered a question about the identification of the rhetorical organisation pattern in written form.   For instance, in the case of the pre-test, a recall test booklet consisted of four pages.   Two types of text that covered the *Computer* text (c*omparison*) and the *Air Pollution* text

(*problem/solution*) were included in the recall test booklet.   The *Computer* text appeared on page one and provided the instructions that the participants write down the time they started and finished reading, and they do not turn back to the text on page one after starting to write recall protocols on page two.   The participants were required to write down all that they could remember from the text and to identify the rhetorical organisation of the test passage on page two.   In the data analysis phase, I scored the responses to the question concerning the identification of the rhetorical organisation as to whether they correctly identified the rhetorical organisation or not.   The *Air Pollution* text appeared on page three.   The participants followed the same procedure as in the *Computer* text on page four.

In the qualitative phase of data collection, interviews with six participants selected from each group were not piloted but were determined to be added for the complementarity of quantitative data (see Tables 3.4 and 3.5).   The interview is arranged according to one of the introspective methods, stimulated recall (Gass and Mackey, 2000, 2007).   A participant was given one of their written products, immediate written recall tests, so that they can make specific mention of immediate written recall tests.   The interviewee's words can be taken as a genuine reflection of the participant's reading in L2 and can be used for the in-depth discussion of this research.   I played the role of an interviewer and set the agenda for the discussion which centres on the immediate written recall tests that the participants took.   Interviews are valuable to this research because they can provide insights into participants' perceptions of text structure at a depth, which is not accomplished with questionnaires.

Stimulated recall and think-aloud are introspective methods, which tap participants' reflections on their own mental processes and behaviours.   Stimulated recall is an introspective technique for gathering data that can yield insights into a learner's thought processes during language learning experiences (Gass and Mackey, 2007:200).   Learners are asked to introspect while viewing a stimulus to prompt their recollections.   Think-aloud is a type of verbal reporting in which individuals are asked what is going through their mind as they are solving a problem or performing a task (Gass and Mackey, 2007:200).   Gass and Mackey (2000:51) noted that think-aloud is more difficult to carry out without training than stimulated recall procedures and many people need some practice as well as a model to follow when asked to vocalise their thoughts during a problem-solving task.   Since stimulated recall did not place an additional burden on the participants for training, I decided to employ stimulated recall.

Table 3.4 Three participants selected from the experimental group

Names of participants (pseudonyms)	Shunichi	Misaki	Aoi
Gender	Male	Female	Female
Age	19	18	18
Scores of reading comprehension (pre-test, post-test)	20 (pre-test) 20 (post-test)	11 (pre-test) 5 (post-test)	9 (pre-test) 9 (post-test)
An affiliated group	Upper experimental	Lower experimental	Lower experimental

Table 3.5 Three participants selected from the control group

Names of participants (pseudonyms)	Ryo	Kou	Jungo
Gender	Male	Male	Male
Age	18	19	18
Scores of reading comprehension (pre-test, post-test)	5 (pre-test) 5 (post-test)	8 (pre-test) 8 (post-test)	7 (pre-test) 7 (post-test)
An affiliated group	Lower control	Upper control	Upper control

A questionnaire was used to investigate the reading behaviour of the Japanese university undergraduate students (see Appendix C). The self-report questionnaire comprised closed questions and open-ended questions. Using a 1-5 Likert scale (strongly agree-strongly disagree), the participants judged twenty-eight statements about silent reading in English. The students were asked to indicate, one by one, the degree of their behaviour in reading, marking a continuum with a tick on a frequency-scale. Table 3.6 shows the structure of the questionnaire. Questionnaire items included six statements regarding the participants' abilities in reading in English, to provide a measure of their confidence in their reading in English, five statements regarding what they do when they do not understand something, to provide a measure of their awareness of repair behaviour, nine statements concerning what they focus on in order to read more effectively, and eight statements concerning things which make reading in English difficult for them. The open-ended questions asked whether the participants knew the text structure of expository text. When they had knowledge of the text structure, there were questions to ask when and where they learned this.

Table 3.6 Structure of the questionnaire

1) Confidence	6 statements related to various aspects of a reader's perceived ability to read in English
2) Repair	5 statements related to repair behaviour a reader uses when comprehension fails
3) Effective	9 statements related to reading behaviour the reader feels make the reading effective
4) Difficulty	8 statements related to aspects of reading which make the reading difficult

3.7 Intervention

The training program consisted of seven sessions as shown in Table 3.7. In Session 1, the concept of text structure, or the author's organisational pattern, was explained and the strategy to use this organisational pattern was introduced. Main ideas and four basic types of rhetorical organisation were demonstrated using short exemplar texts (see Table 3.8).

Table 3.7 The text structure intervention of each session

Session 1 (paragraph)

Session 2 (cause/effect)

Session 3 (problem/solution)

Session 4 (description)

Session 5 (comparison)

Session 6 (practice)

Session 7 (practice)

Table 3.8 Short passages used for Session 1

Causation: Sally's health was in bad condition.   Sally wasn't eating well, exercising, or resting enough.   As a result, she felt weak and run-down and never wanted to do anything.

Problem/solution: Polluted rivers are eyesores.   They are also health hazards.   One solution is to bar the dumping of industrial wastes.

Description: Our 25th high school reunion was held last year.   We saw many old friends, danced until dawn, and agreed to meet again in five years.

Comparison: Despite evidence that smoking is harmful, many people claim that this is not so.   Although smoking has been related to lung and heart diseases, for some people smoking may relieve tension.

One key to reading and learning from written informational materials is to become familiar with the way the ideas are organised by the writer (Blachowicz and Ogle, 2008). For this purpose, in sessions 2 through 5, participants were asked to find the main ideas and to recognise and use the rhetorical organisation from expository texts, using visual representations that include graphic organisers (GOs).   Jiang and Grabe (2009:25) suggested that by recognising how information is organised in the text and how the information can be arranged in GOs, students are able to comprehend the information in the text easily.   Besides comprehension, GOs that reflect the text structures of expository text can help students recall the ideas in informational texts (McKenna and Stahl, 2009:177).   Pearson and Fielding (1996:827) noted that nearly any form of instruction aimed at teaching students text structure enhances comprehension and short- and long-term memory of text.   The instruction in this research would be expected to help the participants improve their comprehension and recall.

GOs are one of ways to promote effective comprehension instruction for the rhetorical organisation in the text (Jiang and Grabe, 2009:25).   GOs raise awareness of how the information in texts is organised.   This awareness of text structure improves comprehension (Goldman and Rakestraw, 2000).   The instruction with GOs helps students build the text meaning coherently, with students perceiving main ideas and supporting ideas.   Using GOs, the participants were also given practice in completing diagrams based on reading passages.   They were asked to read three passages of different rhetorical organisation and fill in the blank outline provided.

Session 2 provided participants with the teaching of the *cause/effect* organisational

pattern. The following text was used, "When I was a child, I was carelessly jumping up on a windowsill on our back porch. My arm went through the window and was cut. I had to get about ten stitches". After reading this text, the participants were asked to complete the diagrams (see Figure 3.2). The teacher discussed the rhetorical organisation of this text with the participants. Three vocabulary words (windowsill, back porch, get stitches) were given as a glossary in a handout. Two more texts were used for practice.

I carelessly jumped up on a windowsill.	1. My arm was cut. 2. I got about ten stitches.
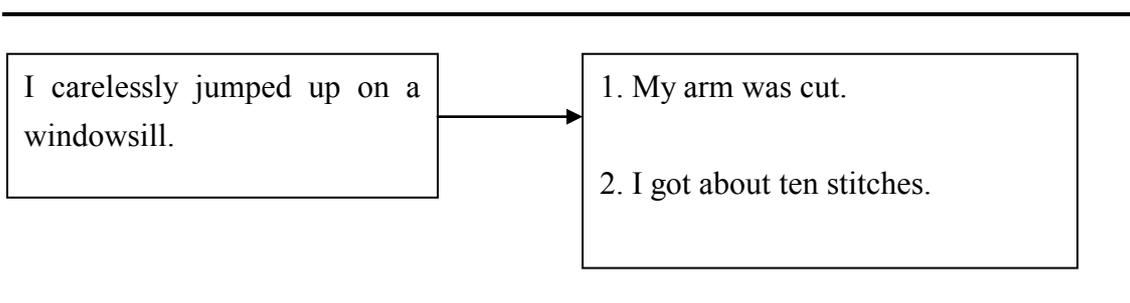
Figure 3.2 GO for *Cause/Effect* organisation

Session 3 dealt with the *problem/solution* organisational pattern. The participants filled up blank space (see Figure 3.3) using the following text, "The only tools that farmers had were sharp digging sticks made of wood or animal horns that barely broke the hard soil. Around 4000 B.C., Mesopotamians invented the plough. It seems like such a simple idea: Attach a rope to a heavy, sharp piece of wood and drag it on the ground to make a furrow. But no one had thought of it before."

Farmers barely broke the hard soil.	The plough was invented.
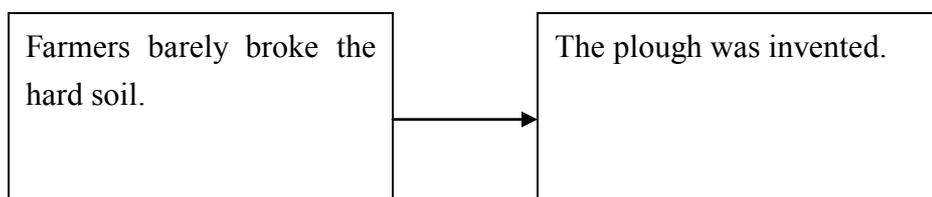
Figure 3.3 GO for *Problem/Solution* organisation

Session 4 taught the rhetorical organisation of *description,* using the following text, "The juice in your stomach is a water-like mix, called gastric juice. It has several components as it is made of several things. It is made of pepsin. It also has water. And it has a little acid, called hydrochloric acid. Pepsin, water and hydrochloric acid

are all chemicals".　In order to teach the *description* pattern, the following GO was used.

```
                        _____
                       /           \
                      (  Gastric juice  )
                       _____/
                      /     |      \
                     /      |       \
             _____/_       |        _____
            /        \   ___|___    /        \
           (  pepsin   ) (  water  ) ( hydrochloric )
            _____/   _____/  (    acid      )
                  \         |         /  _____/
                   \        |        /
                    \    ___|___    /
                     \  /        \ /
                      ( Chemicals  )
                       _____/
```
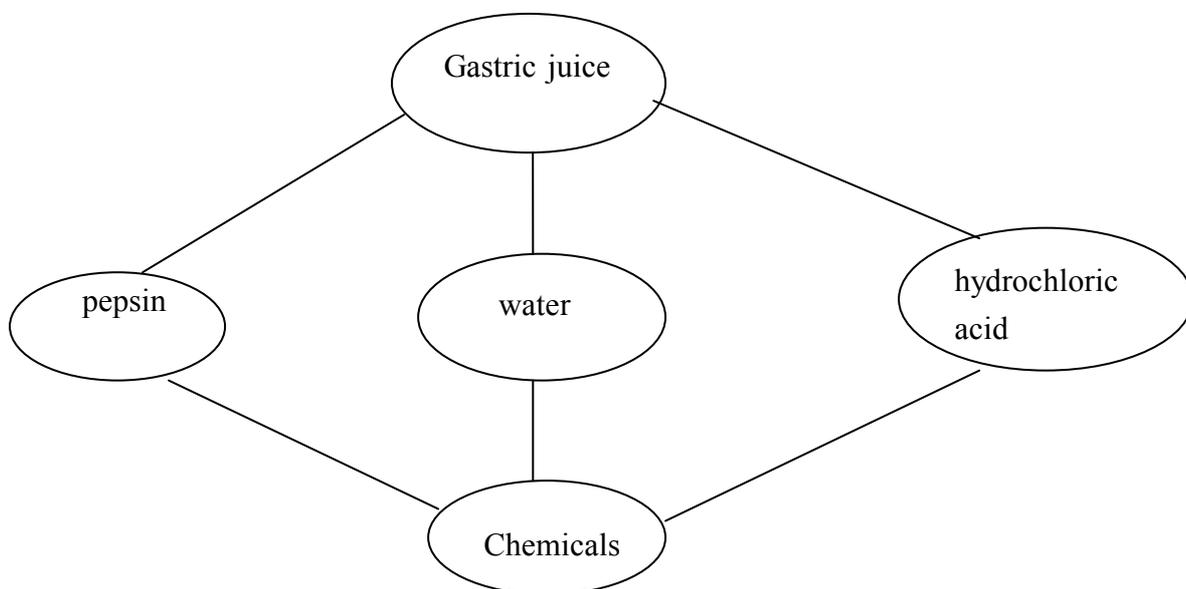
Figure 3.4 GO for *Description* organisation

Session 5 taught the *comparison/contrast* rhetorical organisation, using a short text as follows.　The text used was "The United States government is a democracy, whereas the British form of government is a constitutional monarchy."

(The United States government)	(The British government)
A democracy	A constitutional monarchy

Figure 3.5 GO for *Comparison* organisation

Sessions 6 and 7 gave participants practice in using the rhetorical organisation that the participants had learned in these training sessions.　After the practice, they read five passages with different rhetorical organisation.

Meyer and Ray (2011) noted that the benefit of the teaching of text structure was that it enabled students to follow the logical structure of text to understand how an author organised ideas, use processes parallel to these structures to increase their own learning, e.g., finding causal relationships, and use these text structures to organise their own

writing.   Skills acquired to apply the knowledge of rhetorical organisation are used not only in reading, but can be harnessed in writing texts such as written summaries and recalls.

3.8 Data Analysis

Data analysis methods were prepared for both the quantitative and qualitative measures. The analyses of the quantitative data were performed first followed by the analyses of the qualitative data.

In order to explore the effect of the teaching of text structure, a mixed between-within subjects ANOVA design is suitable for the statistical analyses because the design of this research includes the combination of between-subjects and within-subjects variables (Pallant, 2007).   This statistical method of analysis was done using IBM SPSS Statistics Base and IBM SPSS Advanced Statistics version 20.   This ANOVA analysis is also referred to as a split-plot ANOVA design (SPANOVA).   I use the term "mixed between-within subjects ANOVA" because this term describes what is involved in combining between-subjects and within-subjects variables in the one analysis and fits the reality of this statistical analysis.   The descriptive statistics of the experimental and control groups on the pre- and post-tests of reading comprehension were calculated in terms of means and standard deviation.

There are some scoring methods of an immediate written recall task employed in the literature.   Hirano (2007) suggested that there were three main methods for scoring recall protocols.   They are Johnson's (1970) pausal units, Kintsch's (1974) propositional analysis, and Meyer's (1975) content-structure analysis.   In the Johnson system, a reading passage is broken into pausal units or breath groups.   The Kintsch system uses propositions, which are viewed as a relationship and the basic unit of meaning, and contain predicates and arguments.   The Meyer system identifies the structural characteristics and lexical units of a passage.   Hudson (2007) suggested that two text analysis systems were most commonly used.   One is that of Meyer (1985), which is based on case grammar and content structure analysis and uses the idea unit. The other is the approach of Kintsch and van Dijk (1978), which employs the notion of propositions as the basic unit of meaning.   Both systems offer hierarchical descriptions of the ordering of the propositions or idea units (Hudson, 2007).   The logical relationships in Meyer's system closely follow those suggested by the text while the

system of Kintsch and van Dijk do not. Protocols are scored for recall of relationships between idea units that are also coded, for example, *problem/solution*, at various levels of text hierarchy (Meyer, 1985:27). In the system of Kintsch and van Dijk, propositions are the units for scoring rather than their component relation. Bernhardt (1991) suggested that these systems had disadvantages regarding efficiency. The expertise needed for developing a scoring template from the text hierarchy and substantial time commitment to developing the template and scoring itself may make it difficult to use such a procedure in research (Bernhardt, 1991:203).

An alternative grading method is simply to count idea units (Alderson, 2000). An idea unit expresses one action or event or state, and generally corresponds to a single verb clause (Mayer, 1985a:71). The recall score is counted as the number of idea units from the original text that are reproduced in the free recall. Mayer (1985a) explains the idea unit in the following sentence: it creates concentric circles of small waves that continue to grow outward. The two main verbs are located: "creates" and "grow." Thus, this sentence is divided into two idea units. Both the Meyer (1985) system and the Mayer (1985a) system are content structure analysis and use idea units for the analysis. Mayer (1985b:305-313) provided a detailed description of the procedure for analysing the expository text. According to the procedure, the production of the hierarchically organised representation of a passage is not necessary for the analysis as seen in Meyer (1985). The Mayer (1985a:73-76) system is characterised by using any of the following three techniques: structural method, logical method, and empirical method. The structural method locates the functional relationship that an idea unit expresses among two or more events and/or components, determines the mechanisms that explain the functional relationship, and spells out the causal chain among the components. The logical method involves determining the major problem that needs to be solved, list all of the pieces of information in the passage in order to solve the problem. Thus, the analysis involves listing all idea units that serve for solving the problem. The empirical method involves asking subjects to read a passage and testing the subjects for which idea units are remembered. As is obvious from the use of the three techniques, the Mayer system appears to be appropriate for the analysis of text that structures the *problem/solution* rhetorical organisation.

In addition to the Mayer (1985a) system, Nuttall (2005:225) further illustrates the construction of each idea unit by an example. Unlike the Mayer (1985a) system, Nuttall (2005) does not follow a particular analysis procedure and may have

applicability to texts that structures any kind of organisation without confining rhetorical organisation analysed to a specific one. If a written recall protocol is categorised into idea units examining two aspects at the same time, raters may not be able to distinguish between them clearly. In the Meyer (1985) system, content, relationships, and superordinate organisational structures that did not occur in the original text are identified and classified. In doing this analysis, three primary levels of text are also identified. The first is the sentence or micropropositional level, which is concerned with the way ideas are organised within sentences. The second is the macropropositional level, which pertains to the issue of rhetorical organisation. The third is the top-level structure or overall organisation of the text as a whole. This procedure is what makes the Meyer system expertise needed. In this research, this idea unit analysis method of Nuttall (2005) was adopted (see Appendix D) since this method of Nuttal (2005) is simple and can obtain sufficiently detailed information.

A list of idea units was pre-established. Written responses to the recall task were graded for idea units by comparing the participants' written recall protocols to this list. Any meaning-preserving approximation of an idea unit was accepted. A summary or paraphrase of the content was accepted if they were accurate in meaning. The written recall protocols were graded for the number of idea units recalled.

Stimulated recall interviews were conducted for the collection of stimulated recall data. The following recall interview procedure was used by way of follow-up to immediate written recall tests. The interview started with inviting a general comment on the written recall test from an interviewee. Questions asked elicited what made recall easy or difficult, in order to consider a facilitative factor and a hindrance factor in the recall tests. The key question for examining the effect of the instruction was whether the rhetorical pattern of the text was noticed. The analysis was highly related to the research questions of this research (Gass and Mackey, 2000). There were three steps that included transcribing, coding, and analysing the data.

The participants' stimulated recall comments were coded for the type of thinking reported in the participants' responses for the stimulus. Seven codes were used to categorize the participants' responses in each interview, which are described in Table 3.7. Quotations that exemplified the categories were used in Chapter 5 to illustrate the results of the immediate written recall tests.

Table 3.9 Coding scheme for stimulated recall interviews

Code	Description	Example
General Comment	Student gives a general comment on text	"After all, I could not really do that" "I think I could read this text well"
Topic	Student reports thinking about text topic	"They are drawing attention as energy issues"
Word	Student reports thinking about the meaning of words	"I don't know the meaning of the word here"
Translation	Student reports thinking about translation of sentences	"I could translate English sentences into Japanese, but I could not really get the outline of the text"
Text structure	Student reports thinking about text structure	"I thought it was description" "I think it is either comparison or description"
Easiness/ Difficulty	Student reports thinking about easiness or difficulty	"I failed in understanding a sentence from the beginning"
N/A	No response or student reports that they can't remember	"No, not really"

The questionnaire in this research comprises 28 closed-ended questions and one open-ended question that contains a specific open question, which asks about concrete pieces of information (Dörnyei, 2003:48). As Dörnyei (2003:103-119) suggested, the processing sequence of closed-ended questions involves some consecutive steps from the initial data check to the statistical analyses of the data. The initial data check was followed by the steps of data cleaning that involve correcting errors and inaccuracies, data manipulation that includes making changes in the dataset prior to the analyses by handling missing data, and the statistical analyses.

The items chosen were taken from Carrell's (1989) questionnaire, which was developed to elicit the participants' metacognitive awareness and judgments about silent reading in their L2. The questionnaire included 4 sections: (1) confidence in reading in English; (2) how they carry out revisions when something goes wrong as they read; (3) perceptions of effective strategies; and (4) things that make reading difficult for them. The sections are a collection of separate items grouped in four categories. Carrell (1989) validated that all of the questionnaire items were related to comprehension based on previous research. These closed-ended questions were helpful in

understanding students' perspectives on reading in English.   On the other hand, the open-ended question is broadly categorized to describe the content of the response so that the categories can be numerically coded and be treated as quantitative data.

The constructs that I was trying to measure were the participants' reading behaviour, specifically, confidence in their reading in English, their awareness of *repair* reading strategies, affective reading strategies, and difficulty in reading.   Baker and Brown (1984) pointed out that readers often indicate they know a strategy is effective but they do not use it.   Paradoxically, Baker and Brown (1984) pointed out that readers sometimes do not describe how to use a particular strategy but do in fact use it. Research to reconcile this contradiction was conducted by Barnett (1988).   Barnett (1988) investigated the relationships among reading comprehension, strategy use, and perceived strategy use, and showed that all three were significantly correlated for university level readers of French as a foreign language.   From this, it is presumed that the questionnaire data analysis reveals what the participants are actually doing when they read text in English.

3.9 Validity and Reliability

A test first needs to be evaluated for its reliability since "reliability can be viewed as a precondition for validity" (Brown, 2005:220).   In order to estimate the internal-consistency reliability of the reading comprehension tests used in this research, there are some methods such as the Spearman rank order correlation, the Pearson product-moment correlation coefficient (r), and the Kuder-Richardson formula 20 (K-R20) and formula 21 (K-R21).   The K-R20 and the K-R21 are appropriate for dichotomously scored items, that is, multiple-choice items and constructed-response items that are scored as correct or incorrect (Bachman, 2004:194).   They have the following disadvantages.   The K-R21 is a conservative estimate of the reliability of a test and can provide a serious underestimate (Brown, 2005:180), as compared to other approaches for estimating internal-consistency reliability.   Although the K-R20 avoids the problem of underestimating the reliability, it is more difficult to calculate than the K-R21 (Brown, 2005:179-185).   For these reasons, the K-R20 and the K-R21 were not employed in this study.   The Spearman rank order correlation and the Pearson product-moment correlation coefficient are included in the split-half method that calculates the half-test correlation coefficient.   The choice of a correlation coefficient depends on the scale of measurement.   The Spearman rank order correlation is

designed for use with the ordinal level or ranked data (Mertens, 1998:97). For variables with a continuous scale, the Pearson product-moment correlation coefficient is typically used (Mertens, 1998:97). Since the scores of the reading comprehension tests are interval level (continuous) variables, the Pearson product-moment correlation coefficient was employed.

There was a strong, positive correlation between the students' scores of the pre-test on odd-numbered items and their scores on the even-numbered items, r=.78, n=80, p<.0005. The resulting coefficient was an estimate of the half-test reliability of the pre-test. In order to adjust the half-test reliability to full-test reliability, the Spearman-Brown prophecy formula was applied (Brown, 2001:9-10; Brown, 2005:177). The adjusted full-test reliability was .876, suggesting good internal consistency reliability (Pallant, 2007:98).

The relationship between the students' scores in the post-test on odd-numbered items and their scores on the even-numbered items was investigated using Pearson product-moment correlation coefficient. There was a strong, positive correlation between the two variables, r =.79, n =80, p<.0005. The resulting coefficient was an estimate of the half-test reliability of the post-test of reading comprehension. In order to adjust the half-test reliability to full-test reliability, the Spearman-Brown prophecy formula was applied (Brown, 2001:9-10; Brown, 2005:177). The adjusted full-test reliability was .883. This estimate suggested that the post-test of reading comprehension had good reliability.

As for the validation, the reading comprehension tests used for the pre-test and post-test in this research were taken from EIKEN, which is a standardized test and is reported that it has content validity (Mochizuki, 2004:15-19). The treatment materials and tests for reading comprehension were prepared by a teacher who roughly grasped the reading ability of students and were conducted as part of regular classes in intact classes. The use of intact classes has the possible advantage of enhancing face validity (Alderson, Clapham, and Wall, 1995:172-173). By the use of intact classes, the initial differences may arise in reading comprehension ability between the participants in the experimental and control groups. Reading comprehension ability needs to be equated before the intervention. In order to reduce the threats to internal validity, it was confirmed that there was no significant differences between the pre-test results of the experimental and control groups ($F(1, 78)$=0.041, p>0.5, see Tables 4.17 and 4.18 in Chapter 4 for

statistical information).

In terms of the power of a test that correctly identifies whether there is a difference between two groups, parametric tests are potentially more powerful than non-parametric tests, if the relevant assumptions are met. The general assumptions for parametric tests are normal distribution, homogeneity of variance, and independence of observations (Bachman, 2004; Pallant, 2007). ANOVA in IBM SPSS Statistics 18 and IBM SPSS Advanced Statistics software packages was used for the statistical analyses. The first assumption was met since the distribution of scores for each of the groups was checked using histograms obtained in the ANOVA. The ANOVA is robust to violations of the first assumption except in a very small sample size (Pallant, 2007:204). The second assumption was met by calculating Levene's test for equality of variances and confirming that the variability of scores for each of the groups is similar. The ANOVA is also robust to violations of the second assumption when the size of the groups is similar (Bachman, 2004, Pallant, 2007). The third assumption was met because each participant learned independently and was scored independently without influencing other participants. Since the reading comprehension tests met the relevant assumptions, they were statistically valid (Neuman, 2000).

The inter-rater reliability of immediate written recall tests is evaluated by obtaining ratings of the same participants from two raters (Bachman, 2004). Two Japanese teachers of the English language were employed for grading the written recall protocols. In this reliability evaluation procedure, no marks are made on the recall task sheet during the first rating to confirm that the second rating is independent of the first. The reliability can be estimated by calculating the correlation between the two sets of ratings. The agreement between the two raters was r=.95. Disagreements were resolved through discussion.

For the reliability measurement of the questionnaire used in this research, internal consistency reliability (Dörnyei, 2003; Mertens, 1998; Wagner, 2010) is tapped. When examining the relationship between two ordinal variables, Spearman rank order correlation should be used for internal consistency reliability for any scales or subscales (Muijs, 2004; Pallant, 2007). Each item on a scale in the multi-item scales of the questionnaire should correlate with the other items and with the total scale score. Looking at the tables of correlations of questionnaire items, the items in the second category (repair) seem to be less likely to correlate significantly with each other (see

Appendix E for more information).

3.10 Ethical Issues

The participants need to be protected and a trust with them should be developed before and while designing the study and collecting data. Ethical behaviour in the postpositivist paradigm is formally protected by external mechanisms such as professional codes of conduct (Guba and Lincoln, 2005). To cite one case, the Economic and Social Research Council (ESRC) publishes ESRC Research Ethics Framework 2010 and provides the framework as well as tools to help researchers when thinking about the ethics of their research. I abided by the Research Ethics Code of Practice of the University of Leicester.

I made documents concerning ethics and explained the purpose of this research available to all the participants before embarking on the study. The participants read an informed consent statement that was written in English. I also explained its content in Japanese. I made it clear to participants that their participation in this research was entirely voluntary, that any harm to the participants such as mental distress was avoided, that they had the right to withdraw from this research without having to give a reason at any time, that confidentiality of all identifiable information and data was assured, and that I would be honest about details such as the necessary time needed to complete a questionnaire. For the questionnaire, an introductory section would provide the following information: the aims of this research, the participants' time required to complete, voluntary participation, voluntary responding to all questions, access to the data collected only by me, and protected individual information. Since all the participants are over eighteen years old, their consent was obtained directly from them, and not from parents or guardians. After reading and listening to the explanation provided by me, the participants signed the statements.

The participants would, it is hoped, definitely receive tangible benefit from this study. For this purpose, I provided all the participants with a summary of the results of this study and the results of the questionnaire. As Bell (1999) suggested, active cooperation of the participants may be obtained by indicating the possible benefits of this research to the participants in advance. Before the intervention, I stated that this research related to reading comprehension, that text structure was closely associated with reading comprehension, and that this research involved the instruction and practice

of text structure.   Since this study was integrated into the reading class and was conducted as part of regular teaching, the participants would not receive additional course work.   Besides, all the participants could obtain the knowledge and training of text structure by participating in this research.   The experimental group was given the instruction first.   After completing the post-tests of reading comprehension and immediate written recall, and the post-questionnaire, the control group was given the same instruction as was given to the experimental group.

3.11 Summary

This chapter has outlined the research methodology.   The paradigmatic stance of this research was stated with the explanation of the rationale for the adoption of mixed methods.   Under the umbrella of the postpositivist paradigm, both quantitative and qualitative approaches were adopted, with the quantitative methods emphasised.

The next chapter will report and explain the quantitative research results and their relevance to the research questions.

Chapter 4

Quantitative Research Findings

4.1 Introduction

An analysis of research data collected during the quantitative data collection phase of this mixed methods research is presented in this chapter in a way that enables me to answer the research questions of this study.   The five research questions presented in Chapter 1 are restated.   The quantitative research results that are gathered by means of questionnaires, reading comprehension tests, and immediate written recall tests are organised around the research questions.   Qualitative results from the data obtained from interviews will be integrated into the discussion of the quantitative research results in Chapter 5.

4.2 Research Questions

Perhaps there is a need to remind the reader of the research questions mentioned earlier in Chapter 1.   They are as follows:

1. To what extent does the teaching of text structure alter the reading behaviour of Japanese college students when they read expository texts?

2. To what extent does teaching text structure improve students' reading comprehension?

3. To what extent does the teaching of text structure improve the reading comprehension of poor readers and good readers?

4. To what extent does teaching the text structure increase the amount of information remembered from the text?

5. To what extent does teaching the text structure alter students' identification of rhetorical organisation?

4.3 Reading Behaviour of Japanese College Students

The first research question examined the reading behaviour of Japanese college students when they read expository text. This research question required an analysis of the questionnaire data on reading behaviour collected from the participants in this research.

The means and standard deviations (SDs) for the pre-intervention questionnaire data that included the total number of responses were calculated and shown in Table 4.1. The items with higher mean value were enumerated here in order to illustrate some characteristics of the participants' reading behaviour. The top ten items ranked by mean value were Nos.23 (*Difficulty*), 13 (*Effective*), 14 (*Effective*), 24 (*Difficulty*), 10 (*Repair*), 7 (*Repair*), 8 (*Repair*), 9 (*Repair*), 27 (*Difficulty*), and 18 (*Effective*). Of these items, No.13 had the smallest standard deviation (SD=0.692). What this means is that the distribution of responses to the question clustered more tightly around the mean value of 3.95 than other items since standard deviation is a measure of how tightly or how loosely data are clustered around the mean (Larson-Hall, 2010:402). No.9 had the largest standard deviation (SD=1.061), which indicated that the distribution of responses to the question clustered more loosely around the mean value of 3.88 than other items. The standard deviations in the top four items varied from 0.692 to 0.855. The distribution of responses was more concentrated around the mean value than the other six items.

Distinguishing the list of the top ten items according to the category that each item belonged to, among ten items, four items belonged to the *Repair* category. Three items fell into the category of *Difficulty* and *Effective* respectively. The *Confidence* category included no items. The statements of the six items in the *Confidence* category were related to background knowledge, text gist, and textual organisation. Results prove that the participants are lacking in confidence in top-down processes in reading.

Table 4.1 Means and SDs for the pre-intervention questionnaire results (n=80)

	Mean	Std. Deviation		Mean	Std. Deviation
Question 1	**2.53**	**.927**	Question 15	**2.26**	**.807**
Question 2	**3.16**	**.849**	Question 16	**3.31**	**1.086**
Question 3	**3.03**	**.886**	Question 17	**3.38**	**.960**
Question 4	**2.86**	**.791**	Question 18	**3.56**	**1.054**
Question 5	**3.34**	**.841**	Question 19	**3.06**	**.769**
Question 6	**3.10**	**.989**	Question 20	**3.25**	**.803**
Question 7	**3.81**	**.901**	Question 21	**2.73**	**.993**
Question 8	**3.81**	**.956**	Question 22	**2.74**	**1.003**
Question 9	**3.75**	**1.061**	Question 23	**4.00**	**.779**
Question 10	**3.88**	**1.011**	Question 24	**3.95**	**.855**
Question 11	**2.50**	**1.019**	Question 25	**2.29**	**1.009**
Question 12	**2.95**	**1.124**	Question 26	**3.06**	**1.035**
Question 13	**3.95**	**.692**	Question 27	**3.68**	**1.041**
Question 14	**3.95**	**.913**	Question 28	**3.54**	**.993**

For graphical representation, positive responses to the questionnaire items, which included the total number of responses for the pre-intervention questionnaire data, were calculated and indicated in Figure 4.1.   In order to understand the characteristics of the participants' reading behaviour, let us look at the top ten questionnaire items in terms of positive responses.

The top ten items with positive responses ranked by the total number of responses were Nos.13 (*Effective*), 14 (*Effective*), 23 (*Difficulty*), 24 (*Difficulty*), 9 (*Repair*), 10 (*Repair*), 18 (*Effective*), 27 (*Difficulty*), 17 (*Effective*), and 28 (*Difficulty*) (see Table 4.2).
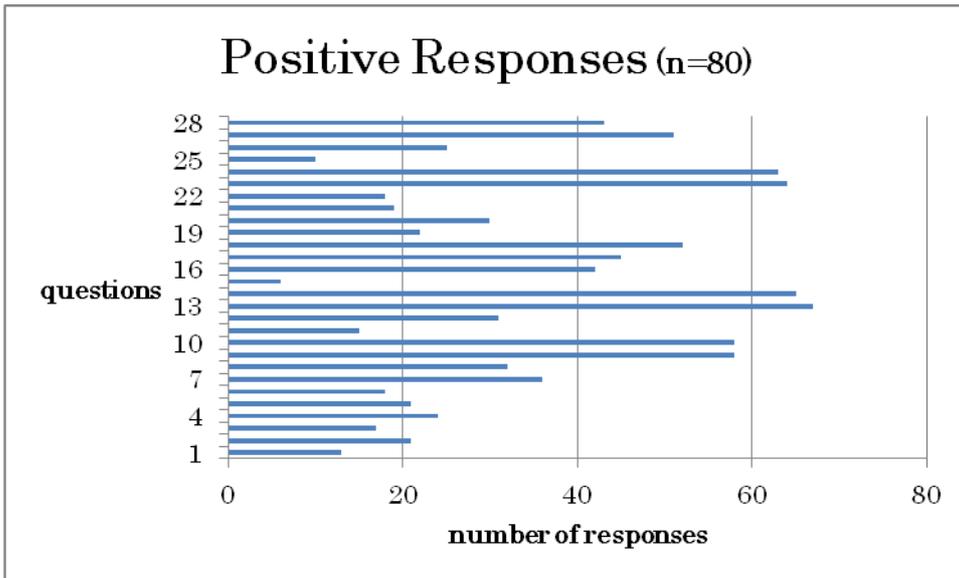
Figure 4.1 Positive responses to statements for the pre-intervention questionnaire

As seen in Table 4.2, the top ten items involved four items in the *Effective* category, four items in the *Difficulty* category, and two items in the *Repair* category. There were no *Confidence* items. The questionnaire items 13 (understanding the meaning of each word), 14 (getting the overall meaning of the text), 17 (relating the text to what I already know about the topic), and 18 (looking up words in the dictionary) are related to *effective* reading. The questionnaire items 23 (recognising the words), 24 (the grammatical structures), 27 (getting the overall meaning of the text), and 28 (the organisation of the text) are related to aspects of reading which make the reading *difficult*. The *Repair* category encompasses the questionnaire items 9 (going back to a point before the problematic part and rereading from there) and 10 (looking up unknown words in a dictionary).

The four items in the *Effective* category included the items relating word-meaning, text-meaning, and background knowledge. The data suggest that the participants recognised that both bottom-up and top-down processes are necessary for effective reading. The four items in the *Difficulty* category were related to word recognition, syntax, text-meaning, and textual organisation. The participants felt difficulties in both bottom-up and top-down processes. The two items in the *Repair* category showed that the participants used the repair strategies for word-meaning and text understanding.

Table 4.2 Top ten questionnaire items with positive responses (n=80)

Rank order	Item no	Category	Statement
1	13	Effective	When reading silently in English, the things I do to read effectively are to focus on understanding the meaning of each word
2	14	Effective	Getting the overall meaning of the text
3	23	Difficulty	When reading silently in English, things that make the reading difficult are recognising the words
4	24	Difficulty	The grammatical structures
5	9	Repair	When reading silently in English, if I don't understand something, I go back to a point before the problematic part and reread from there.
6	10	Repair	I look up unknown words in a dictionary.
7	18	Effective	Looking up words in the dictionary
8	27	Difficulty	Getting the overall meaning of the text
9	17	Effective	Relating the text to what I already know about the topic
10	28	Difficulty	The organisation of the text

For graphical representation, negative responses to the questionnaire items, which included the total number of responses for the pre-intervention questionnaire data, were calculated and indicated in Figure 4.2.

The top ten items with negative responses where the participants disagreed with the statements ranked by the total number of responses were Nos.15 (*Effective*), 25 (*Difficulty*), 11 (*Repair*), 1 (*Confidence*), 8 (*Repair*), 22 (*Difficulty*), 6 (*Confidence*), 5 (*Confidence*), 21 (*Difficulty*), 7 (*Repair*), and 12 (*Effective*). Nos.7 and 12 had the same number of responses.
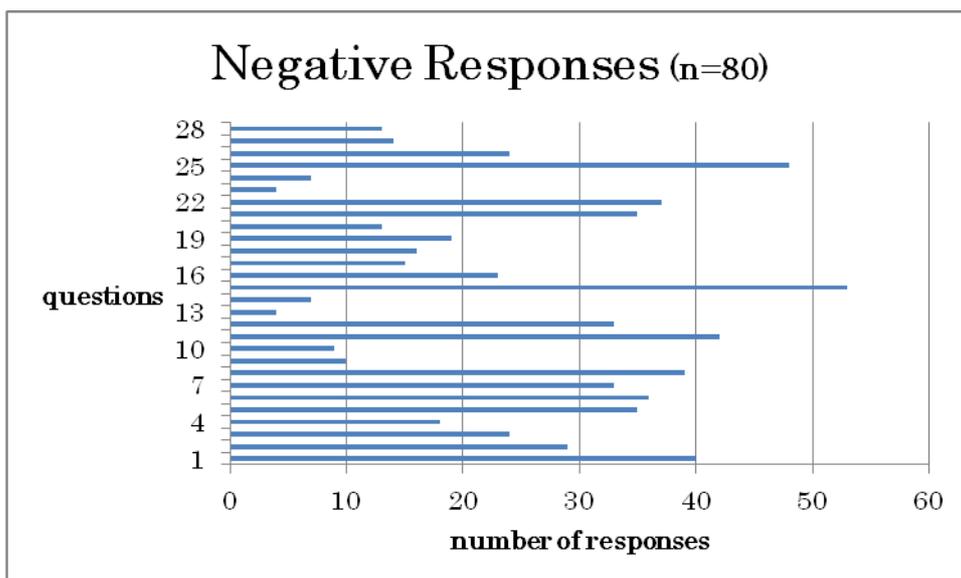
Figure 4.2 Negative responses to statements for the pre-intervention questionnaire

As you can see in Table 4.3, the top ten items contained three items in the *Confidence* category, three items in the *Repair* category, two items in the *Effective* category, and three items in the *Difficulty* category. These items are described in a little more detail. The three items in the *Confidence* category were the questionnaire items 1 (to anticipate what will come next in the text), 5 (to use my prior knowledge and experience), and 6 (to have a good sense of when I understand something and when I do not). These items are related to top-down processes for text understanding. Thus, the participants have no confidence in anticipation, background knowledge, and judgment of understanding among the participants' perceptions about their reading abilities.

The three items in the *Repair* category were Nos. 7 (to keep on reading and hope for clarification further on), 8 (to reread the problematic part), and 11 (to give up and stop reading). The *Effective* category items were Nos. 1 (to focus on being able to pronounce each whole word) and 12 (to focus on mentally sounding out parts of the words). The *Difficulty* category items were Nos. 25 (the alphabet), 22 (pronunciation of the words), and 21 (the sounds of the individual words).

Table 4.3 Top ten questionnaire items with negative responses (n=80)

Rank order	Item no	Category	Statement
1	15	Effective	When reading silently in English, the things I do to read effectively are to focus on being able to pronounce each whole word.
2	25	Difficulty	When reading silently in English, the things that make the reading difficult are the alphabet.
3	11	Repair	When reading silently in English, if I don't understand something, I give up and stop reading.
4	1	Confidence	When reading silently in English, I am able to anticipate what will come next in the text.
5	8	Repair	I reread the problematic part.
6	22	Difficulty	Pronunciation of the words.
7	6	Confidence	I have a good sense of when I understand something and when I do not.
8	5	Confidence	I am able to use my prior knowledge and experience to understand the content of the text I am reading.
9	21	Difficulty	The sounds of the individual words.
10	7	Repair	I keep on reading and hope for clarification further on.
10	12	Effective	To focus on mentally sounding out parts of the words.

The means and standard deviations for the items on the post-intervention questionnaire data that embraced the total number of responses were calculated and shown in Table 4.4.　The items with higher mean value were listed here to illustrate some changes of the participants' reading behaviour after the intervention.　The top ten items ranked by mean value were Nos.10 (*Repair*), 14 (*Effective*), 8 (*Repair*), 7 (*Repair*), 23 (*Difficulty*), 13 (*Effective*), 27 (*Difficulty*), 24 (*Difficulty*), 9 (*Repair*), and 18 (*Effective*).　Among these items, No.13 had the smallest standard deviation (SD=.668) as in the pre-intervention questionnaire data.　This means that the distribution of responses to the question clustered more tightly around the mean value of 3.90 than other items. No.9 had the largest standard deviation (SD=.968) as in the pre-intervention questionnaire data.　This indicated that the distribution of responses to the question clustered more loosely around the mean value of 3.73 than other items.

Classifying the items according to the category that each item was included, four items belonged to the *Repair* category. Three items were included in the category of *Effective* and *Difficulty* respectively. The *Confidence* category had no items.

The top ten questionnaire items in the post-intervention questionnaire data included the same items as in the pre-intervention questionnaire data. However, there was a difference in rank order between the pre-intervention and the post-intervention questionnaire results. Five items rose on the list, four items fell on the list, and one item was the same rank. Five items that rose on the list were Nos.14 (*Effective*, getting the overall meaning of the text), 10 (*Repair*, looking up unknown words in a dictionary), 7 (*Repair*, keeping on reading and hoping for clarification further on), 8 (*Repair*, rereading the problematic part) and 27 (*Difficulty*, getting the overall meaning of the text). Four items that fell on the list were Nos.23 (*Difficulty*, recognising the words), 13 (*Effective*, understanding the meaning of each word), 24 (*Difficulty*, the grammatical structures), and 9 (*Repair*, going back to a point before the problematic part and rereading from there).

Table 4.4 Means and SDs for the items on the post-intervention questionnaire results (n=80)

	Mean	Std. Deviation		Mean	Std. Deviation
Question 1	**2.78**	**.914**	Question 15	**2.48**	**.914**
Question 2	**3.41**	**.822**	Question 16	**3.33**	**.978**
Question 3	**3.25**	**.819**	Question 17	**3.55**	**.884**
Question 4	**3.05**	**.794**	Question 18	**3.71**	**.903**
Question 5	**3.61**	**.893**	Question 19	**3.14**	**.775**
Question 6	**3.24**	**.783**	Question 20	**3.40**	**.936**
Question 7	**3.96**	**.849**	Question 21	**2.89**	**1.031**
Question 8	**3.98**	**.795**	Question 22	**2.94**	**1.060**
Question 9	**3.73**	**.968**	Question 23	**3.95**	**.761**
Question 10	**4.10**	**.894**	Question 24	**3.75**	**.961**
Question 11	**2.46**	**.993**	Question 25	**2.46**	**1.078**
Question 12	**3.15**	**1.045**	Question 26	**3.16**	**1.049**
Question 13	**3.90**	**.668**	Question 27	**3.90**	**.880**
Question 14	**4.08**	**.759**	Question 28	**3.67**	**.792**

Upper experimental group

For grasping an overall trend toward positive and negative responses to the questionnaire statements through the intervention between the pre-data and the post-data of the questionnaire in the upper experimental group, the results are represented graphically in Figures 4.3 and 4.4.

A comprehensive overview of the trend indicated that a relative increase in the number of positive responses was observed among the items 2 (*Confidence*, I am able to recognise the difference between main points and supporting details), 3 (*Confidence*, I am able to relate information which comes next in the text to previous information in the text), 4 (*Confidence*, I am able to question the significance or truthfulness of what the author says), and 5 (*Confidence*, I am able to use my prior knowledge and experience to understand the content of the text I am reading) items that are associated with a reader's confidence. As for the items in the *Repair* category, the items 7 (*Repair*, to keep on reading and hope for clarification) and 9 (*Repair*, I go back to a point before the problematic part and reread from there) showed an increase in the number of positive responses. Nearly all the items in the *Effective* category revealed a decrease in the number of positive responses. Concerning the items in the *Difficulty* category, all of them showed an increase in the number of positive responses.
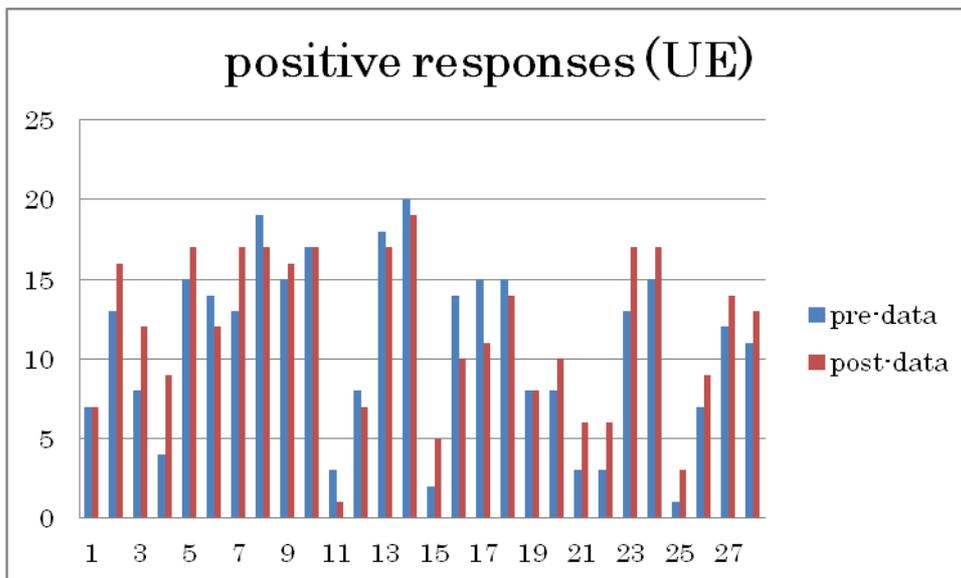
Figure 4.3 Positive responses to statements for the upper experimental group
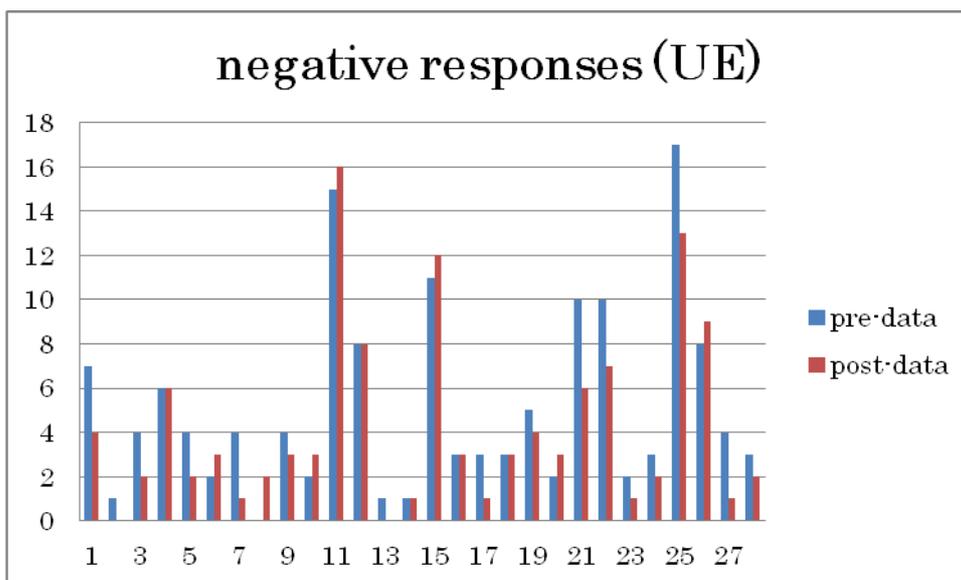
Figure 4.4 Negative responses to statements for the upper experimental group

In the post-intervention questionnaire data, only the questionnaire item 6 (I have a good sense of when I understand something and when I do not) among the items in the *Confidence* category showed an increase in the number of negative responses. As for the items in the *Repair* category, the item 11 (I give up and stop reading) showed a large increase in the number of negative responses. Concerning the items in the *Effective* category, item 15 (being able to pronounce each whole word) showed a large increase in the number of negative responses. Regarding the items in the *Difficulty* category, only one item, 26 (relating the text to what I already know about the topic) saw an increase in the number of negative responses.

A statistical analysis of pre-data and post-data of the upper experimental group was performed to see if any significant changes took place in the post-data. As for the three questionnaire items 2, 21 and 22, there were statistically significant differences between the pre-data and the post-data.

Questionnaire item 2: When reading silently in English, I am able to recognise the difference between main points and supporting details.

A paired-samples t-test was conducted to evaluate the impact of the intervention on the participants' reading behaviour. As shown in Tables 4.5 and 4.6, there was a statistically significant increase in participants' responses from pre-data (M=3.571, SD= .130) to post-data (M=3.905, SD= .136), t (20) =-2.09, p< .05 (two-tailed). The mean increase in participants' responses was .33 with a 95% confidence interval

ranging from -.666 to -.001.   The eta-squared statistic (.08) indicated a moderate effect size.

Table 4.5 Paired samples statistics of question 2

	Mean	N	Std. Deviation
Pre-data	3.571	21	.130
Post-data	3.905	21	.136

Table 4.6 Paired samples test of question 2

	Paired differences				
	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair pre-data – post-data	-.333	.730	-2.092	20	.049

Questionnaire item 21: When reading silently in English, things that make the reading difficult are the sounds of the individual words.

A paired-samples t-test was conducted to evaluate the impact of the intervention on the participants' reading behaviour.   As indicated in Tables 4.7 and 4.8, there was a statistically significant increase in participants' responses from pre-data (M=2.477, SD= .981) to post-data (M=3.143, SD=1.153), t (20) =-3.57, p< .005 (two-tailed).   The mean increase in participants' responses was .66 with a 95% confidence interval ranging from -1.056 to -.277.   The eta-squared statistic (.47) indicated a large effect size.

Table 4.7 Paired samples statistics of question 21

	Mean	N	Std. Deviation
Pre-data	2.477	21	.981
Post-data	3.143	21	1.153

Table 4.8 Paired samples test of question 21

	Paired differences				
	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair pre-data – post-data	-.667	.856	-3.568	20	.002

Questionnaire item 22: When reading silently in English, things that make the reading difficult are pronunciation of the words.

A paired-samples t-test was conducted to evaluate the impact of the intervention on the participants' reading behaviour.   As seen in Tables 4.9 and 4.10, there was a statistically significant increase in participants' responses from pre-data (M=2.524, SD=1.078) to post-data (M=3.048, SD=1.244), t (20) =-2.45, p< .05 (two-tailed).   The mean increase in participants' responses was .53 with a 95% confidence interval

ranging from -.970 to -.077.   The eta-squared statistic (.43) indicated a large effect size.

Table 4.9 Paired samples statistics of question 22

	Mean	N	Std. Deviation
Pre-data	2.524	21	1.078
Post-data	3.048	21	1.244

Table 4.10 Paired samples test of question 22

	Paired differences				
	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair pre-data – post-data	-.523	.981	-2.447	20	.024

Lower experimental group

For grasping an overall trend toward positive and negative responses to the questionnaire statements through the intervention between the pre-data and the post-data of the questionnaire in the lower experimental group, the results are represented graphically in Figures 4.5 and 4.6.
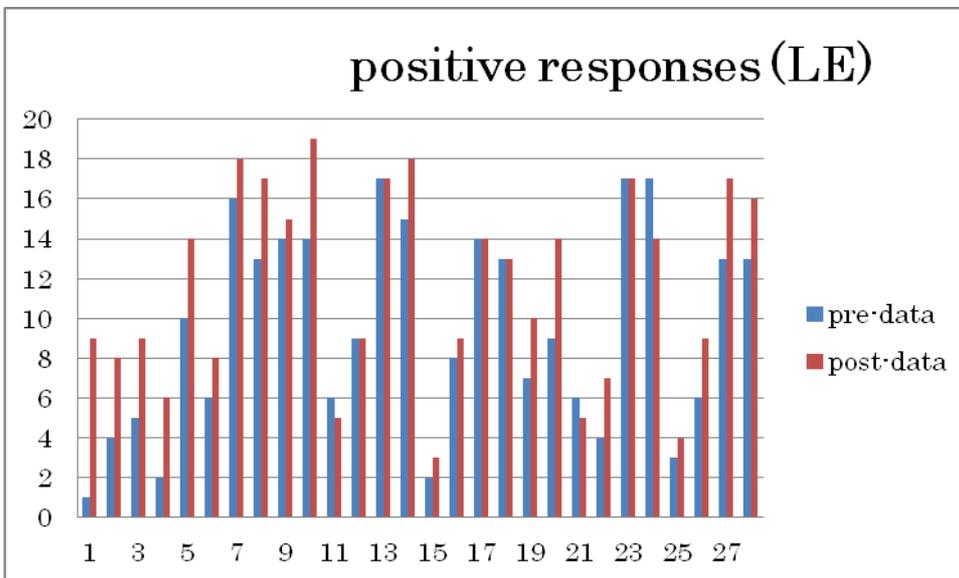
Figure 4.5 Positive responses to statements for the lower experimental group
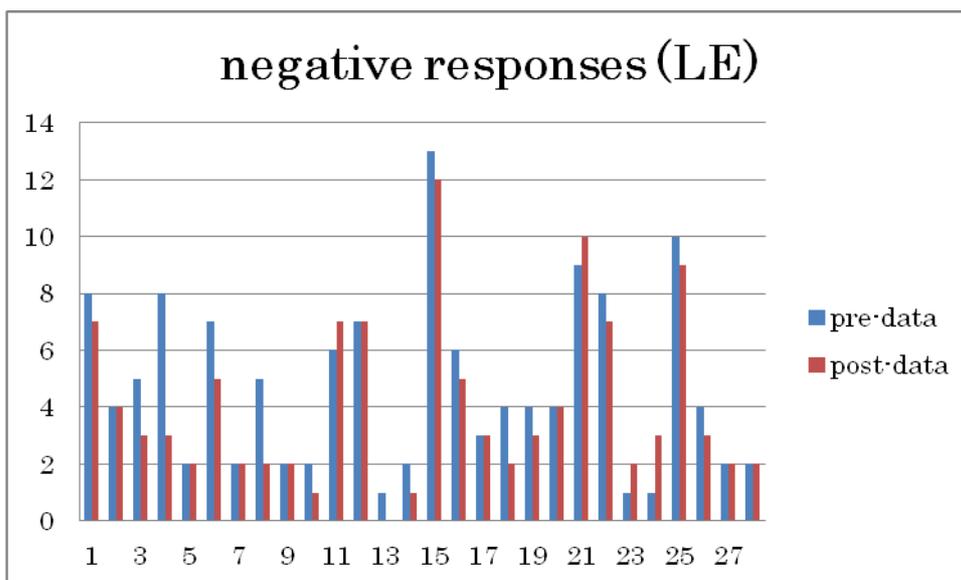
Figure 4.6 Negative responses to statements for the lower experimental group

A comprehensive overview of the trend indicated that a large increase in the number of positive responses was observed in the first category of a reader's confidence. The *repair* items showed an increase in the number of positive responses except item 11 (I give up and stop reading). The effective items 14 (getting the overall meaning of the text), 19 (the details of the content), and 20 (the organization of the text) revealed a large increase in the number of positive responses. Concerning the difficult items, four items 22 (pronunciation of the words), 25 (the alphabet), 26 (relating the text to what I already know about the topic), 27 (getting the overall meaning of the text), and 28 (the organization of the text) showed an increase in the number of positive responses and item 24 (the grammatical structure) indicated a decrease.

A glance at Figure 4.6 showed that nearly all the items exhibited the same as or less than the pre-data in the number of positive responses.

As for the two questionnaire items 4 and 24, there were marginally significant differences between the pre-data and the post-data for the lower experimental group.

Questionnaire item 4: When reading silently in English, I am able to question the significance or truthfulness of what the author says.
A paired-samples t-test was conducted to evaluate the impact of the intervention on the participants' reading behaviour. As seen in Tables 4.11 and 4.12, there was a marginally significant increase in participants' responses from pre-data (M=2.632,

SD= .761) to post-data (M=3.053, SD= .621), t (20) =-2.04, p= .057 (two-tailed).   The mean increase in participants' responses was .42 with a 95% confidence interval ranging from -.856 to .014.   The eta-squared statistic (.03) indicated a small effect size.

Table 4.11 Paired samples statistics of question 4

	Mean	N	Std. Deviation
Pre-data	2.632	19	.761
Post-data	3.053	19	.621

Table 4.12 Paired samples test of question 4

	Paired differences		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair pre-data – post-data	-.421	.902	-2.036	18	.057

Questionnaire item 24: When reading silently in English, things that make the reading difficult are the grammatical structures.

A paired-samples t-test was conducted to evaluate the impact of the intervention on the participants' reading behaviour.   As indicated in Tables 4.13 and 4.14, there was a marginally significant decrease in participants' responses from pre-data (M=4.105, SD= .737) to post-data (M=3.684, SD=1.003), t (18) =1.91, p= .072 (two-tailed).   The mean decrease in participants' responses was -.42 with a 95% confidence interval ranging from -.042 to .884.   The eta-squared statistic (.18) indicated a large effect size.

Table 4.13 Paired samples statistics of question 24

	Mean	N	Std. Deviation
Pre-data	4.105	19	.737
Post-data	3.684	19	1.003

Table 4.14 Paired samples test of question 24

	Paired differences		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair pre-data – post-data	.421	.961	1.909	18	.072

Upper and lower control groups

As the results of the analysis that was conducted between the pre-data and the post-data of the questionnaire, the upper and lower control groups revealed no statistically significant differences between the pre-data and the post-data.

A prior knowledge of text structure

The questionnaire included open-ended questions to ask whether the participants know the text structure of expository text.   The results are shown in Table 4.15.   It revealed that there were about the same number of participants who knew text structure as participants who did not in the experimental group.   However, in the control group, there were twice as many participants who did not know the text structure as participants who did.   From some participants' self-reported data, they reported that they knew the text structure by having learned it at cram school.   The others learned it at high school.

Table 4.15 Prior knowledge of text structure

	With knowledge	Without knowledge
Upper experimental	11	10
Lower experimental	8	11
Upper control	7	15
Lower control	6	12

4.4 The Effect of the Teaching of Text Structure

The second research question investigated the relationship between the teaching of text structure and students' reading comprehension, and was directed to an examination of whether the scores of reading comprehension tests improved after the teaching of text structure for the experimental group.

Table 4.16 outlines how within-subject and between-subject variables are set up.   The within-subjects factors consist of two dependent variables; scores on a reading comprehension test at each time period.   The between-subjects factors cover one categorically independent variable with two levels.   The reading comprehension test was conducted as a pre-test before the teaching of text structure and as a post-test after the intervention.   There are 40 participants in each (between-subjects) group.

Table 4.16 Within-subject and between-subject variables

Within-Subjects Factors		Between-Subjects Factors	
Test	dependent variables	group	N
1	pre-test	control group	40
2	post-test	experimental group	40

Table 4.17 below shows the descriptive statistics for each group within the two levels of the test: the pre-test and post-test.   The EIKEN reading comprehension test was administered as the pre-test before the teaching of text structure and as the post-test after the intervention in both experimental and control groups.   The means and standard deviations for the participants' performance on the pre- and post- reading comprehension tests were calculated and presented.   It was calculated that there was no significant difference between the pre-test results of the experimental and control groups (F (1, 78) =0.041, p>0.5, see Table 4.18).   This result revealed homogeneity of both groups on pre-test measures.   As shown, the average scores at pre-test (the control group score 8.65 and the experimental group score 8.45) before the intervention increase at post-test (the control group score being 8.88 and the experimental group score 11.70).   In order to identify whether these differences are large enough to be considered statistically significant, the interaction effect is first assessed.

Table 4.17 Descriptive statistics of the groups on the pre- and post-tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Control	8.6500	5.47980	40
	Experimental	8.4500	3.07137	40
	Total	8.5500	4.41488	80
Post-test	Control	8.8750	5.46404	40
	Experimental	11.7000	3.87100	40
	Total	10.2875	4.91496	80

Table 4.18 The results of the t-test for reading comprehension

	df	Mean Square	F	Sig.	Partial Eta Squared
Between-groups	1	.800	.041	.841	.001
Within-groups	78	19.731			

Table 4.19 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. Sphericity is an assumption for ANOVA and measures whether differences between the variances of an individual participant's data are equal (Larson-Hall, 2010:336).   The assumption of sphericity is like the homogeneity of variances assumption for the same participant when repeated measures are implemented.   Mauchly's test of sphericity is

used to test the null hypothesis that the variances of differences are equal. Looking at the Sig. value violated this assumption. When sphericity does not hold, the multivariate analysis of variance (MANOVA) results can be used to compensate for this assumption violation (Landau and Everitt, 2002). Then the MANOVA procedure will be presented in Table 4.20.

Table 4.19 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
test	1.000	.000	0	.	1.000	1.000	1.000

Table 4.20 shows the multivariate analysis of variance (MANOVA) procedure. This procedure was used since I wanted to compare the two groups on two different dependent variables. The MANOVA procedure indicated that there was a change in reading comprehension ability of the participants across the test, and the main effect on the test was significant. There was also an indication that the two groups were different in terms of their reading comprehension performance across the test. The interaction effect between test and group was also significant. Wilks' Lambda values and the associated probability values supported these findings.

Among the four multivariate tests, Wilks' Lambda, which is the most commonly reported statistic (Pallant, 2007:272), was given attention. Since the value for Wilks' Lambda for the interaction effect between the test and the group was 0.857, with the Sig. level for Wilks' Lambda being .001, which is less than an alpha level of .05, the interaction effect was statistically significant. The value of Partial Eta Squared obtained for the test times and the group in this study was 0.143. Using the common guidelines (Cohen, 1988), this result suggests a large effect size. Since the value for Wilks' Lambda for test was 0.819, with the Sig. level for Wilks' Lambda was .000, which is less than an alpha level of .05, the test effect was statistically significant. The value of Partial Eta Squared obtained for test in this study was 0.181. This result suggests a large effect size.

Based on the values in Wilks' Lambda, it was found that there was a statistically significant change in the reading comprehension performance of the participants as a result of the treatment. This suggested that there was a change in the reading

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performance across the test, that is, the treatment affected the reading comprehension of the participants.

Table 4.20 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Test	Pillai's Trace	.181	17.243	.000	.181
	Wilks' Lambda	.819	17.243	.000	.181
	Hotelling's Trace	.221	17.243	.000	.181
	Roy's Largest Root	.221	17.243	.000	.181
Test×Group					
	Pillai's Trace	.143	13.067	.001	.143
	Wilks' Lambda	.857	13.067	.001	.143
	Hotelling's Trace	.168	13.067	.001	.143
	Roy's Largest Root	.168	13.067	.001	.143

Computed using alpha=.05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Test)

Table 4.21 shows the test of within-subjects effects, which only had two independent variables.   Here again as in MANOVA, the interaction between the two independent variables of test and group was statistically significant using the Huynh-Feldt correction ($F_{(1,78)}=13.067$, $p<.0005$, partial eta-squared=.1).   The effect size is large.

Table 4.21 Test of within-subjects effects

Source		df	F	Sig.	Partial Eta Squared
Test	Sphericity Assumed	1	17.243	.000	.1
	Greenhouse-Geisser	1.000	17.243	.000	.1
	Huynh-Feldt	1.000	17.243	.000	.1
	Lower-bound	1.000	17.243	.000	.1
Test×Group					
	Sphericity Assumed	1	13.067	.001	.1
	Greenhouse-Geisser	1.000	13.067	.001	.1
	Huynh-Feldt	1.000	13.067	.001	.1
	Lower-bound	1.000	13.067	.001	.1
Error (Test)					
	Sphericity Assumed	78			
	Greenhouse-Geisser	78.000			
	Huynh-Feldt	78.000			
	Lower-bound	78.000			

Figure 4.7 visualizes this difference in reading comprehension performance of the two participant groups.   As Figure 4.7 shows, the experimental group expressed a greater gain in reading comprehension tests than the control group.
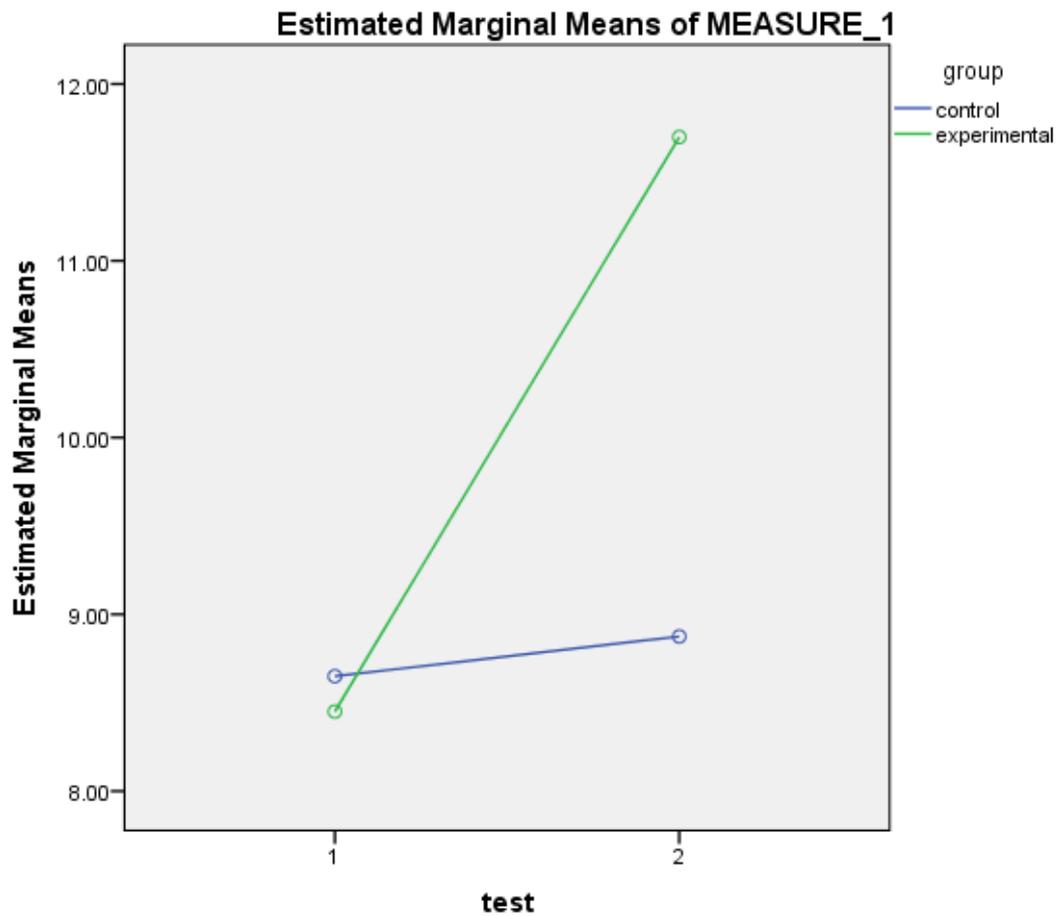
Figure 4.7 Profile plot for the reading comprehension performance of the two groups

Table 4.22 presents the descriptive statistics for the two groups across time. As Table 4.22 indicates, the pre-test mean for control group was 8.6500 while the post-test mean was 8.8750; the pre-test mean for the experimental group was 8.4500 whereas the post test mean was 11.7000. Table 4.24 displays that the Sig. value for the two groups was not statistically significant (p>0.01) and hence it was concluded that the main effect for the groups was not significant, that is, there was no significant difference in reading ability for the two groups. This suggested that the test score increase was affected by the intervention. The effect size is small.

Table 4.22 Descriptive statistics for the two groups across time

	Group	Mean	Std. Deviation	N
Pre-test Score	Control	8.6500	5.47980	40
	Experimental	8.4500	3.07137	40
Post-test Score	Control	8.8750	5.46404	40
	Experimental	11.7000	3.87100	40

Table 4.23   Test of between-subjects effects

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1	14194.056	403.838	.000	.838
Group	1	68.906	1.960	.165	.025
Error	78	35.148			

In summary, a mixed between-within subjects analysis of variance (Pallant, 2007) was conducted to assess the impact of one intervention (the teaching of text structure) on participants' scores on reading comprehension tests, across two time periods (pre-intervention and post-intervention). There was significant interaction between the instruction and the test, Wilks' Lambda=.86, $F(1, 78)=13.07$, $p<.01$, partial eta squared= .14. There was a substantial main effect for test, Wilks' Lambda= .82, $F(1, 78) = 17.24$, $p< .0005$, partial eta squared= .18, with both groups showing an increase in reading comprehension test scores across the two time periods (see Table 4.24). The main effect of group was not significant, $F(1, 78) =1.960$, $p= .165$, partial eta squared= .025.

Table 4.24 Reading comprehension test scores for the control and experimental groups across two time periods

Time period	Control Group			Experimental Group		
	N	M	SD	N	M	SD
Pre-Test	40	8.6500	5.47980	40	8.4500	3.07137
Post-Test	40	8.8750	5.46404	40	11.7000	3.87100

4.5 The Effect of the Teaching of Text Structure for Good and Poor Readers

The third research question considered the degree to which the teaching of text

structure affects participants who belong to the upper level of the experimental group compared to the lower level of the experimental group.   The question was analysed using a mixed between-within subjects ANOVA in order to assess the statistical significance of the resulting difference among the four groups of data: the upper and lower levels of the experimental group and the upper and lower levels of the control group.

Tables 4.25 and 4.26 outline how within-subject and between-subject variables are set up.   The within-subjects factors consisted of two dependent variables, scores on a reading comprehension test at each time period.   The between-subjects factors covered one categorical independent variable with four levels.   The reading comprehension test was conducted as a pre-test before the teaching of text structure and as a post-test after the intervention.   The participants of both control and experimental groups were further subdivided into a lower group and an upper group based on the scores of the EIKEN reading test.   There were 18 participants in a lower control group, 20 in a lower experimental group, 22 in an upper control group, and 20 in an upper experimental group respectively.

Table 4.25 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test

Table 4.26 Between-subject variables

Group	N
Lower control group	18
Lower experimental group	20
Upper control group	22
Upper experimental group	20

Table 4.27 below shows the descriptive statistics for each group within the two test factor levels.   The means and standard deviations of the EIKEN reading comprehension test for the participants' performance on the pre- and post-reading comprehension tests were calculated and presented.   As shown, the average scores at pre-test before the intervention increased at the post-test for the lower control, lower experimental, and upper experimental groups; however, the average scores decreased for the upper control group.   In order to identify whether these differences are large enough to be considered statistically significant, the interaction effect is first assessed.

Table 4.27 Descriptive statistics of the groups on the pre- and post-tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Lower control	4.2222	1.47750	18
	Lower experimental	6.0000	2.00000	20
	Upper control	12.2727	4.84210	22
	Upper experimental	10.9000	1.65116	20
	Total	8.5500	4.41488	80
Post-test	Lower control	6.2222	2.36533	18
	Lower experimental	11.0000	3.83886	20
	Upper control	11.0455	6.32.62	22
	Upper experimental	12.4000	3.87162	20
	Total	10.2875	4.91496	80

Table 4.28 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. Looking at the Sig. value violated this assumption. When sphericity does not hold, the multivariate analysis of variance (MANOVA) results can be used to compensate for this assumption violation (Landau and Everitt, 2002). Thus the MANOVA procedure will be presented in Table 4.29.

Table 4.28 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
test	1.000	.000	0	.	1.000	1.000	1.000

Table 4.29 shows the multivariate analysis of variance (MANOVA) procedure. This procedure was used since I wanted to compare the four groups on two different dependent variables. The MANOVA procedure indicated that there was a change in reading comprehension ability of the participants across test and the main effect for test was significant. There was also an indication that the four groups were different in terms of their reading comprehension performance across test. The interaction effect between the test and the group was also significant. Wilks' Lambda values and the associated probability values support these findings.

Among the four multivariate tests, Wilks' Lambda, which is the most commonly

reported statistics (Pallant, 2007:272), is given attention.   Since the value for Wilks'
Lambda for the interaction effect between test and group was 0.680, with the Sig. level
for Wilks' Lambda of .000, which was less than an alpha level of .05, the interaction
effect was statistically significant.   The value of Partial Eta Squared obtained for test
and group in this study was 0.320.   Using the commonly guidelines (Cohen, 1988), this
result suggested a very large effect size.   Since the value for Wilks' Lambda for test
was 0.767, with the Sig. level for Wilks' Lambda of .000, which was less than an alpha
level of .05, the test effect was statistically significant.   The value of Partial Eta
Squared obtained for test in this study was 0.233.   This result suggested a large effect
size.

Based on the values in Wilks' Lambda, it was found that there was a statistically
significant change in the reading comprehension performance of the participants as a
result of the intervention.   This suggested that there was a change in the reading
performance across test, that is, the intervention affected the reading comprehension of
the participants.

Table 4.29 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Test	Pillai's Trace	.233	23.070	.000	.233
	Wilks' Lambda	.767	23.070	.000	.233
	Hotelling's Trace	.304	23.070	.000	.233
	Roy's Largest Root	.304	23.070	.000	.233
Test × Group					
	Pillai's Trace	.320	11.942	.000	.320
	Wilks' Lambda	.680	11.942	.000	.320
	Hotelling's Trace	.471	11.942	.000	.320
	Roy's Largest Root	.471	11.942	.000	.320

Computed using alpha=.05 (Exact statistic, Design: Intercept+Group, Within Subjects
Design: Test)

Furthermore, the value for Wilks' Lambda for test and group interaction was 0.680,
with a Sig. value of .000 <.01.   There was a statistically significant effect for test and
group interaction.   The Partial Eta Squared value for the interaction effect was 0.320.
This result suggested a very large effect size, which meant that the change that occurred
in the reading comprehension performance over time for the four groups was not the
same.   In other words, the reading performance for the experimental group was not
statistically the same as that for the control group.

Table 4.30 shows the test of within-subjects effects, which only had two independent variables. Here again as in MANOVA, the interaction between the two independent variables of test and group was statistically significant using the Huynh-Feldt correction (F (3, 76) =11.942, p<.0005, partial eta-squared= .3). This result suggested a very large effect size.

Table 4.30 Test of within-subjects effects

Source		df	F	Sig.	Partial Eta Squared
Test	Sphericity Assumed	1	23.070	.000	.2
	Greenhouse-Geisser	1.000	23.070	.000	.2
	Huynh-Feldt	1.000	23.070	.000	.2
	Lower-bound	1.000	23.070	.000	.2
Test×Group					
	Sphericity Assumed	3	11.942	.000	.3
	Greenhouse-Geisser	3.000	11.942	.000	.3
	Huynh-Feldt	3.000	11.942	.000	.3
	Lower-bound	3.000	11.942	.000	.3
Error (Test)					
	Sphericity Assumed	76			
	Greenhouse-Geisser	76.000			
	Huynh-Feldt	76.000			
	Lower-bound	76.000			

The statistically significant effect for test and group interaction was identified and the very large effect size was recognized. This suggested that there was a difference somewhere among participants' groups. Then I wanted to know which group did better than which other groups and so I looked at the results of pair-wise comparisons between each group. These comparisons are found in Table 4.31.

Table 4.31 shows the pair-wise comparisons between the different groups. The differences between groups lay in statistical differences between the lower control and lower experimental groups (95% Confidence Interval in mean difference: -6.2, -3.2), the lower control and upper control groups (95% Confidence Interval in mean difference: -9.3, -3.5), the lower control and upper experimental groups (95% Confidence Interval in mean difference: -9.4, -3.5), the lower experimental and lower control groups (95% Confidence Interval in mean difference: 3.2, 6.2), the lower experimental and upper control groups (95% Confidence Interval in mean difference: -6.0, -0.3), the lower experimental and upper experimental groups (95% Confidence Interval in mean difference: -6.0, -0.3), the upper control and lower control groups (95% Confidence Interval in mean difference: 3.5, 9.3), the upper control and lower experimental groups

(95% Confidence Interval in mean difference: 0.3, 6.0), the upper experimental and lower control groups (95% Confidence Interval in mean difference: 3.5, 9.4), and the upper experimental and lower experimental groups (95% Confidence Interval in mean difference: 0.3, 6.0). None of the other groups were statistically different from each other.

Table 4.31 Pair-wise comparisons

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
Lower Control	Lower Experimental	-3.278	1.094	.022
	Upper Control	-6.437	1.070	.000
	Upper Experimental	-6.428	1.094	.000
Lower Experimental				
	Lower Control	3.278	1.094	.022
	Upper Control	-3.159	1.040	.020
	Upper Experimental	-3.150	1.065	.025
Upper Control	Lower Control	6.437	1.070	.000
	Lower Experimental	3.159	1.040	.020
	Upper Experimental	0.009	1.040	1.000
Upper Experimental				
	Lower Control	6.428	1.094	.000
	Lower Experimental	3.150	1.065	.025
	Upper Control	-0.009	1.040	1.000

Figure 4.8 visualises the difference in reading comprehension performance of the four groups of the upper control, the lower control, the upper experimental, and the lower experimental. As Figure 4.8 shows, the lower experimental group expressed the greatest gain in reading comprehension among the four groups.
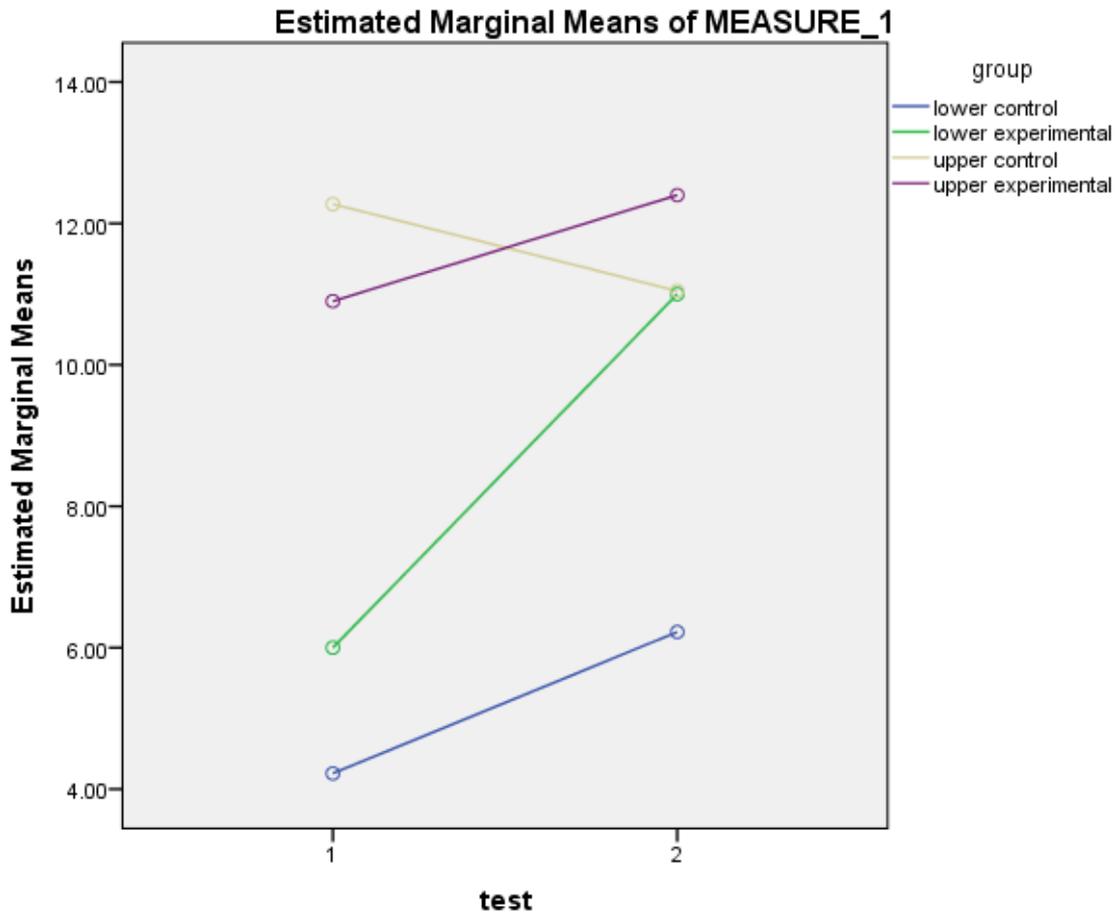
Figure 4.8 Profile Plot for the reading comprehension performance of the four groups

4.6 Analysis of the Written Recall Protocols

The fourth research question considered the degree to which the teaching of text structure increases the amount of information remembered from the text for the participants who belonged to the experimental group. The written recall protocols were analysed using a mixed between-within subjects ANOVA in order to assess the statistical significance of the resulting difference among the four groups of data: the upper experimental and lower experimental groups and the upper control and lower control groups. The analysis was done according to rhetorical organisation: first *comparison* organisation, and then *problem/solution*.

4.6.1 Analysis of *Comparison* Organisation

Tables 4.32 and 4.33 outline how within-subject and between-subject variables are set up.   The within-subjects factors consisted of two dependent variables, scores (idea units) on an immediate written recall test at each time period.   The between-subjects factors covered one categorical independent variable with four levels.   The immediate written recall test was conducted as a pre-test before the teaching of text structure and as a post-test after the intervention.   The participants of both control and experimental groups were further subdivided into a lower group and an upper group based on the scores of the EIKEN reading test.   There were 18 participants in a lower control group, 20 in a lower experimental group, 22 in an upper control group, and 20 in an upper experimental group respectively.

Table 4.32 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test

Table 4.33 Between-subject variables

Group	N
Lower control group	18
Lower experimental group	20
Upper control group	22
Upper experimental group	20

Table 4.34 below shows the descriptive statistics for each group within the two test factor levels.   The means and standard deviations of the immediate written recall test for the participants' performance on the pre- and post-recall tests were calculated and presented.   As shown, the average scores at pre-test before the intervention increased at the post-test for the lower control, lower experimental, upper experimental groups; however, the average scores decreased for the upper control group.   In order to identify whether these differences are large enough to be considered statistically significant, the interaction effect was first assessed.

Table 4.34 Descriptive statistics of the groups on the pre- and post-tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Lower control	1.0556	1.51356	18
	Lower experimental	3.5000	1.87785	20
	Upper control	4.0455	3.10878	22
	Upper experimental	5.6000	2.34857	20
	Total	3.6250	2.78956	80
Post-test	Lower control	2.8889	1.56765	18
	Lower experimental	4.5500	2.30503	20
	Upper control	4.0000	2.00000	22
	Upper experimental	6.7000	3.02794	20
	Total	4.5625	2.63782	80

Table 4.35 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. Looking at the Sig. value violated this assumption. When sphericity does not hold, the multivariate analysis of variance (MANOVA) results can be used to compensate for this assumption violation (Landau and Everitt, 2002). Then the MANOVA procedure will be presented in Table 4.36.

Table 4.35 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	1.000	.000	0	.	1.000	1.000	1.000

Table 4.36 shows the multivariate analysis of variance (MANOVA) procedure. This procedure was used since I wanted to compare the four groups on two different dependent variables. The MANOVA procedure indicated that there was a change in the amount of idea units recalled of the participants across test and the main effect for recall test is significant. There was also an indication that the four groups were different in terms of their recall performance across the test. The interaction effect between recall test and group was also significant. Wilks' Lambda values and the associated probability values support these findings.

Among the four multivariate tests, Wilks' Lambda, that is, the most commonly reported statistics (Pallant, 2007:272), is given attention. Since the value for Wilks' Lambda for the interaction effect between recall test and group was 0.929, with the Sig. level for Wilks' Lambda being .129, which was larger than an alpha level of .05, the interaction

effect was not statistically significant.   Since the value for Wilks' Lambda for the recall test was 0.860, with the Sig. level for Wilks' Lambda of .001, which was less than an alpha level of .05, the test effect was statistically significant.   The value of Partial Eta Squared obtained for test in this study was 0.140.   Using the common guidelines (Cohen, 1988), this result suggested a large effect size.

Based on the values in Wilks' Lambda, it was found that there was a statistically significant change in the recall performance of the participants as a result of the intervention.   This suggested that there was a change in the recall performance across the test, that is, the intervention affected the recall performance of the participants.

Table 4.36 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.140	12.364	.001	.140
	Wilks' Lambda	.860	12.364	.001	.140
	Hotelling's Trace	.163	12.364	.001	.140
	Roy's Largest Root				
		.163	12.364	.001	.140
Recall Test $\times$ Group					
	Pillai's Trace	.071	1.949	.129	.071
	Wilks' Lambda	.929	1.949	.129	.071
	Hotelling's Trace	.077	1.949	.129	.071
	Roy's Largest Root	.077	1.949	.129	.071

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Test)

Table 4.37 shows the test of within-subjects effects, which only had two independent variables.   Here again as in MANOVA, the test effect of recall test was statistically significant using the Huynh-Feldt correction (F $(1,76)$=12.364, p< .005, partial eta-squared= .140).   This result suggested a large effect size.

Table 4.37 Test of within-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Recall Test				
Sphericity Assumed	1	12.364	.001	.140
Greenhouse-Geisser	1.000	12.364	.001	.140
Huynh-Feldt	1.000	12.364	.001	.140
Lower-bound	1.000	12.364	.001	.140
Recall Test × Group				
Sphericity Assumed	3	1.949	.129	.071
Greenhouse-Geisser	3.000	1.949	.129	.071
Huynh-Feldt	3.000	1.949	.129	.071
Lower-bound	3.000	1.949	.129	.071
Error (Recall Test)				
Sphericity Assumed	76			
Greenhouse-Geisser	76.000			
Huynh-Feldt	76.000			
Lower-bound	76.000			
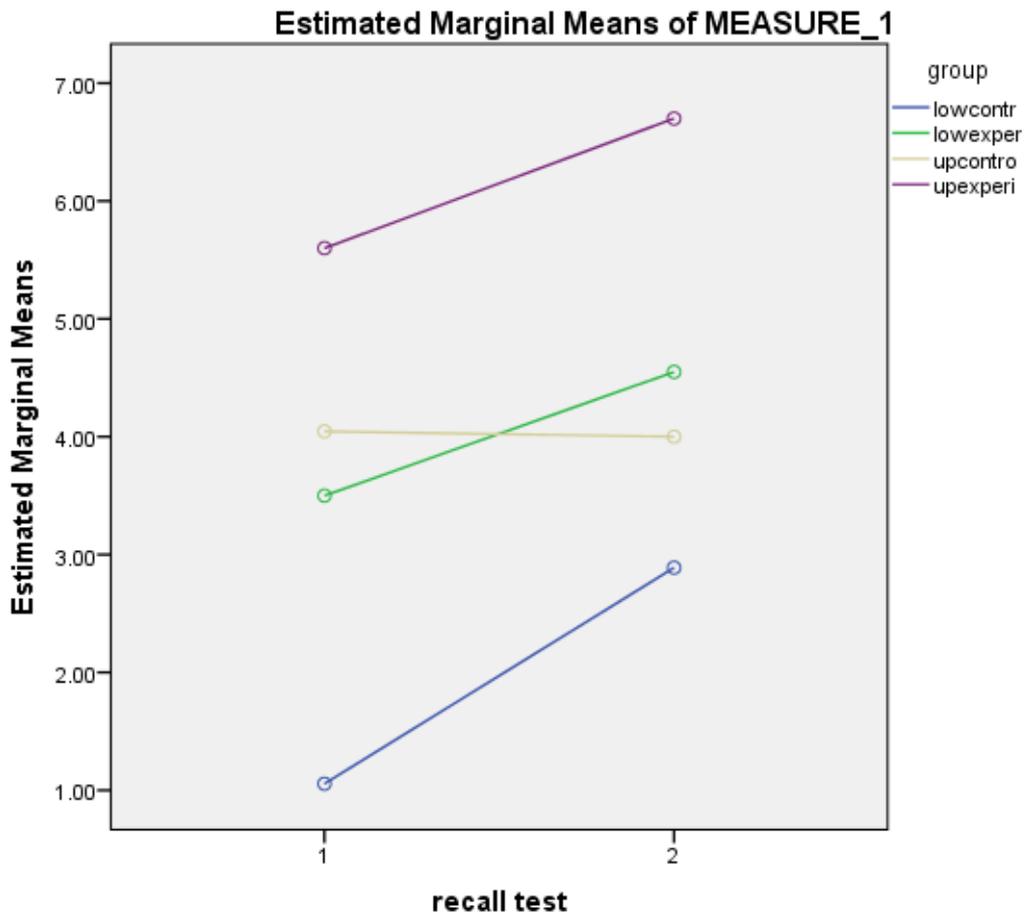
Figure 4.9 Profile Plot for the recall performance of the *comparison* organisation

Figure 4.9 visualizes the recall performance of the four groups in the pre-and post-tests of immediate written recall. As can be seen in Figure 4.9, the scores of the three groups of upper experimental, lower experimental, and lower control increased at the post-test.

Concerning the rhetorical organization of *comparison*, the amount of idea units recalled was calculated by the pre-test, post-test, and delayed test for extracted participants.

Tables 4.38 and 4.39 outline how within-subject and between-subject variables are set up. The within-subjects factors consisted of three dependent variables, scores (idea units) on an immediate written recall test at each time period. The between-subjects factors covered one categorical independent variable with two levels, the experimental and control groups.

Table 4.38 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test
3	delayed test

Table 4.39 Between-subject variables

Group	N
Experimental group	3
Control group	3

Table 4.40 below shows the descriptive statistics for each group within the three test factor levels. The means and standard deviations of the immediate written recall test for the extracted participants' performance on the pre-, post-, and delayed tests were calculated and presented.

Table 4.40 Descriptive statistics of the groups on the pre-, post-, and delayed tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Experimental	4.6667	4.72582	3
	Control	2.0000	1.73205	3
	Total	3.3333	3.50238	6
Post-test	Experimental	10.3333	5.13160	3
	Control	3.0000	1.73205	3
	Total	6.6667	5.27889	6
Delayed test	Experimental	9.0000	5.29150	3
	Control	4.3333	1.15470	3
	Total	6.6667	4.27395	6

Table 4.41 shows the multivariate analysis of variance (MANOVA) procedure. This procedure was used since I wanted to compare the two groups on three different dependent variables. The MANOVA procedure indicated that there was a change in the amount of idea units recalled of the participants across the test and the main effect for the recall test is significant. There was also an indication that the two groups were different in terms of their recall performance across test. The interaction effect between the recall test and the group was also significant. Wilks' Lambda values and the associated probability values support these findings.

Table 4.41 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.866	9.677	.049	.866
	Wilks' Lambda	.134	9.677	.049	.866
	Hotelling's Trace	6.452	9.677	.049	.866
	Roy's Largest Root				
		6.452	9.677	.049	.866
Recall Test × Group					
	Pillai's Trace	.896	12.871	.034	.896
	Wilks' Lambda	.104	12.871	.034	.896
	Hotelling's Trace	8.581	12.871	.034	.896
	Roy's Largest Root	8.581	12.871	.034	.896

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Recall Test)

Among the four multivariate tests, Wilks' Lambda, that is, the most commonly reported statistics (Pallant, 2007:272), is given attention. Since the value for Wilks' Lambda for the interaction effect between recall test and group was 0.104, with the Sig. level for Wilks' Lambda of .034, which was less than an alpha level of .05, the interaction effect was statistically significant. Since the value for Wilks' Lambda for recall test was 0.134, with the Sig. level for Wilks' Lambda of .049, which was less than an alpha level of .05, the test effect was statistically significant. The value of Partial Eta Squared obtained for test in this study was 0.896. Using the common guidelines (Cohen, 1988), this result suggested a very large effect size.

Based on the values in Wilks' Lambda, it was found that there was a statistically

significant change in the recall performance of the participants as a result of the intervention. This suggested that this change concerned the intervention in the recall performance across tests.

Table 4.42 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. This assumption was met by looking at the Sig. value.

Table 4.42 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	.149	5.715	2	.057	.540	.768	.500

Table 4.43 shows the test of within-subjects effects, which only had two independent variables. Here again as in MANOVA, the interaction effect was statistically significant using the Huynh-Feldt correction (F $(2,8)$=5.920, p< .05, partial eta-squared= .597). This result suggested a very large effect size.

Table 4.43 Test of within-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Recall Test				
Sphericity Assumed	2	16.000	.002	.800
Greenhouse-Geisser	1.080	16.000	.013	.800
Huynh-Feldt	1.535	16.000	.005	.800
Lower-bound	1.000	16.000	.016	.800
Recall Test × Group				
Sphericity Assumed	2	5.920	.026	.597
Greenhouse-Geisser	1.080	5.920	.066	.597
Huynh-Feldt	1.535	5.920	.042	.597
Lower-bound	1.000	5.920	.072	.597
Error (Recall Test)				
Sphericity Assumed	8			
Greenhouse-Geisser	4.322			
Huynh-Feldt	6.141			
Lower-bound	4.000			

Figure 4.10 visualizes the recall performance of the two groups of experimental and control in the pre-, post-, and delayed tests of immediate written recall. As can be seen in Figure 4.10, the scores of the experimental group significantly increased at the post-test and the scores were maintained to some extent at the delayed test although

they exhibited a slight decline.
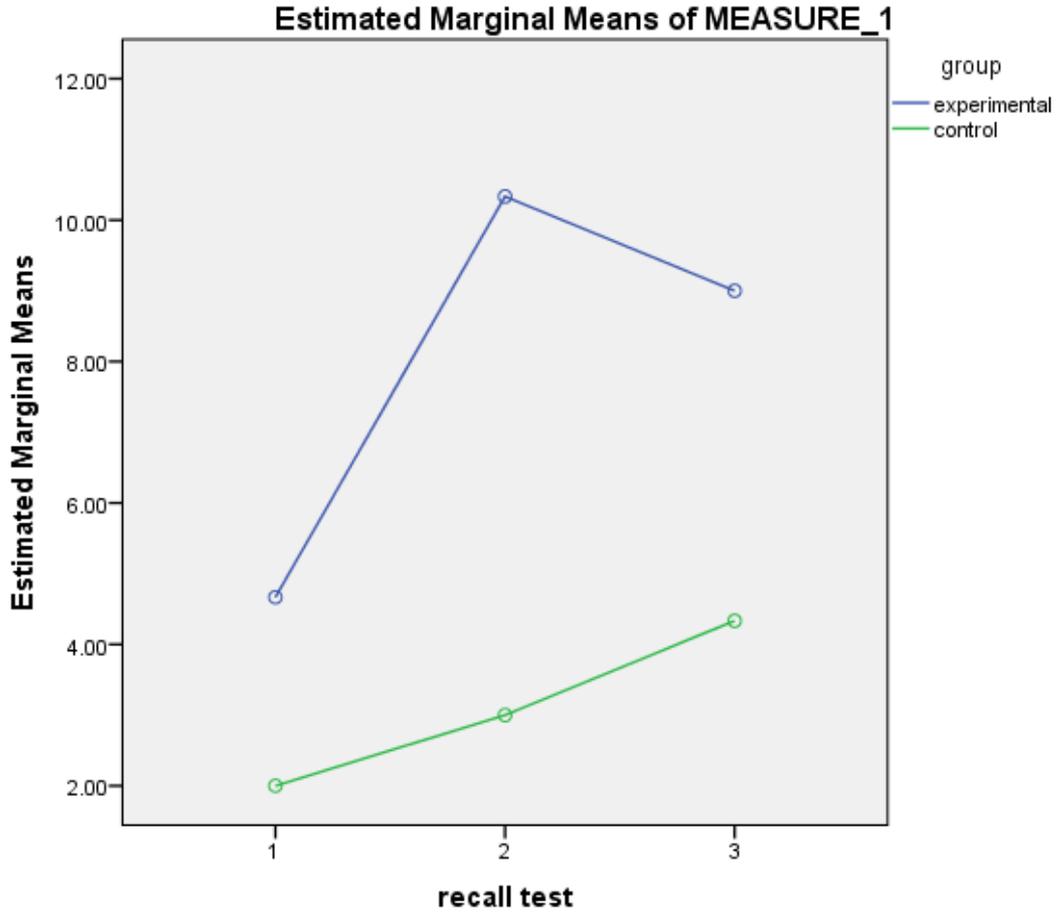
Figure 4.10 Profile Plot for the recall performance of the *comparison* organisation

4.6.2 Analysis of *Problem/Solution* Organisation

Tables 4.44 and 4.45 outline how within-subject and between-subject variables are set up. The within-subjects factors consisted of two dependent variables: scores (idea units) on an immediate written recall test at each time period. The between-subjects factors covered one categorical independent variable with four levels. The immediate written recall test was conducted as a pre-test before the teaching of text structure and as a post-test after the intervention. The participants of both the control and experimental groups were further subdivided into a lower group and an upper group

based on the scores of the EIKEN reading test.   There were 18 participants in the lower control group, 20 in the lower experimental group, 22 in then upper control group, and 20 in the upper experimental group respectively.

Table 4.44 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test

Table 4.45 Between-subject variables

Group	N
Lower control group	18
Lower experimental group	20
Upper control group	22
Upper experimental group	20

Table 4.46 below shows the descriptive statistics for each group within the two test factor levels.   The means and standard deviations of the immediate written recall test for the participants' performance on the pre- and post-recall tests were calculated and presented.   As shown, the average scores at pre-test before the intervention increased at the post-test for the four groups of lower control, lower experimental, upper control and upper experimental groups.   In order to identify whether these differences are large enough to be considered statistically significant, the interaction effect was first assessed.

Table 4.46 Descriptive statistics of the groups on the pre- and post-tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Lower control	2.6667	2.05798	18
	Lower experimental	3.6500	2.08440	20
	Upper control	3.9091	2.67099	22
	Upper experimental	6.3500	2.51888	20
	Total	4.1750	2.68033	80
Post-test	Lower control	2.8333	2.59524	18
	Lower experimental	4.6000	2.18608	20
	Upper control	4.0909	3.30813	22
	Upper experimental	6.4000	2.85436	20
	Total	4.5125	3.01050	80

Table 4.47 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. Looking at the Sig. value violated this assumption.   When sphericity does not hold, the multivariate analysis of variance (MANOVA) results can be used to compensate for this

assumption violation (Landau and Everitt, 2002).   Then the MANOVA procedure will be presented in Table 4.48.

Table 4.47 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	1.000	.000	0	.	1.000	1.000	1.000

Table 4.48 shows the multivariate analysis of variance (MANOVA) procedure.   This procedure was used since I wanted to compare the four groups on two different dependent variables.   The MANOVA procedure indicated that there was no statistically significant change in recall performance of the participants across tests.

Table 4.48 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.017	1.328	.253	.017
	Wilks' Lambda	.983	1.328	.253	.017
	Hotelling's Trace	.017	1.328	.253	.017
	Roy's Largest Root				
		.017	1.328	.253	.017
Recall Test × Group					
	Pillai's Trace	.019	.500	.683	.019
	Wilks' Lambda	.981	.500	.683	.019
	Hotelling's Trace	.020	.500	.683	.019
	Roy's Largest Root	.020	.500	.683	.019

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Recall Test)

Figure 4.11 visualizes the recall performance of the two groups of experimental and control in the pre-, post-, and delayed tests of immediate written recall.   As can be seen in Figure 4.11, the scores of the lower experimental group increased at the post-test but the statistically significant change was not recognised.
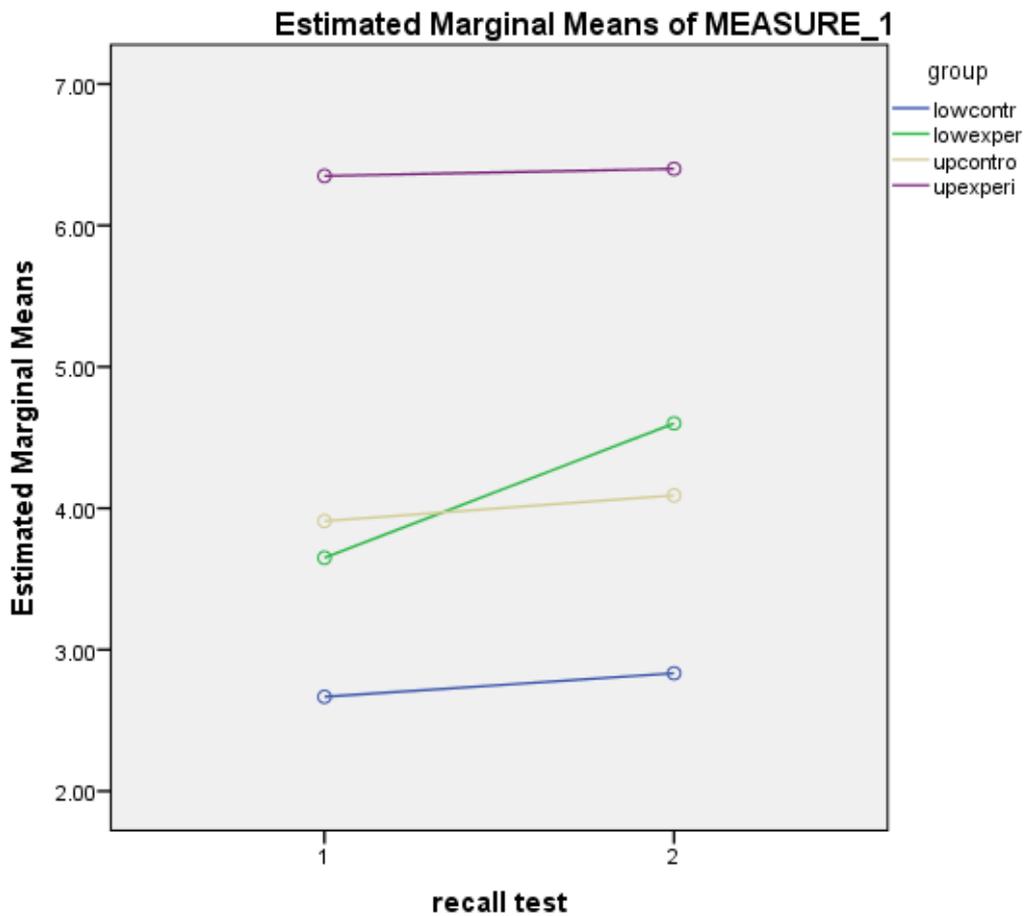
Figure 4.11 Profile Plot for the recall performance of the *problem/solution* organisation

Concerning the rhetorical organization of *problem/solution*, the amount of idea units recalled was calculated by the pre-test, post-test, and delayed test for extracted participants.

Tables 4.49 and 4.50 outline how within-subject and between-subject variables are set up. The within-subjects factors consisted of three dependent variables: scores (idea units) on an immediate written recall test at each time period. The between-subjects factors covered one categorical independent variable with two levels, the experimental and control groups.

Table 4.49 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test
3	delayed test

Table 4.50 Between-subject variables

Group	N
Experimental group	3
Control group	3

Table 4.51 below shows the descriptive statistics for each group within the three test factor levels.   The means and standard deviations of the immediate written recall test for the extracted participants' performance on the pre-, post-, and delayed tests were calculated and presented.

Table 4.51 Descriptive statistics of the groups on the pre-, post-, and delayed tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Experimental	5.0000	1.73205	3
	Control	1.6667	1.15470	3
	Total	3.3333	2.25093	6
Post-test	Experimental	8.3333	5.13160	3
	Control	3.0000	1.73205	3
	Total	5.6667	4.22690	6
Delayed test	Experimental	8.0000	4.00000	3
	Control	2.6667	0.57735	3
	Total	5.3333	3.88158	6

Table 4.52 shows the multivariate analysis of variance (MANOVA) procedure.   This procedure was used since I wanted to compare the two groups on three different dependent variables.   The MANOVA procedure indicated that there was not a change in the amount of idea units recalled of the participants across test and the main effect for recall test was not significant.   The interaction effect between the recall test and the group was not significant as well.

Among the four multivariate tests, Wilks' Lambda, that is, the most commonly reported statistics (Pallant, 2007:272), is given attention.   Since the value for Wilks' Lambda for the interaction effect between recall test and group was 0.487, with the Sig. level for Wilks' Lambda of .340, which was larger than an alpha level of .05, the interaction

effect was not statistically significant.   Since the value for Wilks' Lambda for recall test was 0.170, with the Sig. level for Wilks' Lambda of .070, which was larger than an alpha level of .05, the test effect was not statistically significant.   The value of Partial Eta Squared obtained for the interaction in this study was 0.830.   Using the commonly guidelines (Cohen, 1988), this result suggested a very large effect size.

Table 4.52 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.830	7.320	.070	.830
	Wilks' Lambda	.170	7.320	.070	.830
	Hotelling's Trace	4.880	7.320	.070	.830
	Roy's Largest Root				
		4.880	7.320	.070	.830
Recall Test × Group					
	Pillai's Trace	.513	1.580	.340	.513
	Wilks' Lambda	.487	1.580	.340	.513
	Hotelling's Trace	1.054	1.580	.340	.513
	Roy's Largest Root	1.054	1.580	.340	.513

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Recall Test)

Table 4.53 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. This assumption was met by looking at the Sig. value.

Table 4.53 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	.446	2.421	2	.298	.644	1.000	.500

Table 4.54 shows the test of within-subjects effects, which only had two independent variables.   Here again as in MANOVA, the interaction effect was not statistically significant using the Huynh-Feldt correction (F (2,8)=0.541, p=0.602, partial eta-squared= .119).   This result suggested a large effect size.

Table 4.54 Test of within-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Recall Test				
Sphericity Assumed	2	2.586	.136	.393
Greenhouse-Geisser	1.286	2.586	.168	.393
Huynh-Feldt	2.000	2.586	.136	.393
Lower-bound	1.000	2.586	.183	.393
Recall Test × Group				
Sphericity Assumed	2	0.541	.602	.119
Greenhouse-Geisser	1.287	0.541	.538	.119
Huynh-Feldt	2.000	0.541	.602	.119
Lower-bound	1.000	0.541	.503	.119
Error (Recall Test)				
Sphericity Assumed	8			
Greenhouse-Geisser	5.149			
Huynh-Feldt	8.000			
Lower-bound	4.000			

Table 4.55 presents the descriptive statistics for the two groups across time. As Table 4.55 indicates, the pre-test mean for control group was 1.6667 while the post-test mean was 3.0000 and the delayed test mean was 2.6667; the pre-test mean for the experimental group was 5.0000 whereas the post test mean was 8.3333 and the delayed test mean was 8.0000. Table 4.56 displays that the Sig. value for group was not statistically significant ($p>0.05$) and hence it was concluded that the main effect for the group was not significant, that is, there was no significant difference in recall performance for the two groups. The effect size was very large.

Table 4.55 Descriptive statistics for the two groups across time

	Group	Mean	Std.Deviation	N
Pre-test Score	Control	1.6667	1.15470	3
	Experimental	5.0000	1.73205	3
Post-test Score	Control	3.0000	1.73205	3
	Experimental	8.3333	5.13160	3
Delayed test	Control	2.6667	0.57735	3
Score	Experimental	8.0000	4.00000	3

Table 4.56   Test of between-subjects effects

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1	410.889	28.122	.006	.875
Group	1	98.000	6.707	.061	.626
Error	4	14.611			

Figure 4.12 visualizes the recall performance of the two groups in the pre-, post-, and delayed tests of immediate written recall.   As can be seen in Figure 4.12, the scores of the two groups of experimental and control increased at the post-test and slightly decreased at the delayed test but a statistically significant change was not recognised.
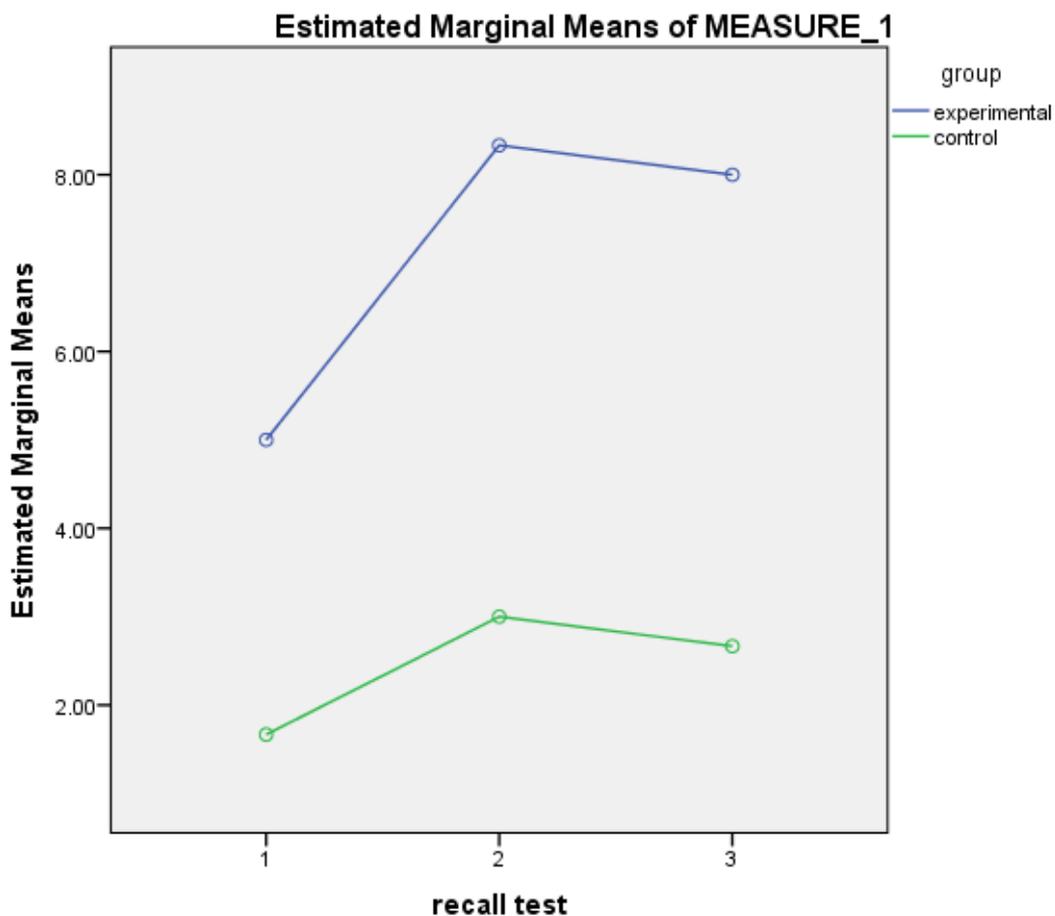
Figure 4.12 Profile Plot for the recall performance of the *problem/solution* organisation

4.6.3 Analysis of *Causation* Organisation

Concerning the rhetorical organization of *causation*, the amount of idea units recalled was calculated by the pre-test, post-test, and delayed test for extracted participants.

Tables 4.57 and 4.58 outline how within-subject and between-subject variables are set up. The within-subjects factors consisted of three dependent variables: scores (idea units) on an immediate written recall test at each time period.   The between-subjects factors covered one categorical independent variable with two levels, the experimental and control groups.

Table 4.57 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test
3	delayed test

Table 4.58 Between-subject variables

Group	N
Experimental group	3
Control group	3

Table 4.59 below shows the descriptive statistics for each group within the three test factor levels.   The means and standard deviations of the immediate written recall test for the extracted participants' performance on the pre-, post-, and delayed tests were calculated and presented.

Table 4.59 Descriptive statistics of the groups on the pre-, post-, and delayed tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Experimental	6.0000	2.64575	3
	Control	3.3333	1.15470	3
	Total	4.6667	2.33809	6
Post-test	Experimental	6.0000	4.00000	3
	Control	6.3333	1.52753	3
	Total	6.1667	2.71416	6
Delayed test	Experimental	8.0000	3.60555	3
	Control	4.3333	3.51188	3
	Total	6.1667	3.76386	6

Table 4.60 shows the multivariate analysis of variance (MANOVA) procedure.   This procedure was used since I wanted to compare the two groups on three different

dependent variables.   The MANOVA procedure indicated that there was not a change in the amount of idea units recalled of the participants across the test and the main effect for the recall test was not significant.   The interaction effect between the recall test and the group was not significant as well.

Among the four multivariate tests, Wilks' Lambda, that is, the most commonly reported statistics (Pallant, 2007:272), is given attention.   Since the value for Wilks' Lambda for the interaction effect between the recall test and the group was 0.538, with the Sig. level for Wilks' Lambda being .394, which was larger than an alpha level of .05, the interaction effect was not statistically significant.   Since the value for Wilks' Lambda for the recall test was 0.322, with the Sig. level for Wilks' Lambda being .182, which was larger than an alpha level of .05, the test effect was not statistically significant. The value of Partial Eta Squared obtained for the interaction in this study was 0.462. Using the common guidelines (Cohen, 1988), this result suggested a very large effect size.

Table 4.60 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.678	3.164	.182	.678
	Wilks' Lambda	.322	3.164	.182	.678
	Hotelling's Trace	2.109	3.164	.182	.678
	Roy's Largest Root				
		2.109	3.164	.182	.678
Recall Test × Group					
	Pillai's Trace	.462	1.289	.394	.462
	Wilks' Lambda	.538	1.289	.394	.462
	Hotelling's Trace	.859	1.289	.394	.462
	Roy's Largest Root	.859	1.289	.394	.462

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Recall Test)

Table 4.61 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. This assumption was met by looking at the Sig. value.

Table 4.61 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	.426	2.560	2	.278	.635	1.000	.500

Table 4.62 shows the test of within-subjects effects, which only had two independent variables. Here again, as in MANOVA, the interaction effect was not statistically significant using the Huynh-Feldt correction (F (2,8)=1.500, p=0.280, partial eta-squared= .462). This result suggested a very large effect size.

Table 4.62 Test of within-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Recall Test				
Sphericity Assumed	2	1.038	.397	.678
Greenhouse-Geisser	1.271	1.038	.378	.678
Huynh-Feldt	2.000	1.038	.397	.678
Lower-bound	1.000	1.038	.366	.678
Recall Test × Group				
Sphericity Assumed	2	1.500	.280	.462
Greenhouse-Geisser	1.271	1.500	.287	.462
Huynh-Feldt	2.000	1.500	.280	.462
Lower-bound	1.000	0.541	.288	.462
Error (Recall Test)				
Sphericity Assumed	8			
Greenhouse-Geisser	5.083			
Huynh-Feldt	8.000			
Lower-bound	4.000			

Table 4.63 presents the descriptive statistics for the two groups across time. As Table 4.63 indicates, the pre-test mean for control group was 3.3333 while the post-test mean was 6.3333 and the delayed test mean was 4.3333; the pre-test mean for the experimental group was 6.0000 whereas the post test mean was 6.0000 and the delayed test mean was 8.0000. Table 4.64 displays that the Sig. value for group was not statistically significant (p>0.05) and hence it was concluded that the main effect for the group was not significant, that is, there was no significant difference in recall performance for the two groups. The effect size was large.

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Table 4.63 Descriptive statistics for the two groups across time

	Group	Mean	Std.Deviation	N
Pre-test Score	Control	3.3333	1.15470	3
	Experimental	6.0000	2.64575	3
Post-test Score	Control	6.3333	1.52753	3
	Experimental	6.0000	4.00000	3
Delayed test Score	Control	4.3333	3.51188	3
	Experimental	8.0000	3.60555	3

Table 4.64 Test of between-subjects effects

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1	578.000	33.346	.004	.893
Group	1	18.000	1.038	.366	.206
Error	4	17.333			
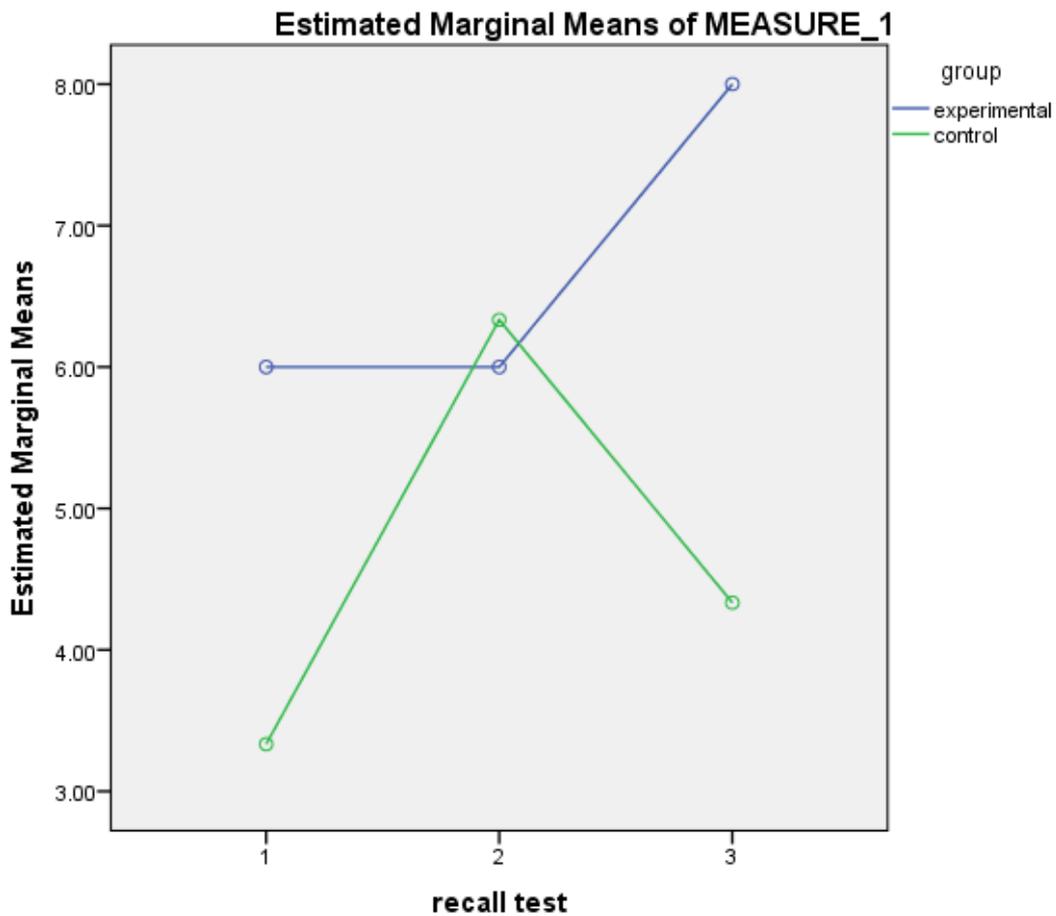
Figure 4.13 Profile Plot for the recall performance of the *causation* organisation

Figure 4.13 visualizes the recall performance of the two groups in the pre-, post-, and delayed tests of immediate written recall.   As can be seen in Figure 4.13, the scores of the experimental group were the same at the post-test and increased at the delayed test while the scores of the control group increased at the post-test and deceased at the delayed test, but statistically significant change was not recognised.

4.6.4 Analysis of *Description* Organisation

Concerning the rhetorical organization of *a collection of descriptions,* the amount of idea units recalled was calculated by the pre-test, post-test, and delayed test for extracted participants.

Tables 4.65 and 4.66 outline how within-subject and between-subject variables are set up.   The within-subjects factors consisted of three dependent variables: scores (idea units) on an immediate written recall test at each time period.   The between-subjects factors covered one categorical independent variable with two levels, the experimental and control groups.

Table 4.65 Within-subject and variables

Test	dependent variables
1	pre-test
2	post-test
3	delayed test

Table 4.66 Between-subject variables

Group	N
Experimental group	3
Control group	3

Table 4.67 below shows the descriptive statistics for each group within the three test factor levels.   The means and standard deviations of the immediate written recall test for the extracted participants' performance on the pre-, post-, and delayed tests were calculated and presented.

Table 4.67 Descriptive statistics of the groups on the pre-, post-, and delayed tests

Test	Subjects	Mean	Std. Deviation	N
Pre-test	Experimental	5.6667	3.78594	3
	Control	2.6667	.57735	3
	Total	4.1667	2.92689	6
Post-test	Experimental	5.6667	5.03322	3
	Control	1.0000	1.73205	3
	Total	3.3333	4.22690	6
Delayed test	Experimental	9.6667	1.52753	3
	Control	2.6667	1.52753	3
	Total	6.1667	4.07022	6

Table 4.68 shows the multivariate analysis of variance (MANOVA) procedure. This procedure was used since I wanted to compare the two groups on three different dependent variables. The MANOVA procedure indicated that there was no change in the amount of idea units recalled of the participants across test and the main effect for the recall test was not significant. The interaction effect between the recall test and the group was not significant as well.

Table 4.68 Multivariate tests

Effect		Value	F	Sig.	Partial Eta Squared
Recall Test	Pillai's Trace	.576	2.039	.276	.576
	Wilks' Lambda	.424	2.039	.276	.576
	Hotelling's Trace	1.359	2.039	.276	.576
	Roy's Largest Root				
		1.359	2.039	.276	.576
Recall Test × Group					
	Pillai's Trace	.819	6.785	.077	.819
	Wilks' Lambda	.181	6.785	.077	.819
	Hotelling's Trace	4.523	6.785	.077	.819
	Roy's Largest Root	4.523	6.785	.077	.819

Computed using alpha= .05 (Exact statistic, Design: Intercept+Group, Within Subjects Design: Recall Test)

Among the four multivariate tests, Wilks' Lambda, that is, the most commonly reported statistics (Pallant, 2007:272), is given attention. Since the value for Wilks' Lambda for the interaction effect between the recall test and the group was 0.181, with the Sig. level for Wilks' Lambda being .077, which was larger than an alpha level of .05, the interaction effect was not statistically significant. Since the value for Wilks' Lambda for the recall test was 0.424, with the Sig. level for Wilks' Lambda being .276, which

was larger than an alpha level of .05, the test effect was not statistically significant. The value of Partial Eta Squared obtained for the interaction in this study was 0.819. Using the common guidelines (Cohen, 1988), this result suggested a very large effect size.

Table 4.69 shows Mauchly's Test of Sphericity to establish the assumption of sphericity. This assumption was met by looking at the Sig. value.

Table 4.69 Mauchly's test of sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recall test	.200	4.830	2	.089	.556	.808	.500

Table 4.70 shows the test of within-subjects effects, which only had two independent variables. Here again as in MANOVA, the interaction effect was not statistically significant using the Huynh-Feldt correction (F (2,8)=1.463, p=0.291, partial eta-squared= .268). This result suggested a large effect size.

Table 4.70 Test of within-subjects effects

Source	df	F	Sig.	Partial Eta Squared
Recall Test				
Sphericity Assumed	2	3.074	.102	.435
Greenhouse-Geisser	1.111	3.074	.147	.435
Huynh-Feldt	1.615	3.074	.120	.435
Lower-bound	1.000	3.074	.154	.435
Recall Test × Group				
Sphericity Assumed	2	1.463	.287	.268
Greenhouse-Geisser	1.111	1.463	.294	.268
Huynh-Feldt	1.615	1.463	.291	.268
Lower-bound	1.000	1.463	.293	.268
Error (Recall Test)				
Sphericity Assumed	8			
Greenhouse-Geisser	4.444			
Huynh-Feldt	6.461			
Lower-bound	4.000			

Table 4.71 presents the descriptive statistics for the two groups across time. As Table 4.71 indicates, the pre-test mean for the control group was 2.6667 while the post-test mean was 1.0000 and the delayed test mean was 2.6667; the pre-test mean for the

experimental group was 5.6667 whereas the post test mean was 5.6667 and the delayed test mean was 9.6667. Table 4.73 displays that the Sig. value for group was not statistically significant (p>0.05) and hence it was concluded that the main effect for the group was not significant, that is, there was no significant difference in recall performance for the two groups. The effect size was very large.

Table 4.71 Descriptive statistics for the two groups across time

	Group	Mean	Std.Deviation	N
Pre-test Score	Control	2.6667	0.57735	3
	Experimental	5.6667	3.78594	3
Post-test Score	Control	1.0000	1.73205	3
	Experimental	5.6667	5.03322	3
Delayed test Score	Control	2.6667	1.52753	3
	Experimental	9.6667	1.52753	3

Table 4.72 Test of between-subjects effects

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	1	373.556	24.014	.008	.857
Group	1	107.556	6.914	.058	.634
Error	4	15.556			

Figure 4.14 visualizes the recall performance of the two groups in the pre-, post-, and delayed tests of immediate written recall. As can be seen in Figure 4.14, the scores of the experimental group were the same at the post-test and increased at the delayed test while the scores of the control group decreased at the post-test and increased at the delayed test, but a statistically significant change was not recognised.
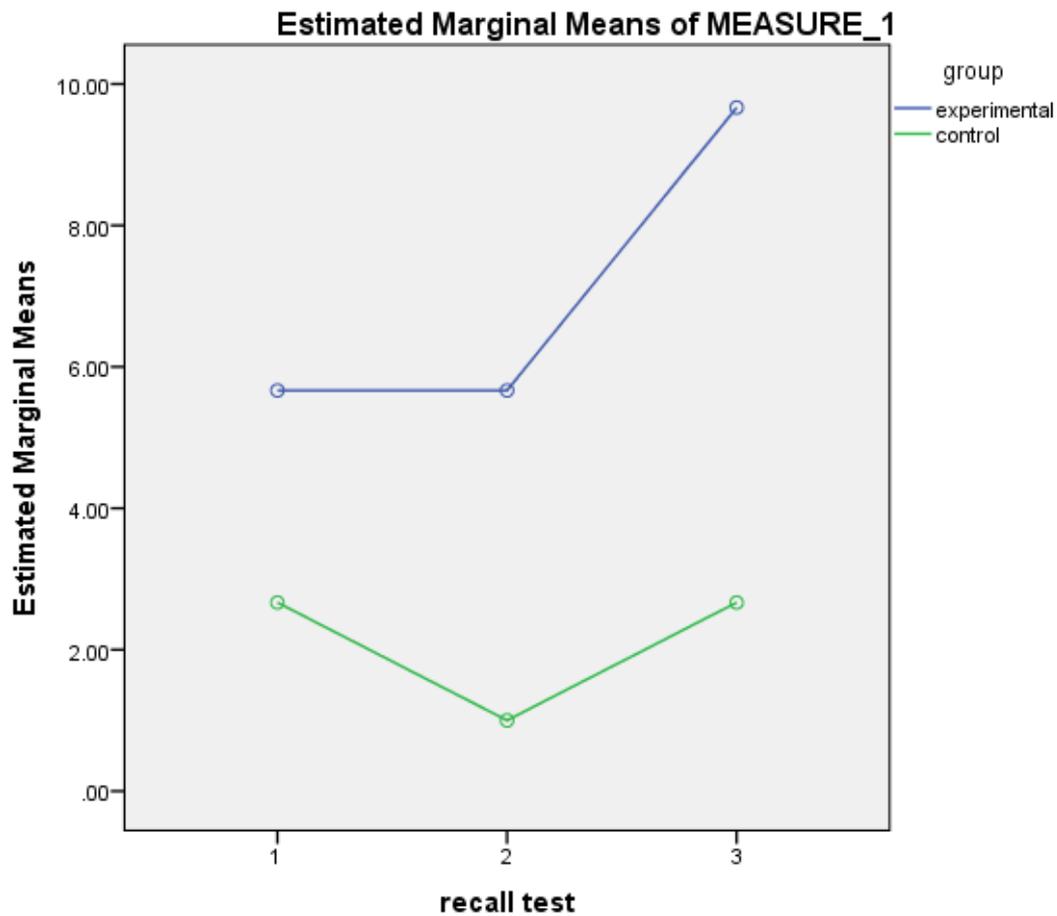
Figure 4.14 Profile Plot for the recall performance of the *description* organisation

4.6.5 Identification of Rhetorical Organisation

In the immediate written recall test, after they recalled the passage, I also asked whether they identified the rhetorical organisation pattern of the text that they read as a recall test.

Comparison Organisation

Table 4.73 indicates descriptive statistics when the number of the participants who identified the rhetorical organisation in the text was calculated by the pre-test and post-test concerning the *comparison* organisational pattern.

Table 4.73 Descriptives

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th	50th (Median)	75th
Pre-test	80	1.7875	.41166	1.00	2.00	2.0000	2.0000	2.0000
Post-test	80	1.6250	.48718	1.00	2.00	1.0000	1.0000	1.0000

The results of the identification of the rhetorical organisation are nominal data that can be sorted into categories. Nominal variables are measured by frequencies. For frequency data, an appropriate statistical procedure is the Chi-square (χ^2) test (Hatch and Lazaraton, 1991:394). There are two types of the Chi-square tests: goodness of fit and group independence. In this result, there is only one categorical variable, that of the identification of the rhetorical organisation. When there is only one categorical variable, the Chi-square for goodness of fit is used to measure how good the fit is to the probabilities that are expected (Larson-Hall, 2010:207).

Table 4.74 shows that 17 out of 80 (or 21.3%) participants identified the rhetorical organisation in the Computer text as the pre-test. 40 cases were expected in each category, while 17 were observed in the *Identified* category. The Chi-square was done postulating the hypothesis that all categories were equally likely to have been chosen (Larson-Hall, 2010:228). This means a 50% chance of choosing each category (*Identified* or *Not identified*).

Table 4.74 Pre-test (The Computer text)

	Observed N	Expected N	Residual
1 Identified	17	40.0	-23.0
2 Not identified	63	40.0	23.0
Total	80		

1: They identified the rhetorical organisation of the Computer text.
2: They did not identify the rhetorical organisation of the Computer text.

Table 4.75 shows that 30 out of 80 (or 37.5%) participants identified the rhetorical organisation in the Nuclear Power Plant text as the post-test. 40 cases were expected in each category, while 30 were observed in the *Identified* category.

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Table 4.75 Post-test (The Nuclear Power Plant text)

	Observed N	Expected N	Residual
1 Identified	30	40.0	-10.0
2 Not identified	50	40.0	10.0
Total	80		

1: They identified the rhetorical organisation of the Nuclear Power Plant text.
2: They did not identify the rhetorical organisation of the Nuclear Power Plant text.

As regards the identification of the *comparison* organisation, the results of the Chi-square test showed that there were statistically significant differences in the pre- and post-recall tests.

A Chi-square goodness-of-fit test indicated that there was significant difference in the proportion of the identification of rhetorical pattern in the pre-test of immediate written recall identified in the current sample (21%), χ^2 (1, n=80) = 26.450, p< .000 (see Table 4.76).

A Chi-square goodness-of-fit test indicated that there was significant difference in the proportion of the identification of rhetorical pattern in the post-test of immediate written recall identified in the current sample (37.5%), χ^2 (1, n=80) = 5.000, p< .025 (see Table 4.76).

Table 4.76 Test statistics

	Pre-test	Post-test
Chi-Square	26.450[a]	5.000[a]
df	1	1
Asymp. Sig.	.000	.025

a. 0 cells (0.0%) have expected frequencies less than 5.   The minimum expected cell frequency is 40.0.

Table 4.77 shows cross tabulations of the pre-test in which frequencies were observed in the groups of lower control, lower experimental, upper control, and upper experimental.   As I mentioned earlier about the types of the Chi-square test, there were two types.   When there was one categorical variable (*Identified* or *Not identified*) to analyse the data of the identification of the rhetorical organisation in the pre- and

post-tests, the Chi-square test for goodness of fit was used.   When analysing the data of the identification of the rhetorical organisation in terms of the four groups, there are two categorical variables: identification (*Identified* or *Not identified*) and groups (lower control, lower experimental, upper control, and upper experimental).   In this case, the Chi-square test for independence is used to explore the relationship between two categorical variables (Pallant, 2007:214).

Table 4.77 Cross tabulations pre-test (The Computer text)

| | Pre-test | | Total |
	1.00	2.00	
Lower control	1	17	18
Lower experimental	3	17	20
Upper control	4	18	22
Upper experimental	9	11	20
Total	17	63	80

1.0: They identified the rhetorical organisation of the Computer text.
2.0: They did not identify the rhetorical organisation of the Computer text.

With regard to the identification of the *comparison* organisation in the four groups of lower control, lower experimental, upper control, and upper experimental, the Chi-Square test showed that there was a statistically significant difference between the groups in the pre-test while there was no significant difference between the groups in the post-test.

Table 4.78 indicates the results of the Chi-Square test for independence regarding the identification of the rhetorical pattern in the pre-test.   A significant difference was found in the identification of the rhetorical pattern in the four groups (Chi-Square = 9.981, df = 3, p = 0.019).

The effect size of the pre-test was calculated by Pearson Chi-Square and Number of Valid Cases.   The effect size was 0.353.   This indicates a moderate effect (Muijs, 2004:126).

Table 4.78 Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.981[a]	3	.019
Likelihood Ratio	9.740	3	.021
N of Valid Cases	80		

a. 0 cells (0.0%) have expected frequencies less than 5.   The minimum expected cell frequency is 3.83.

Table 4.79 shows cross tabulations of the post-test in which frequencies were observed in the groups of lower control, lower experimental, upper control, and upper experimental.

Table 4.79 Cross tabulations post-test (The Nuclear Power Plant text)

	Post-test		Total
	1.00	2.00	
Lower control	3	15	18
Lower experimental	8	12	20
Upper control	10	12	22
Upper experimental	9	11	20
Total	30	50	80

1.0: They identified the rhetorical organisation of the Nuclear Power Plant text.
2.0: They did not identify the rhetorical organisation of the Nuclear Power Plant text.

Table 4.80 indicates the results of the Chi-Square test for independence regarding the identification of the rhetorical pattern in the post-test.   A significant difference was not found in the identification of the rhetorical pattern by the four groups (Chi-Square = 4.461, df = 3, p = 0.216).

The effect size of the post-test was calculated by Pearson Chi-Square and Number of Valid Cases.   The effect size is 0.236.   This means a modest effect (Muijs, 2004:126).

Table 4.80 Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.461[a]	3	.216
Likelihood Ratio	4.867	3	.182
N of Valid Cases	80		

a. 0 cells (0.0%) have expected frequencies less than 5.   The minimum expected cell frequency is 6.75.

Problem/Solution Organisation

Table 4.81 indicates descriptive statistics when the number of the participants who identified the rhetorical organisation in the text was calculated by the pre-test and post-test concerning the *problem/solution* organisational pattern.

Table 4.81 Descriptives

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th	50th (Median)	75th
Pre-test	80	1.5000	.50315	1.00	2.00	1.0000	1.5000	2.0000
Post-test	80	1.4250	.49746	1.00	2.00	1.0000	1.0000	2.0000

Table 4.82 shows that 40 out of 80 (or 50.0%) identified the rhetorical organisation in the Air Pollution text as the pre-test.   40 cases were expected in each category, and 40 were observed in the *Identified* category.

Table 4.82 Pre-test (The Air Pollution text)

	Observed N	Expected N	Residual
1 Identified	40	40.0	0.0
2 Not identified	40	40.0	0.0
Total	80		

1: They identified the rhetorical organisation of the Air Pollution text.
2: They did not identify the rhetorical organisation of the Air Pollution text.

Table 4.83 shows that 46 out of 80 (or 57.5%) identified the rhetorical organisation in the Water text as the post-test.   40 cases were expected in each category, while 46 were observed in the *Identified* category.

Table 4.83 Post-test (The Water text)

		Observed N	Expected N	Residual
1	Identified	46	40.0	6.0
2	Not identified	34	40.0	-6.0
	Total	80		

1: They identified the rhetorical organisation of the Water text.
2: They did not identify the rhetorical organisation of the Water text.

As regards the identification of the *problem/solution* organisation, the results of the Chi-square test showed that there was no statistically significant difference in the pre- and post-recall tests.

A Chi-square goodness-of-fit test indicated that there was no significant difference in the proportion of the identification of rhetorical pattern in the pre-test of immediate written recall identified in the current sample (21%), χ^2 (1, n=80) = 0.000, p>.05 (see Table 4.84).

A Chi-square goodness-of-fit test indicated that there was no significant difference in the proportion of the identification of rhetorical pattern in the post-test of immediate written recall identified in the current sample (37.5%), χ^2 (1, n=80) = 1.800, p> .05 (see Table 4.84).

Table 4.84 Test statistics

	Pre-test	Post-test
Chi-Square	.000[a]	1.800[a]
df	1	1
Asymp. Sig.	1.000	.180

a. 0 cells (0.0%) have expected frequencies less than 5.   The minimum expected cell frequency is 40.0.

With regard to the identification of the *problem/solution* organisation in the four groups of lower control, lower experimental, upper control, and upper experimental, the Chi-Square test showed that there was a statistically significant difference between the groups in the pre- and post-tests.

Table 4.85 shows cross tabulations of the pre-test in which frequencies were observed in the groups of lower control, lower experimental, upper control, and upper experimental.

Table 4.85 Cross tabulations pre-test (The Air Pollution text)

	Pre-test		Total
	1.00	2.00	
Lower control	4	14	18
Lower experimental	9	11	20
Upper control	13	9	22
Upper experimental	14	6	20
Total	40	40	80

1.0: They identified the rhetorical organisation of the Air Pollution text.
2.0: They did not identify the rhetorical organisation of the Air Pollution text.

Table 4.86 indicates the results of the Chi-Square test for independence regarding the identification of the rhetorical pattern in the pre-test. A significant difference was found in the identification of the rhetorical pattern by the four groups (Chi-Square = 9.683, df = 3, p = 0.021).

The effect size of the pre-test was calculated by Pearson Chi-Square and Number of Valid Cases. The effect size was 0.348. This indicates a moderate effect (Muijs, 2004:126).

Table 4.86 Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.683[a]	3	.021
Likelihood Ratio	10.107	3	.018
N of Valid Cases	80		

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 9.00.

Table 4.87 shows cross tabulations of the post-test in which frequencies were observed in the groups of lower control, lower experimental, upper control, and upper

experimental.

Table 4.87 Cross tabulations post-test (The Water text)

	Post-test		Total
	1.00	2.00	
Lower control	5	13	18
Lower experimental	15	5	20
Upper control	11	11	22
Upper experimental	15	5	20
Total	46	34	80

1.0: They identified the rhetorical organisation of the Water text.
2.0: They did not identify the rhetorical organisation of the Water text.

Table 4.88 indicates the results of the Chi-Square test for independence regarding the identification of the rhetorical pattern in the post-test. A significant difference was found in the identification of the rhetorical pattern by the four groups (Chi-Square = 12.026, df = 3, p = 0.007).

The effect size of the post-test was calculated by Pearson Chi-Square and Number of Valid Cases. The effect size was 0.388. This indicates a moderate effect (Muijs, 2004:126).

Table 4.88 Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.026[a]	3	.007
Likelihood Ratio	12.341	3	.006
N of Valid Cases	80		

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 7.65.

4.7 Summary

In this chapter, concerning the questionnaires, reading comprehension tests, and immediate written recall tests, the results of quantitative data analysis were provided in

association with the research questions. The next chapter discusses the results of quantitative data analysis, presenting the results of interview data analysis.

Chapter 5

Discussion and Analysis of the Interview Data

5.1 Introduction

In this chapter, a detailed analysis of quantitative research findings presented in Chapter 4 is provided, with reference to each of the five research questions. The quantitative findings of this study are discussed in relation to previous research studies. The interview data is integrated mainly into the discussion of recall test results.

5.2 Research Questions

Perhaps there is a need to remind the reader of the research questions mentioned earlier in Chapter 1. They are as follows:

1. To what extent does the teaching of text structure alter the reading behaviour of Japanese college students when they read expository texts?

2. To what extent does teaching text structure improve students' reading comprehension?

3. To what extent does the teaching of text structure improve the reading comprehension of poor readers and good readers?

4. To what extent does teaching the text structure increase the amount of information remembered from the text?

5. To what extent does teaching the text structure alter students' identification of rhetorical organisation?

5.3 Reading Behaviour of Japanese College Students

The first research question was to explore the reading behaviour of Japanese college students when they read expository text. From the calculation of positive responses to questionnaire items in the pre-intervention questionnaire data, it was revealed that four

questionnaire items were included in the two categories *Effective* and *Difficulty* respectively, two items belonged to the *Repair* category, and the *Confidence* category contained no items by examining the top ten items. These questionnaire items are discussed in order.

Good readers have a tendency to recognise and use top down processing effectively such as through the use of the knowledge of text structure, integration of information, and the use of general knowledge and association, while poor readers are disposed to reliance on bottom up processing at a word or sentence level (Barnett, 1988; Block, 1986; Block and Duffy, 2008; Carrell, 1989; Duke and Pearson, 2002; Ogle and Blachowicz, 2002; Pang, 2008; Pressley, Gaskins, and Fingeret, 2006).

The two questionnaire items related to the *Repair* category were: 'if I don't understand something, I go back to a point before the problematic part and reread from there' and 'I look up unknown words in a dictionary'.   The former is one of the characteristics that good readers exhibit (Pressley, Gaskins and Fingeret, 2006).   As Kitao and Kitao (1989) stated, the latter is the typical behaviour of Japanese college students during reading and is associated with bottom-up processing.

The four questionnaire items associated with the *Effective* category were: 'the things I do to read effectively are to focus on understanding the meaning of each word', 'getting the overall meaning of the text', 'relating the text to what I already know about the topic', and 'looking up words in the dictionary'.   The first item, 'understanding the meaning of each word', is included in lower level processes.   Decoding is highly automatic in good readers (Field, 2003:25).   If lower level processes make few demands on working memory, it leaves capacity space for higher-level processes since the capacity of human working memory is extremely limited (Pressley and McCormick, 1995:42).   The second item makes considerable demands on working memory.   Good readers who have adequate sight vocabularies that readers do not need to decode can use cognitive capacity for comprehension (Pressley, 2002a:23).   The third item "relating the text to what I already know about the topic" is relevant to the construction of meaning.   The construction of meaning is influenced by schemas that integrate new information into existing knowledge structures (Reznitskaya and Anderson, 2002:320).   Schemas affect how readers comprehend a particular text (Narvaez, 2002:159).   A schema is activated during reading in order to interpret new information.   If the reader lacks the activations requisite for interpreting the information in the text, the reader

may misunderstand or misinterpret the text. Schemas also affect the reader's recall of a text (Narvaez, 2002:160). When a text is inconsistent with the reader's activated knowledge structures, the reader recalls incorrectly (Steffensen, Joag-Dev, and Anderson, 1979). The fourth item is related to bottom-up processing and is a frequent reading behaviour of Japanese students (Kitao and Kitao, 1989). It seems that the participants in this research regard both bottom-up processing and top-down processing in reading as effective, although they may use these items as unconscious reading strategies.

The *Difficulty* category involved the four items of 'things that make the reading difficult are recognising the words', 'the grammatical structures', 'getting the overall meaning of the text' and 'the organisation of the text'. The first two items are associated with bottom-up processing while the last two items are related to top-down processing. This suggests that the participants' attention was directed towards both bottom-up and top-down processing. This tendency is different in upper and lower experimental groups after the intervention. In the upper experimental group, all the four items showed an increase. However, only the last two items saw an increase in the lower experimental group.

Among the four questionnaire items, the grammatical structure is a factor that Iijima (1998) pointed out as one of the most notable characteristics of Japanese EFL learners. Iijima (1998) revealed from the factor analysis of the data obtained from the questionnaire that the Japanese EFL learners paid particular attention to the structural aspect of English. The *grammatical structure* factor is related to recognising the words, the analytical approach to sentence structure, and paying attention to the structural aspect of English, and is typical of Japanese learners who received English teaching focussing on grammar. The *grammatical structure* factor in Iijima (1998) corresponds to *recognising the words* and *grammatical structures* in this research.

Including the *structure* factor, Iijima (2000) extracted four other factors as a result of a factor analysis performed on the obtained data for identifying the characteristics of Japanese EFL learners' reading behaviour. These were: *information integration*, *text information*, *emotional involvement*, and *translation* factors. The *information integration* factor is involved in comprehension and prediction utilizing background knowledge, prediction based on text content, and the confirmation of prediction and interpretation in reading processes. This factor corresponds to *getting the overall*

meaning of the text in this research.   The *text information* factor is related to the summarization of the main points and attention to words to provide a clue as to text organisation.   This factor corresponds to *the organisation of the text* in this research. The *emotional involvement* factor is associated with the reader's opinion and emotions concerning the text content, and feelings for the author's ideas.   This factor is believed to correspond to *questioning the significance or truthfulness of what the author says* in the *Effective* category.   This questionnaire item in the Effective category showed low mean value, which means that the participants do not think that they are able to question the significance or truthfulness of what the author says.   The *translation* factor concerns translating English words and sentences into Japanese.   This factor was not included in the questionnaire items prepared for this research.   If the questionnaire in this research contained this factor, this item might show high mean value since many of the participants received English instruction by the grammar translation method and considerable attention of the participants was devoted to translation.

Isaji (2003) extracted two factors from the analysis of a questionnaire: global understanding and bottom-up processing.   The *global understanding* factor indicates the way of reading with the focus on grasping the outline of the text.   The *bottom-up processing* factor refers to the Japanese learners' awareness of local level reading. Isaji (2003) concluded that although Japanese EFL learners believe that local level reading is the core of understanding a passage, they show global level reading if they are given an appropriate level of passage.   From the previous studies, Japanese EFL learners bring together features of bottom-up and top-down processing.   The fact that the participants' attention was directed towards both bottom-up and top-down processing is consistent with Isaji's (2003) study on Japanese EFL learners' reading behaviour.

Poor readers use attention, which is the cognitive energy or effort to process information separately for decoding, comprehension, and comprehension monitoring (Kahneman, 1973; Samuels, 2006).   According to Automaticity Theory (LaBerge and Samuels, 1974; Samuels, 2002, 2006), it seems that poor readers use attention to decode first.   After the decoding task is completed, the reader's attention is switched to comprehension.   After the comprehension task is done, the student switches attention to comprehension monitoring (metacognition).   In contrast, for good readers, the printed words are recognised with automatic decoding.   With so little attention,

decoding and comprehension monitoring are done simultaneously while comprehension processing takes place at the same time.

As Kitao and Kitao (1989) pointed out, the attention of some Japanese college students was simply directed toward decoding. For the participants from the lower experimental group, their attention might be always directed toward decoding. If this is the case, their attention remained in a struggle with decoding and cannot proceed to the comprehension stage. In L2 reading, as suggested in Grabe (1986) and Grabe and Stoller (2011), vocabulary and grammatical knowledge that is concerned with the formation of a sentence or parts of a sentence such as a clause or a phrase (Shiotsu, 2010) are factors that make reading difficult. In order to understand what they are reading, poor readers should be encouraged to develop their word recognition skills by providing instruction in phonemic awareness and phonics (Pardo, 2010:173). Students may be able to improve not only their accuracy but also their fluency by increasing the amount of practice. I explored the possibilities for what the participant were doing in their minds when reading silently. Further research needs to be done to provide evidence to support these possibilities.

The four items in the *Difficulty* category, 'recognising the words', 'the grammatical structures', 'getting the overall meaning of the text', and 'the organisation of the text', showed an increase in the upper experimental group in the post-intervention questionnaire. I understand that the lower experimental group showed an increase in only the two items, 'getting the overall meaning of the text' and 'the organisation of the text' since their attention may be newly devoted to these items. However, the upper experimental group exhibited a rise in 'recognising the words' and 'the grammatical structures' as well as these items. It would appear that the participants from the upper experimental group have always used their attention to decode and comprehend text simultaneously. When the participants directed too much attention to the organisation of the text during the intervention, they would have less working memory left to process words. Even for good readers, this might happen when they encounter unfamiliar and difficult words that necessitate conscious and deliberate processing (Sinatra, Brown, and Reynolds, 2002). Students will become fluent by engaging themselves in doing deep, repeated reading of the same text to master its contents as well as reading a large amount and wide variety of information (Rasinski and Samuels, 2011:104).

Looking at the analysis results of the questionnaires for the upper experimental group,

the three questionnaire items 2, 21, and 22 exhibited statistically significant differences between the pre-data and post-data.   Item 2, about recognising the difference between main points and supporting details, is related to a reader's perceived ability to read in English.   Item 21, concerning the sounds of the individual words and item 22, regarding pronunciation of the words, are associated with aspects of reading which make the reading difficult.

It is unsurprising that the participants from the upper group expressed greater confidence in recognising the difference between main ideas and supporting details since they received instruction on the paragraph organisation of expository text.   When students read expository texts to learn from texts, they need scaffolding support from teachers to learn how to become aware of and identify main ideas in a given text (Palincsar, 2003).   Readers sometimes read for entertainment and they may unconsciously recognise and generate main ideas from texts.   However, in order to identify main ideas from expository texts that include new or conceptually difficult information, main-idea comprehension requires metacognitive awareness. Metacognition generally refers to thinking about one's own thinking in order to monitor progress toward a particular goal and to assume active control over the strategies needed to accomplish it (Caccamise et al., 2007:391).   Successful readers have an awareness of and control over their own reading process (Brown, 1980).   It is more than probable that the participants from the upper experimental group were deliberately able to apply their metacognitive skills in order to identify main ideas.

It was unexpected that the participants from the upper group reported the difficulties in the sounds of individual words and pronunciation of words that are included in the lower level processing.   The participants from the upper group are clearly distinct from the participants from the lower group in reading performance.   Interviews with some students from the lower group revealed that they actually struggled with word perception.   However, the participants from the upper group did not make a clear statement about the difficulties.

What makes the participants from the upper group have difficulty in recognising the sounds of the individual words and pronouncing words may be the reason why they take a step closer to being fluent readers.   According to Automaticity Theory (LaBerge and Samuels, 1974; Samuels, 2002; Samuels, 2006), non-fluent readers face the problem that there is a limited amount of processing space available for decoding and

comprehension.   They break the task into smaller parts and complete one task before the next task.   They decode the words by directing attention to sounding out words. When the words are decoded, attention is switched to comprehension.   On the other hand, for fluent readers, the amount of attention required for decoding decreases and the decoding task is fast and easy.   For this decoding of fluent readers, the bulk of attention is available for comprehension.

In order to direct the bulk of attention toward comprehension, the decoding task needs to be done automatically.   The faster the participants decode, the larger space in working memory can be available for comprehension.   For example, 300 common words that make up approximately 85% of the words encountered in day-to-day reading must be recognised automatically (Samuels, 2002:170).   It is believed that although the participants from the upper experimental group made efforts to improve their currently possessed reading skills through reading practice during this intervention, they did not decode adequately automatically and the decoding task was not sufficiently fast and easy.   This is a situation where the participants are struggling with the implementation of faster decoding.

Another reason why the participants from the upper group reported the difficulties in the sounds of individual words and pronunciation of words is thought to be due to the limited control over the English language of the participants.   Carrell (1989) noted that the ESL group of more advanced proficiency levels tended to be more "global" or top-down strategies (i.e., those having to do with background knowledge, text gist, and textual organisation) in their perception of difficulty-causing reading strategies.   The Spanish-as-a-foreign-language group at lower proficiency levels tended to be more "local" or bottom-up strategies (i.e., those having to do with sound-letter, word-meaning, sentence syntax, and text details) in their perception of difficulty-causing reading strategies.   The participants from the upper group are supposed to show "global" or top-down strategies.   In this connection, Clarke (1980) suggested that limited language proficiency appears to exert a powerful effect on the behaviours utilised by the readers.   That is, limited control over the English language short-circuited the good readers' system and caused the good readers to revert to poor readers when confronted with a difficult or confusing task in the L2.   From this, the texts that were presented in the intervention might have been difficult for the participants.

Next, let's look at the analysis results of the questionnaire items of the lower experimental group.   Two items were found to be statistically significantly different. One item is related to readers' perceived ability to read in English.   They showed confidence in questioning the significance or truthfulness of what the author says. This reading behaviour is what Block (1986) and Block and Duffy (2008) state as one of the characteristics of good readers.   It is considered that through the instruction the participants were prodded to attempt to know the stated intention of the author from the text.   This change of reading behaviour of the lower experimental group may have exerted a positive effect on the reading performance of the participants.   The participants' average reading comprehension score on the pre-test was 6.0 points.   The average score increased by 5.0 points on the post-test, from 6.0 to 11.0.

With respect to this confidence questionnaire item, Misaki mentioned how she read texts before the intervention.   She focussed on one sentence while reading and could not grasp the meaning of a passage.

> **Misaki**: Although I remembered the content of a passage while reading one
> sentence, when reading further, I couldn't grasp a series of events.   I
> focussed on one sentence.   I would lose my grasp on the content
> along the way and return to the place where I lost my grasp.   I could
> not really grasp the meaning of a passage as a whole.

After the intervention, Misaki made a comment on pricing decision in the "Purpose of Guilds" text.

> **Misaki**: Guilds decide the price of goods and one merchant cannot change the
> price.   All the merchants sell goods at the same price.   One
> merchant does not ruin another's business by selling goods too
> cheaply.   It is fair and equal.

The other item is related to aspects of reading that make the reading difficult.   The item includes the difficulty of grammatical structure.   As Carrell (1989) suggested, for reading in the L2, some of the "local" reading strategies (focusing on grammatical structures, sound-letter, word-meaning, and text details) were positively correlated with reading performance, and readers at lower proficiency levels tended to be more "local" or bottom-up in their perception of difficulty-causing strategies.   Because of their

lower proficiency in the English language, the lower group may have been still dependent on bottom-up skills even after the intervention.   In reading comprehension processes, when words are recognised and the syntax is processed, the meaning of clauses and sentences is constructed (Kintsch, 1998).   Thus, the successful processing of the syntax is essential to the construction of the meaning.

As far as grammatical structure was concerned, when Aoi was asked about the *Purpose of Guilds* text as the post-test of immediate written recall, she presented one question about one of result clauses (Sinclair, 1990:356).

> **Aoi**:   This sentence was difficult.   "Guilds also decided the price of goods so that one merchant could not ruin another's business by selling goods too cheaply."   How is 'so that' used here?

According to the Common Underlying Proficiency model, literacy skills in L1 and L2 are assumed to be interdependent (Cummins, 1979, 1991).   Alexander and Jetton (2000:295) stated that skills are "essential academic habits".   Skills essential for reading are represented in four categories (Hudson, 2007:79-80).   They are: decoding, comprehension, fluency, and critical reading.   In decoding, words are identified, context and knowledge are used to derive meaning from what is read in comprehension, larger sentences and phrases are seen as wholes in fluency, and the reader can analyze, synthesize, and evaluate what is read in critical reading.   The participants are already literate in their L1 and can process the syntax in their L1 successfully.   Further, in Japan, most English lessons in junior and senior high schools are dedicated to "learning of grammar rules and item-by-item (rather than contextualised) vocabulary" (Thompson, 2001:309).   Nonetheless, the syntax processing skills in L1 are unlikely to be transferred to L2, partly because word order is different between the English and Japanese languages and their syntax processing skills in L2 are less well-established during the English lessons.

Word order is a major contributor to comprehension in English (Grabe, 2009:202). English is usually referred to as an SVO (subject-verb-object) language since a subject usually precedes a verb and an object usually follows the verb in a declarative sentence (Kuo and Anderson, 2008:49).   Japanese is generally referred to an SOV (subject-object-verb) language because the subject usually precedes the object and the verb usually follows the object in the declarative sentence (Odlin, 1989:44).   The

language transfer might not take place since Japanese learners of English do not produce writing in which the verb is wrongly placed at the end of a sentence, like the way they write in Japanese (Rutherford, 1983:367). Language-specific skills like spelling patterns and grammatical rules would be less-transferable ones (Kern, 2000:127).

General cognitive processes that are involved in hypothesis-testing and integration of meaning would be more transferable across languages (Kern, 2000:127). The article system in English is the last grammatical item to transfer. Because the Japanese language does not have articles, for Japanese learners of English, the articles must be learned as a new grammatical rule (Gass and Selinker, 2008).

Another aspect of reading that makes the reading difficult is covered in rhetorical and organisational styles of text. Hinds (1983a) claimed that there are language-specific or preferred organisational patterns that can be found in L1 production. The traditional rhetorical pattern of Japanese text is called *ki-shoo-ten-ketsu* (Hinds, 1983b). Hinds (1983b) examined a popular newspaper column that appears daily in the *Asahi Shinbun* and recognised that the articles were produced by Japanese professional writers following the *ki-shoo-ten-ketsu* pattern. Meanwhile, Miura's (2007) study revealed that many Japanese students learned this pattern at elementary and junior high school but do not necessarily follow this pattern when writing their composition in their L1. Her research results seem to reflect the trend in recent years in Japan that what students learned in classes has not been firmly acquired.

A prior knowledge of text structure

The open-ended questions part of the questionnaire revealed that as a whole, more than half of the participants lacked knowledge of the text structure of expository text. There were about the same number of participants who knew text structure as participants who did not in the experimental group. However, in the control group, there were twice as many participants who did not know the text structure as there were participants who did. It was a coincidence that more participants in the experimental group knew it than those in the control group. As for the participants who knew about text structure, they learned it at cram school or *juku*, special private schools that offer lessons conducted after regular school hours and on the weekends. The others learned it at high school.

As far as I can tell, there was no information about what extent Japanese college students have the knowledge of text structure. I did not expect that two fifths of the participants had learned the text structure before entrance into college. Surprisingly, only a few participants had already learned it at junior high school. One participant whose English ability is high consulted a reference book about text structure. On the other hand, some participants had never heard about English paragraph organisation. To know is one thing, to practice another. Even for the participants who already have the knowledge, providing them with adequate training time involving systematic teaching and practice would be significant for better understanding of expository texts.

What a disproportionate number of the participants who have knowledge about text structure between the experimental group and the control group might have made to the results of the reading comprehension tests and recall tests is explored. In the pre-test measurement of reading comprehension, since there was no significant difference between the experimental and control groups ($F(1, 78)=0.041$, $p>0.5$), homogeneity of both groups in the phase of the pre-reading comprehension test was successfully established. The participants who have already known about text structure probably would not benefit from the instruction as much as the participants who did not know about it. In the post-test measurement of reading comprehension, the experimental group showed a statistically significant increase ($F(1, 78)=13.07$, $p<.01$). A possible reason for an increase in test scores on reading comprehension tests is assumed to be due to the participants who did not know about text structure. They may reap most of the benefits from the instruction. Regarding the participants who did not have knowledge about text structure, five more participants were involved in the control group. If the control group would receive the instruction, test scores on reading comprehension might have been raised further.

In the recall tests, both the lower and upper experimental groups increased the amount of information recalled for the recall performance of the *comparison* organisation, although there was no statistically significant difference ($F(1, 76)=1.949$, $p= .129$). In the identification of the *comparison* organisation, the number of the participants who could identify the *comparison* organisation significantly rose. Almost half the participants in both the lower and upper experimental groups did not know about text structure. They would contribute to an increase in the amount of information recalled and identification of the organisation. If the control group received the instruction, a

noticeable increase may be yielded in the recall of the *comparison* organisation.

Only the lower experimental group increased the amount of information recalled for the performance of the *problem/solution* organisation, although there was no statistically significant difference (F(1, 76)=0.500, p=.683).   In the proportion of the identification of the *problem/solution* organisation, there was also no significant difference.   Among the four groups of the lower control, lower experimental, upper control, and upper experimental, the number of the participants who could identify the *problem/solution* organisation comparatively rose in the lower experimental group.   The lower group appears to have been enriched by the influence of the instruction.   When paying notice to the lower groups, the number of the participants who did not know about text structure in the experimental group was the same as those in the control group.   A disproportionate number of the participants who have the knowledge of text structure between the experimental group and the control group would have little impact on the recall of the *problem/solution* organisation.

Table 5.1 Learner priorities in English reading (N=105)

Questionnaire item	Rank order
A large vocabulary	1
being willing to tolerate not understanding every word	2
a good knowledge of grammar	3
reading a lot for practice	4
reading slowly and carefully	5
reading aloud	6
reading a wide variety of things	7
using background knowledge	8
skill in using a bilingual dictionary	9
skill in translating into Japanese while reading	10
using other clues such as pictures, titles, and so on	11
thinking about the topic before reading	12

Source: This list is drawn from Ihata (2007).

Ihata (2007) examined what is important in reading comprehension in the ESL reading from the aspect of students (see Table 5.1).   Participants included three groups of first year, third year, and fourth year students at a Japanese college.   The results of the

survey on learner priorities for the three groups showed that vocabulary was unsurprisingly everyone's chief concern with knowledge of grammar trailing some way behind.   Vocabulary inevitably plays a crucial role in any language learning. Automatic and efficient use of syntax is a skill used by good readers (Weaver, 2002:62). Grammar was pushed into third place by willingness to tolerate not understanding every word, as Ihata (2007) suggested, which may be due to the partial influence of increasing focus on L2 reading instruction that emphasises tolerating ambiguity that students should use in order to grasp the gist of what they read.   Since using background knowledge that includes formal schemata is ranked comparatively low, it reflects students' thinking that formal schemata are unimportant.   The next section considers what is important in reading comprehension in the ESL reading for teachers.

5.4 The Effect of the Teaching of Text Structure for Participants

The second research question was directed to an examination of whether the scores of reading comprehension tests improve after the teaching of text structure for the experimental group.   In order to investigate the effects of the teaching of text structure for the experimental group, a reading comprehension test was conducted for both the experimental and control groups before and after the instruction.   The scores of the reading comprehension tests were analysed using mixed between-within subjects ANOVA.

As demonstrated in Chapter 4, the interaction effect between test and group was statistically significant since the value for Wilks' Lambda for the interaction effect between test and group was 0.857, with the Sig. level for Wilks' Lambda was .001, which was less than an alpha level of .05.   The Partial Eta Squared value for the interaction effect was 0.143.   This result suggested a large effect size, which meant that the change occurring in the reading comprehension performance over time for the two groups was not the same.   The impact of the two independent variables of test and group on the participants' reading comprehension performance was strong.   There was a substantial main effect for the test, Wilks' Lambda=.82, $F(1, 78)=17.24$, $p<.0005$, partial eta squared=.18, with both groups showing an increase in reading comprehension test scores across the two time periods (see Table 4.20 in Chapter 4 for detailed information).   The scores of the reading comprehension tests for the experimental and control groups showed an increase in the post-test; however, only the scores of the experimental group indicated a statistically significant increase.   The

relationship between the intervention and reading comprehension performance was strong.   It is contemplated that the students from the experimental group gave the highest possible yield from the teaching of text structure and the teaching was able to greatly improve the students' reading comprehension.

Only reading comprehension scores for the upper control group fell in the post-test. Texts used for reading comprehension tests were taken from second grade EIKEN tests that show MEXT benchmarks for high school graduates.   In order to meet this benchmark, vocabulary and syntax are controlled by EIKEN.   One of the factors that led to a drop in reading comprehension scores in the post-test is discussed in terms of topic familiarity.   Four text topics covered in the pre-test were (a) raising fish in deserts, (b) decreasing the number of days that students have to attend classes, (c) eating shark meat, and (d) aid for families to educate their daughters.   These text contents are not considered difficult to understand.   However, two topics addressed in the post-test such as (a) an interesting festival, the Battle of the Oranges and (b) a new program called Two-for-One in Peru seem difficult to link with the participants' prior knowledge.   The topic (a) described the past and the present of a festival held in Italy. This festival called the Carnival of Ivrea or the Battle of the Oranges.   The topic (b) described a new program called Two-for-One carried out by the Peruvian government. This program is for children who come from poor families that cannot afford to buy books.

When readers try to comprehend, there is a back-and-forth interaction between their knowledge of the topic and the text.   Prior knowledge and previous experience with the topic affect students' construction of meaning.   In the post-test, the participants who did not possess any prior knowledge about a festival in Italy and a new program in Peru might not have easily guessed or predicted what the texts were about.   It is possible to guess or predict text content not only by topic familiarity but also by reading the title, the headings, and glancing quickly through the text (Farrell, 2009).   Even so, topic familiarity would have exerted a certain influence on students' comprehension.

Using the knowledge of text structure is a good method for a reader wants to know what a writer is trying to tell the reader (Meyer and Poon, 2001:146).   Readers who use the knowledge of text structure allegedly read the text with the knowledge that authors organise texts in predictable ways (Meyer, Talbot, Poon, and Johnson, 2001:234). Using this textual knowledge, readers can build mental representations similar to the

text's organization of important ideas. The instruction about text structures in this research, as suggested by Meyer, Young, and Bartlett (1989), exerted positive effects on understanding of text. The instruction taught the participants to organise information and to identify rhetorical organisation in the text through the practice of both paragraph structure and rhetorical organisation. It would appear that the instruction in this research helped the participants organise the information of the text in reading comprehension tests, increase understanding of the texts, and recall information available in the texts.

When the intervention took place, the use of text structure would not reach the skill level for most of the participants. It would appear that the students from the experimental group benefitted from the explicit teaching of the knowledge. The knowledge may be learned in both achievement and metacognitive awareness of what readers are doing when reading expository text (Pressley et al., 1992). Metacognition must take place for successful reading (Samuels, Ediger, Willcutt, and Palumbo, 2005:44). The metacognitive awareness must have been promoted. From the questionnaire survey in this research, although approximately half of the participants reported that they knew about the text structure, it differed in the degree of their knowledge, from having heard about the term *text structure* somewhere to consulting a reference book to know more about text structure. After the intervention, the use of textual knowledge appeared to lead to a skill through the practice of using the textual knowledge. Whether this supposition is correct will be examined by analysing interview data.

A reading strategy is defined as "a cognitive or behavioural action that is enacted under particular contextual conditions, with the goal of improving some aspect of comprehension" (Graesser, 2007:6). Using the textual knowledge is regarded as a reading strategy. Referring to effective strategy training, Grabe (1991:393) pointed out that variables which influenced strategy training results were: the duration of training, clarity of training procedures, student responsibility, and strategy transfer. Strategy transfer refers to the learners' ability to generalise a strategy learnt in connection with a specific task to other related tasks (Chen, 2007:21).

Firstly, the duration of training is considered, compared with previous research. Little research had been done in order to investigate the relationship between training and the understanding of expository texts in L1 (see Table 5.3) with even less research having

been done for Japanese participants in the Japanese L2 context as shown in Table 5.4.

In the L1 research that involved text structure interventions, the training period ranged from 4 hours (Hall, Sabey, and McClellan, 2005) to 10 hours (Meyer et al., 2002). The training period in four other studies came between them: 6.75 hours (Williams et al., 2005), 7.5 hours (Meyer, Young, and Bartlett, 1989) and 9 hours (Meyer et al., 2001; Meyer and Poon, 2001).

Table 5.2 Text structure interventions in L1

L1 research	Teaching period and rhetorical organisation
Meyer, Young, and Bartlett (1989)	The training program included five sessions over two weeks. Each session lasted one and a half hours. (7.5 hours) Five text structures, *description*, *sequence*, *causation*, *problem/solution*, and *comparison*.
Meyer and Poon (2001)	9 hours of instruction. Structure strategy: *description*, *sequence*, *causation*, *problem/solution*, and *comparison*.
Meyer et al. (2001)	The 6 training sessions were spread over three weeks. Each session lasted one and a half hours. (9 hours) Five structures: *description*, *sequence*, *cause/effect*, *problem/solution*, and *comparison*.
Meyer et al. (2002)	Three times a week for 20 minutes each week of the 10-week program (10 hours). Five structures: *description*, *sequence*, *cause/effect*, *problem/solution*, and *comparison*.
Hall, Sabey, and McClellan (2005)	The teacher met with second graders for 20-25 minutes/two or three times per week during the 6 weeks of instruction (4－7.5 hours). The program contained the *compare/contrast* expository text.
Williams et al. (2005)	The program was taught in 15 sessions, 2 per week. It consisted of series of 9 lessons (45 min each). 6.75 hours in total. The program contained the *compare/contrast* expository text.
Williams et al. (2009)	The program consisted of 12 lessons, taught in 22 sessions (45 min each). 16.5 hours in total. The program contained the *compare/contrast,* and *pro/con* expository text.

The text structure interventions in L1 exerted a positive effect on comprehension.

Instruction on text structure increased the amount of information retained (Meyer et al., 2001; Meyer et al., 2002; Meyer, Young, and Bartlett, 1989). Participants who received text structure training reported positive changes in reading and increased the amount of information retained as well as recall of the most important information (Meyer and Poon, 2001). The text structure program (*compare/contrast*) improved students' ability to comprehend *compare/contrast* texts and enabled students to demonstrate transfer to uninstructed *compare/contrast* texts (Williams et al., 2005).

In the L2 research that included text structure interventions, the training time in the three studies shown in Table 5.4 came to an average of 5 hours as a whole. The text structure interventions in the three studies could improve participants' reading comprehension. The training time of five hours can be one norm for the improvement of comprehension in the L2 context. This research provided 5.3 hours of text structure instruction to participants who were then able to improve their reading comprehension performance.

Table 5.3 Text structure interventions in L2

L2 research	Teaching period and rhetorical organisation
Carrell (1985)	Training was conducted during a one-week period for five successive one-hour sessions. The training covered four major expository organisational types: *comparison*, *causation*, *problem/solution*, and *collection of descriptions*.
An (1992)	The training included 5 one-hour sessions. Two passages of expository text (*comparison* and *problem/solution*) were used for pre-, post-, and delayed tests. Four basic types of text structures were included in training sessions (*description*, *cause/effect*, *problem/solution*, and *comparison*).
Nakamura and Hirose (2009)	The training was conducted once weekly, ten times in total. Each session lasted 30 minutes. The training covered content schema and formal schema. The formal schema included main ideas and four basic types of text structures: *description*, *cause/effect*, *problem/solution*, and *comparison*.

The training program in the L2 research covered four basic types of text structures: *description*, *cause/effect*, *problem/solution*, and *comparison*. Approximately half of the participants have heard of the term *text structure* but the degree of their perception

of text structure varied considerably.   Taking into consideration time allocated for the teaching of text structure in English classes that focus on reading for first year college students, the types of rhetorical organisation are restricted to four types: *description*, *cause/effect*, *problem/solution*, and *comparison*.

Texts used for the intervention were primarily texts that consist of one paragraph.   It is usually possible to recognise one or two overarching rhetorical structures that organise the text information, and there are usually two or three rhetorical structures that organise subsections of a longer text (Grabe, 2009:251).   I adopted one-paragraph texts as the teaching material.   In regard to this point, Jiang and Grabe (2009:28) noted that rather than trying to determine the overarching discourse organisational pattern at the outset, it is usually effective to find readily identifiable sections.   As described in Section 3.7, graphic organisers (GOs) were used to find the main ideas and to identify and make use of the rhetorical patterns of expository texts.   In order to use GOs, simplicity is a key point.   I suppose that texts comprising one paragraph are effective for the participants who have never leant text structure.   In texts comprising two or more paragraphs, expository writers may even change the text structure as frequently as every paragraph in order to address the content appropriately (Keene, 2008:181).   Any benefits from teaching rhetorical structure may be dependent upon the length of the reading text.   As Keene (2008:188) suggested, learners should read long texts or difficult (containing hurdles such as insufficient schema for text structures) texts utilizing knowledge about text structure that the learners learnt after key concepts are understood.

In the L1 training research, the types of rhetorical organisation taught were not the only the four types, but one other added type to the four basic types, and thus came to five organisational structures that include *description*, *sequence*, *causation*, *problem/solution, comparison*.   The added type is *sequence* which means ideas grouped on the basis of order or time (Meyer et al., 2002:490).   The main idea embraces the procedure or is history related (e.g., recipe procedure, history of Civil War battles).   Alternatively, a program aimed exclusively at one type of rhetorical organisation such as *compare/contrast* was used.   The training programs in Hall, Sabey, and McClellan (2005), Williams et al. (2005), and Williams et al. (2009) were geared toward primary school children.

Text structure training research has also been done across cultures and languages.   As

shown in Table 5.5, the training period that involved text structure interventions was 5 hours (Raymond, 1993) and 4.2 hours (Leon and Carretero, 1995). These two studies indicated that the experimental group scored higher on the post-test than the control group. Leon and Carretero (1995) further indicated that the participants in the instructional program transferred their newly acquired knowledge to a text with a structure which had not been taught.

Table 5.4 Text structure interventions across cultures and languages

Research studies	Teaching period and rhetorical organisation
Raymond (1993)	The experimental group received 5 hours of training. Participants read texts for pre-test and post-test in French, but recalled them in English. The training procedures followed the same sequencing as in Meyer, Young, and Bartlett (1989). The training covered five major expository organisational types: *description*, *collection*, *comparison*, *causation*, and *problem/solution*.
Leon and Carretero (1995)	The training included 5 sessions. Each session lasted 50 minutes. The text structure intervention was given in Spanish. The training program included three text structures, *description and collection*, *causation*, and *problem/solution*.

The types of rhetorical organisation taught in the training program across cultures and languages were similar to L2 research. The study of Leon and Carretero (1995) included three types of rhetorical organisation: *description and collection*, *causation*, and *problem/solution*. Raymond's (1993) study covered five major expository organisational types: *description*, *collection*, *comparison*, *causation*, and *problem/solution* in the training sessions. The two types of *description* and *collection* were combined into one type of rhetorical organisation in the previous studies (An, 1992; Carrell, 1985). Actually, the types of rhetorical organisation dealt with in their instruction are the same number or less than the types dealt with in the L2 research.

This research was conducted as mixed methods research with quantitative research emphasised. Three research instruments consisting of questionnaires, reading comprehension tests, and immediate written recall tests were used for the pre-test and post-test. In addition, interviews were carried out for extracted participants in

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conjunction with the recall tests. Interventions were implemented in seven teaching sessions. Table 5.6 contains the four types of rhetorical organisation and their associated cue words (Almasi, 2003:141), which were taught in this teaching program.

Table 5.5 Rhetorical organisation of expository text

Pattern	Description	Cue words
Description	The author describes a topic by listing characteristics and features.	*for example, characteristics are*
Comparison	The author explains how two or more things are alike and/or how they are different.	*different, in contrast, alike, same as, on the other hand*
Cause/effect	The author lists one or more causes and the resulting effect or effects.	*reasons why, because, as a result, consequently*
Problem/solution	The author states a problem and lists one or more solutions for the problem.	*problem is/dilemma is/puzzle is solved, yet*

5.5 The Effect of the Teaching of Text Structure for Good and Poor Readers

Stimulated recall interviews were carried out in order to reinforce the quantitative data of the immediate written recall tests. After the completion of each of the written recall tests, face-to-face interviews with six extracted participants were conducted about how they recalled information from the text when taking the immediate written recall tests.

Table 5.6 The three extracted participants from the experimental group

Names of participants (pseudonyms)	Shunichi	Misaki	Aoi
Gender	Male	Female	Female
Age	19	18	18
Scores of reading comprehension (pre-test, post-test)	20 (pre-test) 20 (post-test)	11 (pre-test) 5 (post-test)	9 (pre-test) 9 (post-test)
An affiliated group	Upper experimental	Lower experimental	Lower experimental

According to their statements, Ryo and Jungo entered the university through the

recommendation system for athletes and did not take enough time to learn English at high school because sports were the centre of their school life and much time was devoted to practicing sports, not to English language learning.

Table 5.7 The three extracted participants from the control group

Names of participants (pseudonyms)	Ryo	Kou	Jungo
Gender	Male	Male	Male
Age	18	19	18
Scores of reading comprehension (pre-test, post-test)	5 (pre-test) 5 (post-test)	8 (pre-test) 8 (post-test)	7 (pre-test) 7 (post-test)
An affiliated group	Lower control	Upper control	Upper control

The third research question was to assess the degree to which the teaching of text structure affects the participants who belong to the lower group of the experimental group in comparison with the upper group.   The scores of the reading comprehension tests were analysed using a mixed between-within subjects ANOVA in order to assess the statistical significance of the resulting difference among the four groups of upper experimental, lower experimental, upper control, and lower control.

In addition to the significant change in scores between the experimental and control groups, in the four groups of lower experimental, upper experimental, lower control and upper control, there was statistically significant interaction between test and group, Wilks' Lambda=.680, $F(3, 76)=11.942$, $p<.005$, partial eta squared=.320, suggesting that the effectiveness of the intervention was apparent.   This result suggested a very large effect size.

The improvement of test scores for reading comprehension was obtained in three groups of upper experimental, lower experimental, and lower control.   However, a statistically significant increase in the scores from the pre-test is achieved only in the lower experimental group.

The reading test scores of the upper experimental and lower control groups moderately increased.   Although the increase of the upper experimental group is thought to be due to the intervention, a solid reason for the increase of the lower control group was not found.

Possible reasons for why the reading test scores of the lower control group moderately increased might be due to vocabulary, syntax, and topic familiarity.   Texts used for the reading comprehension tests were taken from the reading section of an EIKEN second grade test.   Grade 2 shows the MEXT benchmark for high school graduates. Vocabulary and syntax were controlled by EIKEN.   Four texts were used as the post-test.   The titles were: *Australian Lifesavers*, *The Battle of the Oranges*, *I Can Do Anything*, and *Two-for-One*.   As discussed earlier, topics such as (a) an interesting festival, the Battle of the Oranges and (b) a new program called Two-for-One in Peru may be difficult to link with the participants' prior knowledge.   As can be seen, no particular reason for the lower control group to increase the reading comprehension scores was found.   It would appear to be incidental that the scores of the lower control group increased.

Meyer, Brandt, and Bluth (1980) noted that the use of the text structure strategy was a characteristic of skilled L1 reading.   As Raymond (1993) suggested, the use of the text structure strategy is a characteristic of skilled L2 reading.   Arising from exploration of the pre-questionnaire data, approximately half of the participants from the upper experimental group knew about the text structure while one third of the participants from the lower experimental group did.   Concerning the participants who did not know anything about text structure, compared with the difference in test scores on reading comprehension between the upper experimental and lower experimental groups, the participants who could increase test scores in the lower group were double those in the upper group.   It would appear that the lower group had much to gain from the intervention and this gain showed considerable progress in the test score of reading comprehension at the post-test.

The quantitative data were reinforced by the interview data.   When I interviewed Misaki who belonged to the lower experimental group and reported that she did not know anything about text structure in the questionnaire after the completion of the post-recall test, she mentioned the usefulness of text structure to permit the clarification and memory of text contents.   Actually, Misaki was one of the participants who improved test scores on reading comprehension.   The participants have learned how expository text is structured and would have developed the ability to organise and remember the key information in the text.

Interviewer: You have learned some rhetorical patterns.

Misaki: I thought that the information could be easily processed and retrieved when I noticed the organisational pattern of the text and organised the information.   Even if I can translate English sentence by sentence into Japanese, I cannot remember the text content well when it is not clearly organised.

Aoi, who reported that she knew about text structure, made the following statement about the possibility of understanding improvement by text structure.   Aoi knew about text structure but did not identify the rhetorical pattern by herself in high school English class.   This suggests that practice is required in order to be able to identify rhetorical patterns without any help from a teacher.

Interviewer: Did you learn rhetorical patterns such as *comparison* and *problem/solution* when you were a high school student?

Aoi: Yes, I did.

Interviwer: Did you check not only Japanese translation but text structure each time when reading expository text at high school?

Aoi: A teacher often mentioned text structure.

Interviwer: Was knowledge of rhetorical patterns useful in understanding text?

Aoi: When my teacher told me that this paragraph was organised by *problem/solution*, I realised the rhetorical pattern.   But I could not realise how a paragraph was organised by myself.   When reading a text, I did not give importance to the identification of rhetorical patterns.   I think that if I can identify rhetorical patterns, I can obtain an in-depth understanding of the text.

Shunichi who belonged to the upper experimental group recognised the importance of understanding text organisation and mentioned that even if he could translate English sentences into Japanese, he could not gain an understanding of the text without understanding text organisation.

Interviewer: You have read some paragraphs that were organised in *problem/solution*, *comparison*, *causation*, and *description*

patterns.　Have you ever read text with a conscious awareness of rhetorical patterns?

Shunichi:　Let me see...Well, when reading expository text, I usually follow prose and I think that here and here two parts are compared.　When reading text, I read the text from the beginning.　For example, when I finish reading one section, I become aware that this part and this part are compared. When solving the problems on a test, for example, I read a problem statement first and then the passage.　For instance, a problem statement says that you should write things that compare here and here.　A problem statement can indicate a rhetorical pattern.　As a problem statement says, there are some parts to compare in the passage.　I have a consciousness of having to look for the parts.

Interviewer:　When reading expository text, you usually read from the beginning.　When you finish reading some parts, you become aware of text organisation.

Shunichi:　Well, in the case of expository text, a book, not a story, at the beginning of the book, in a way, it is described that this book makes a comparison between something and something.　At that point, I read text looking for comparison and find that part.　Oh, is that so?　I may be conscious of rhetorical organisation.

Interviewer:　What about reading with an awareness of text organisation?

Shunichi:　Let's say, in a way of reading to translate English text sentence by sentence into Japanese without understanding text organisation, I can translate English text sentence by sentence into Japanese but cannot understand the meaning of the English text at the end.

It was expected that strategy transfer (Grabe, 1991) would take place.　The participants' ability to organise information in expository text improved during the instructional program.　The participants maintained this ability until the post-test of reading comprehension.　It is contemplated that what the participants learned about

text structure in this study would transfer to new texts that the participants encountered in the post-test of reading comprehension.

Structural information is usually processed automatically for comprehension (Williams, 2008:172). More than half of the participants lacked the knowledge of the text structure of expository text (see Sections 4.3 and 5.3). Even if some knowledge about text structure was possessed, successful processing of structural information depends on whether the knowledge can be used automatically. For that purpose, text structure instruction should make a practice of applying the knowledge of text structure to text comprehension. It would appear that the participants who learned to use the text structure successfully were better able to understand the information in the text.

5.6 The Effect of the Teaching of Text Structure for Recall

The fourth research question investigated the relationship between the teaching of text structure and the amount of information recalled. The data was collected from immediate written recall tests in which each test included one of the four types of rhetorical organisation. The immediate written recall tests for all the participants were prepared using two types of rhetorical organisation. One is the *comparison* organisation. The other is the *problem/solution* organisation. The immediate written recall tests for six extracted participants were created using two other types of rhetorical organisation. Each of the recall tests involved either of the types of *causation* and *description* respectively. The written recall protocols were analysed using a mixed between-within subjects ANOVA.

5.6.1 *Comparison* Organisation

The impact of intervention for the experimental group on participants' amount of information recalled was assessed across two time periods (pre-intervention and post-intervention). There was no statistically significant interaction between the recall test and the group, Wilks' Lambda=.929, F(1, 76)=1.949, p=.129, partial eta squared=.071. There was a substantial main effect for the recall test, Wilks' Lambda=.860, F(1, 76)=12.364, p<.005, partial eta squared=.140, suggesting that the effectiveness of the intervention was not significantly recognised although the scores of three groups of upper experimental, lower experimental, and lower control increased.

The amount of information increased at the post-test for the three groups of upper experimental (mean scores from 5.6000 to 6.7000), lower experimental (mean scores from 3.500 to 4.5500), and lower control (mean scores from 1.0556 to 2.8889) while the scores of the upper control group decreased slightly (mean scores from 4.0455 to 4.0000).

With respect to the rhetorical organisation of *comparison*, the main expectations I had before analysing the recall data was that the scores of the upper and lower experimental groups would improve. However, the lower control group unexpectedly produced an increase in addition to the upper and lower experimental groups.

The two *comparison* texts that were used for the pre- and post-recall tests indicated almost the same readability indices. The *Computer* text had a rating of 50.9 on the Flesch Kincaid Reading Ease index. The *Nuclear Power Plant* text had a readability index of 52.1. Readability formulae are based on only two factors, vocabulary and syntax (Davies, et al., 1999:163). It is safe to assume that the two texts are regarded as standard and the text difficulty differs only slightly between the *Computer* text and the *Nuclear Power Plant* text in terms of vocabulary and syntax.

Duke, Pearson, Strachan, and Billman (2011:70) provided *both*, *alike*, *unalike*, *but*, *however*, and *than* as common cue words in the rhetorical organisation of *comparison*. In addition to these words, Almasi (2003:141) offered other cue words such as *different*, *in contrast*, *same as*, and *on the other hand*. In the *Computer* text used as the pre-test, there were no such cue words. In the *Nuclear Power Plant* text used as the post-test, one cue word, *different*, as in *different views*, was involved. From the viewpoint of cue words, there was not much difference between the *Computer* text and the *Nuclear Power Plant* text.

It is believed that there were differences in the level of topic familiarity between the lower control group and the experimental group. In L2 reading research, readers who were familiar with text content appeared to enhance their overall comprehension (Carrell, 1987). Regarding comprehension and retention, Pritchard (1990) suggested that greater topic familiarity leads to greater text comprehension and retention of the text information. It would appear that all the participants had a certain level of background knowledge on nuclear power plants. This is because a residents' poll was held a few years ago in the area that the participants live in about the construction of a

nuclear power plant and the participants had great interest in nuclear power plants.   To cite a case, Ryo, from the lower control group, is thought to have familiarity with this topic.

Interviewer: I asked you to read the "Nuclear Power Plant" text.   How was this text?

Ryo: This was a little difficult.

Interviewer: How were the vocabulary words?

Ryo: There were many words that I didn't know.

Interviewer: Did you grasp the meaning of "views"?

Ryo: "風景" (scenery).

Interviewer: There is a precise meaning.   Here this word means "見方、考え方、見解" (point of view).   You had many words that you didn't know.   How did you read this text?

Ryo: I read it by rule of thumb.   I thought this text was closely linked to nuclear power plants.

The experimental group also appears to possess a prior knowledge of nuclear power plants and it was not really necessary to activate formal schemata because the use of the knowledge of text structure is not useful in the text where prior knowledge is available (Meyer and Poon, 2001; Voss and Silfies, 1996).

From the analysis of the recall protocols, I realised that some of the participants from the lower control group had understood text organisation.   These participants read the text paying attention to some particular words or phrases.   The words or phrases were *advantages*, *an important source of energy*, and *does not pollute the air* in the first paragraph and *not favoured*, *were afraid of*, *worried*, and *feared* in the second paragraph.   The participants understood the *comparison* pattern of the text with the aid of these key words or phrases.   Additionally, they could make a conjecture in

understanding the meaning of sentences.

The upper control group score declined slightly at the post-test of recall. The difference is very small or negligible. The participants from the upper control group supposedly addressed the task of recall both at the pre-test and post-test, drawing on everything they know. If they received some additional knowledge through the intervention, they would increase their recall scores.

The impact of intervention for the experimental group on participants' amount of information recalled was assessed across three time periods (pre-intervention, post-intervention, and delayed follow-up). There was statistically significant interaction between the recall test and the group, Wilks' Lambda=.104, $F(2, 3)=12.871$, $p<.05$, partial eta squared=.896. There was a substantial main effect for the recall test, Wilks' Lambda=.134, $F(2, 3)=9.677$, $p<.05$, partial eta squared=.866, suggesting that the effectiveness of the intervention was recognised. The value of partial eta squared obtained for test in this study was 0.896. Using the common guidelines (Cohen, 1988), this result suggested a very large effect size.

Although there was no statistically significant difference between the pre-test and the post-test for all the participants, statistically significant differences were observed for the extracted participants. The amount of information recalled of the experimental group rose sharply at the post-test and was maintained to some extent at the delayed test while a gentle rise curve was observed in the control group. In the delayed test, Shunichi could quickly identify the rhetorical pattern of this text taking notice of a topic sentence that involved a cue word, *contrasting*.

> **Interviewer**: You read the "The Early Railroad" text in one minute.
>
> **Shunichi**: Since this text did not require some expertise, I could read this text smoothly. At the beginning, as it is written, "There are two contrasting views", in the case of this text, if anything, it is organised by comparison. I thought that the writer of this text wanted to take the tone of an argument that this was perhaps, as a text, you know, although there was opposition, the early railroad developed in this manner.
>
> **Interviewer**: Was this text easy to read?

Shunichi: Yes, it was.

Misaki wondered whether this text was organised by comparison or description. But as she read further, she was able to identify the rhetorical pattern of this text. This identification of the rhetorical pattern was made not by topic familiarity or cue words but by an understanding of paragraph organisation.

Interviewer: What is the rhetorical pattern of this text?

Misaki: I think it is either of comparison and description. I think it is comparison.

Interviewer: Where did you think it meant comparison?

Misaki: At the beginning, convenience is mentioned. In the second half, it is mentioned that railroads were not popular with everybody. It makes a loud noise. It produces a physical effect. I thought the good and bad things were written down.

After reading the "The Early Railroad" text, when I interviewed Aoi, she stated that whether the text content can be understood or not depends on the length of the sentence and some familiarity associated with a word. Additionally, whether all the English sentences can be translated into Japanese is very important for Japanese learners.

Interviewer: Did you grasp the meaning of the whole text?

Aoi: It is a little bit undetermined. To be honest, I could translate English sentences into Japanese, but I could not really get the outline of the text.

Interviewer: You could translate English sentences into Japanese, but you didn't grasp the meaning of the whole text.

Aoi: If I am told to say the text content succinctly, I can't.

> **Interviewer**: Does this text raise the topic of American railroads?
>
> **Aoi**: I feel that I can't grasp the meaning of the whole text since I can't translate two or three English sentences into Japanese consecutively.

I keenly realised the importance to familiarise signals (Meyer et al., 2002:490) or clue words (Williams et al., 2009:5) and to allow students to get used to identifying those words in the text structure instruction. Aoi failed to grasp the meaning of the whole text since she couldn't identify a clue word "contrasting" in the topic sentence of the first paragraph in the "The Early Railroad" text.

The amount of idea units recalled in the control group slightly increased at the delayed test. One of the possible reasons for this may be explained in terms of text difficulty (vocabulary and syntax). The Flesch Kincaid Reading Ease readability index showed a rating of 52.1 at the post-test and a rating of 53.8 at the delayed test. The delayed test score was slightly higher than the post-test score. This means that the *Early Railroad* text at the delayed test is easier than the *Nuclear Power Plant* text at the post-test. This text easiness may make the selected participants in the control group increase the amount of idea units recalled even if they did not receive the intervention.

From the viewpoint of cue words, the *Nuclear Power Plant* text and the *Early Railroad* text only had one cue word. In the *Nuclear Power Plant* text used as the post-test, one cue word, *different,* as in *different views*, was involved. The *Early Railroad* text that was used as the delayed test contained one cue word: *contrasting,* as in *two contrasting views*. Since both texts contained the same number of cue words, it is highly unlikely that cue words influenced the amount of information recalled at the delayed test.

5.6.2 *Problem/Solution* Organisation

The impact of intervention for the entire experimental group on participants' amount of information recalled was assessed across two time periods (pre-intervention and post-intervention). There was no statistically significant interaction between recall test and group, Wilks' Lambda=.981, $F_{(1, 76)}$=.500, p=.683, partial eta squared=.019. There was a substantial main effect for recall test, Wilks' Lambda=.983, $F_{(1, 76)}$=1.328,

p=.253, partial eta squared=.017, suggesting that the effectiveness of the intervention was not recognised although the scores of the lower experimental group increased.

There are some reasons that can be given as to the failure to find any statistically significant change on the *problem/solution* recall tests for the higher and lower ability groups. Concerning the Flesch Kincaid Reading Ease readability index, the *Air Pollution* text used as the pre-test got a readability index of 60.8 and the *Water* text used as the post-test obtained a readability index of 55.0. The post-test score was lower than the pre-test score. This means that the post-test text was a bit more complicated than the pre-test text in terms of vocabulary and syntax.

Regarding the cue words, Duke, Pearson, Strachan, and Billman (2011:70) provided *because*, *in order to*, *so that*, *trouble*, *if,* and *problem* as common cue words in the rhetorical organisation of *problem/solution*. In addition to these words, Almasi (2003:141) offered other cue words such as *but*, *although*, *however*, *yet*, *dilemma*, *puzzle*, and *question posed and answered.* The *Air Pollution* text used as the pre-test contained three cue words, *problems* (twice), *in order to*, and *if*. The *Water* text involved two cue words, *problems* (three times), and *if*. There was not much difference between the *Air Pollution* text and the *Water* text in lexical clues when looking for the rhetorical pattern. If the post-test text included more cue words than the pre-test text, the amount of information recalled might increase especially for the participants in the lower experimental group since the participants had learnt cue words and they were more likely to obtain the potential gain from the intervention (Block and Duffy, 2008). The participants in the upper experimental group who are regarded as good readers had the potential to have unconsciously used cue words (Block and Duffy, 2008).

Misaki who belongs to the lower experimental group used signal words in identifying the rhetorical pattern of the *Water* text.

> **Misaki**: Here is a word "problems". Here is another word, "answer". I think that this part describes a problem and this part states a solution to the problem.

Although a statistically significant difference was not recognised at the post-recall test, the amount of information recalled increased slightly only in the lower experimental

group.   As for the *problem/solution* organisation, the intervention exerted a slightly positive influence on the participants' recall.   It is said that in general, familiarity with structural elements of the text affects recall process and outcomes (Goldman and Rakestraw, 2000; Reznitskaya and Anderson, 2002).   McKenna and Stahl (2009:19) suggested that students who have difficulties perceiving text structure could benefit from text structure instruction.   The slight increase of information recalled in the lower experimental group is thought to be due to the after-effects of the intervention.

In contrast to the lower experimental group, the upper experimental group that received the intervention showed little change in the recall post-test.   I think how much the upper experimental group incorporated knowledge from the intervention might differ depending on the type of rhetorical organisation.   Although there was little change in the *problem/solution* organisation, the upper experimental group substantially increased their recall scores in the *comparison* organisation.   Carrell (1984b) suggested that Asian students (Korean and Chinese) recalled twice as much information from the *problem/solution* text as from the *comparison* text.   Hirai (2008) reported that the Japanese EFL readers recalled more information in the *problem/solution* text than in the *temporal order* text.   In this research, the amount of information recalled in the *problem/solution* text was larger than that in the *comparison* text at the pre-test.   After the intervention, the amount of information recalled in the *comparison* text increased and was larger than that in the *problem/solution* text.   Since good readers note the structure of the text (Duke and Pearson, 2002:205), the upper experimental group is thought to have already used the *problem/solution* organisation unconsciously before the intervention.

The results of the reading comprehension test and the recall test denote a similar tendency.   In the reading comprehension test, among the participants who did not know anything about text structure, the participants who could improve test scores in the lower group were double those in the upper group.   It would appear that the lower group had much to gain from the intervention.   These results suggest that familiarity with text structure affects comprehension and recall outcomes to some extent, and poor readers who do not know anything about text structure come to use knowledge of text structure in comprehension and recall.

Aoi who belongs to the lower experimental group could identify the rhetorical pattern and mentioned the usefulness of the rhetorical pattern in comprehension and recall.

She found the *problem* part first and then looked for the *solution* part to solve the problem.

Interviewer:	What do you think about the rhetorical pattern of the "Water" text?
Aoi:	This text is organised by problem/solution, isn't it?
Interviewer:	Why do you think it is organised by problem/solution?
Aoi:	There is a part that provides how a water scarcity problem is solved. The problem is described first. I think that it is organised by *problem/solution* because the text describes the solution to a water shortage problem afterward.
Interviewer:	You have identified the rhetorical pattern. Was the rhetorical pattern helpful in understanding and remembering the text?
Aoi:	I think that the identification of the rhetorical pattern makes the text easily understood and recalled. I mean, it is well organised in my mind. It is not all of the details. Just like there is such a solution. For example, using a short phrase such as "use sea water". I can remember three short phases easily. I think that I can write more information recalled.

The impact of intervention for the selected participants of the experimental group on participants' amount of information recalled was assessed across three time periods (pre-intervention, post-intervention, and delayed follow-up).   There was no statistically significant interaction between the recall test and the group, Wilks' Lambda=.487, $F(2, 3)=1.580$, p=.340, partial eta squared=.513.   There was no substantial main effect for the recall test, Wilks' Lambda=.170, $F(2, 3)=7.320$, p=.070, partial eta squared=.830, suggesting that the effectiveness of the intervention was not recognised since the scores of both the experimental and control groups increased in the post-test and decreased slightly in the delayed test.

Although there was no statistical significance between the experimental and control groups, the experimental group gained more information recalled than the control group in the post-test. Both groups showed a slight decrease in the delayed test. At one week after the intervention, the effect of the instruction was maintained to some extent. Meyer et al. (2002) showed the superiority in total recall for the experimental group over the control group two and half months after the end of training. The effect of the instruction might last longer.

In the delayed test, Aoi noted cue words and could identify the rhetorical pattern.

Interviewer: What is the rhetorical pattern of the "Energy Crisis" text?

Aoi: Here it said about sunlight. Around here I think that it mentions "another way to solve the problem".

Interviewer: Paying attention to "another way to solve"?

Aoi: Yes.

Interviewer: Are there any words or phrases that you noted in order to find the rhetorical pattern?

Aoi: It is "one of the promising solutions". The contents of this passage are now the focus of so much attention, you know. They are drawing attention as energy issues.

Interviewer: You mean you know that as general knowledge?

The rhetorical pattern of the "Energy Crisis" text was not hard to identify to Misaki as well.

Interviewer: What is the rhetorical pattern of this text?

Misaki: Problem/solution.

Interviewer: What did you take particular note of?

Misaki: I thought that this passage is easily understandable since in the flow of these sentences, first the problem comes, and in the second paragraph, the solution comes.

Misaki mentioned the importance of background knowledge. In this text, Misaki spotted cues associated with prior knowledge so strongly that relevant schemata were activated automatically. The activated schemata direct the allocation of attention (Pressley, 1995:305). Thus Misaki went looking for elements of text related to the resource problem.

Interviewer: How about the words in the "Energy Crisis" text?

Misaki: Because I memorised the meaning of "promise" of the promising solutions as "約束する" (pledge), I didn't know the meaning of the word here and couldn't translate details. But I have read news items about environmental issues and the resource problem somewhere, and could guess and write a good deal of the meaning of the text. I couldn't write details.

5.6.3 *Causation* Organisation

The impact of intervention for the experimental group on participants' amount of information recalled was assessed across three time periods (pre-intervention, post-intervention, and delayed follow-up). There was no statistically significant interaction between recall test and group, Wilks' Lambda=.538, $F(2, 3)$=1.289, p=.394, partial eta squared=.462. There was no substantial main effect for the recall test, Wilks' Lambda=.322, $F(2, 3)$=3.164, p=.182, partial eta squared=.678, suggesting that the effectiveness of the intervention was not recognised although the scores of the experimental group were the same in the post-test and increased markedly in the delayed test while the scores of the control group increased in the post-test and decreased markedly in the delayed test.

Shunichi is likely to have read the "Global Warming" text well at the delayed test. He not only grasped the rhetorical pattern of the text easily but also possessed the rich

background knowledge about the topic of global warming.

> **Interviewer**: How did you read the "Global Warming" text?

> **Shunichi**: This text is organised by cause/effect. I think that the author wanted to avoid stating flatly that carbon dioxide is the main cause of global warming. It appears throughout the text. It is a little bit out of reading in English. It is generally believed that fossil fuel is burnt, carbon dioxide is emitted, greenhouse gases are released into the atmosphere, and it causes warming. Scientifically, it remains unproved.

Although there were some words that could not be translated into Japanese, Aoi could identify the rhetorical pattern of the "Global Warming" text.

> **Interviewer**: You saw many slash marks in the text. (She makes it a habit while reading to mark the text with a slash mark that indicates a unit of meaning.)

> **Aoi**: I think that I could read this text very well. There were not many difficult words. But there were some words that could not be easily translated into Japanese such as words that were used as set phrases or idiomatically.

> **Interviewer**: What is the rhetorical pattern of this text?

> **Aoi**: I think that it is organised by cause/effect.

Misaki noted the important role of the organisation pattern of the text when reading and recalling the "Global Warming" text at the delayed test.

> **Misaki**: I thought that it was good to be easy to remember the content of a passage when I clearly identified the organisation pattern of the text. If the organisation pattern is not accurately perceived, I cannot remember the content of a passage even though I can translate sentence by sentence.

In the delayed test, when reading the "Global Warming" text, as Aoi mentioned, she thought this text was relatively easy to read since the topic has often been taken up in the media and, as far as content goes, she possessed a certain level of knowledge as content schemata.

> **Interviewer**: I can see a lot of slashes. (It is a custom for Aoi to read text, putting slashes in coherent semantic units.)
>
> **Aoi**: I think I could read this text well. This "Global Warming" text and the "Energy Crisis" text are similar in that topic. I felt that somehow I could read it because I had some knowledge in content.

Ciardiello (2002) suggested that the *cause/effect* structure was particularly difficult in the structures. Richgels, Mcgee, Lomax, and Sheard (1987) suggested that L1 sixth graders were less able to understand the *causation* text structure than other three text structures of *comparison/contrast*, *collection*, and *problem/solution*. The difficulty in understanding the *cause/effect* structure can be explained by McCormick (2003). McCormick (2003:385) noted that the difficulty comes from the necessity of other comprehension skills, for example, being able to draw a conclusion, infer, determine the main idea, predict outcomes, and follow a sequence of events. After reading the "Global Warming" text, in the interviews with Misaki, the difficulty to identify the *cause/effect* organisation emerged.

> **Interviewer**: What is the rhetorical pattern?
>
> **Misaki**: Description. I thought it was description. I thought that it is good to recall when the text is organised in one way or another. Even if the text is translated sentence by sentence, I cannot remember the content when the organisation is blurred and indefinite.
>
> **Interviewer**: This text is the cause/effect organisation.

Texts used for the recall tests were the *EU* text used as the pre-test and the *Warming Up*

text used as the post-test, and the *Global Warming* text used as the delayed test. Regarding the Flesch Kincaid Reading Ease readability index, the *EU* text got a score of 37.5, the *Warming Up* text obtained a score of 69.8, and the *Global Warming* text had a score of 58.7.   The post-test score was higher than the pre-test score and the delayed test score was lower than the post-test score.   This means that the *EU* text was more complicated than the *Warming Up* text and the *Global Warming* text.   The text used in the post-test was the easiest one among these three texts.   Text difficulty possibly made the control group increase their recall scores on the post-test.

There were falls in the delayed test recall scores for the control group.   This may be related to the title and topic familiarity.   Jungo appeared to be less concerned about global warming.   Jungo never could deal with the *Global Warming* text.

> **Jungo**: "Global Warming".   Global... Sekaitekina (Worldwide).   What does this mean?   This word, natural is Shizenni (the Japanese equivalent for natural)?

Kou and Ryo who were members of the control group made particular reference to lexical difficulty in the delayed test text.

> **Kou**: There were some words that I didn't know in places.   This prevented me from contributing to correct sentence understanding.

> **Ryo**: I thought that I could not read well because there were some words I didn't know.

Regarding the cue words, Duke, Pearson, Strachan, and Billman (2011:70) provided *because*, *therefore*, *cause*, *effect*, and *so* as common cue words in the rhetorical organisation of *cause/effect*.   In addition to these words, Almasi (2003:141) offered other cue words such as *reasons why*, *if...then*, *as a result*, and *consequently*.   The *EU* text contained one cue word, *as a result*.   The *Warming Up* text involved no cue word. The *Global Warming* text included one cue word, *cause* (twice).   In terms of cue words, the post-test text had no lexical clue for looking for the rhetorical organisation.

5.6.4 *Description* Organisation

This section looks at the mount of information recalled in the text of *description* organisation. The impact of intervention for the experimental group on participants' amount of information recalled was assessed across three time periods (pre-intervention, post-intervention, and delayed follow-up). There was no statistically significant interaction between the recall test and the group, Wilks' Lambda=.181, $F(2, 3)=6.785$, p=.077, partial eta squared=.819. There was no substantial main effect for the recall test, Wilks' Lambda=.424, $F(2, 3)=2.039$, p=.276, partial eta squared=.576, suggesting that the effectiveness of the intervention was not recognised.

The recall test scores of the experimental group in the post-test were the same as those in the pre-test and increased markedly in the delayed test while the scores of the control group decreased in the post-test and went up to the same score as the pre-test in the delayed test.

In general, the organisation pattern of *description* has a smaller benefit for recall than the other rhetorical structures. In the L1 context, Meyer and Freedle (1984) showed that for college students, the *comparison* and *causation* structures had greater benefits for recall than *description*. In the L2 context, Carrell's (1984b) study revealed that the more tightly organised types of organisation are more facilitative of recall than the loosely organised *description* text. Tian (1990) replicated Carrell's (1984b) study in Singapore. In Tian's (1990) study, only the *comparison* structure was clearly the most facilitative of comprehension and recall. The picture was not at all clear for the other rhetorical structures. As Carrell (1984b) suggested, the rhetorical patterns that facilitate comprehension and recall are the more tightly organised *comparison*, *causation*, and *problem/solution* types. It is believed that the intervention had little effect on the recall of the more loosely organised *description* text.

What raised the amount of information recalled both in the experimental and control groups in the delayed test may have something to do with readability and familiarity with the topic. The "Picking Up Rubbish" text is slightly easier to read than the "Purpose of Guilds" text in terms of readability. The "Picking Up Rubbish" text has a readability index of 71.9 while the "Purpose of Guilds" text used as the post-test has a readability of 64.7. The "Picking Up Rubbish" text for the delayed test seems to be easy to read for the experimental and control groups. Shunichi easily identified the

rhetorical pattern.

> **Shunichi**: This text is written according to the order of events and it is different from other texts read before this.

Misaki did not identify the rhetorical pattern in the post-test when reading the "Purpose of Guilds" text but could do that in the delayed test when reading the "Picking Up Rubbish" text.   Misaki remarked on the "Picking Up Rubbish" text.

> **Interviewer**: What is the rhetorical pattern?

> **Misaki**: Description.   There are an easily comprehensible pattern and a confusing pattern.   This passage was fairly easy to read.

It seems that the "Picking Up Rubbish" text was relatively easy to read for Ryo who is member of the control group.

> **Interviewer**: What about the "Picking Up Rubbish text?

> **Ryo**: Since I could get the meaning of most words, it was easy. The text was described about a nest.   This is a familiar topic for me.

Kou who was a member of the control group mentioned that he had heard none of guilds.   He could not understand the "Purpose of Guilds" text.

> **Interviewer**: What about the "Purpose of Guilds" text?

> **Kou**: Yes.   I could not get the meaning of many words.   Guilds?

> **Interviewer**: A guild is a gathering of merchants.   Have you ever heard of that?

> **Kou**: No, I haven't.

Interviewer: The word is contained in the title.

Kou: Yes.   I could not translate the title.   It was difficult.

Familiarity with the topic might have had some effect on the participants' comprehension and recall.   Aoi noted that the "Purpose of Guilds" text was difficult for her to understand since she was less familiar with the content of the text.

Aoi: It is a gathering of people, isn't it?

Interviewer: It is a gathering of merchants.   It is a gathering of many kinds of professionals.   Bakers and brewers took part in a guild.

Aoi: I have never heard of that.   I might have learned it in the world history class.   Since I knew some words in some vague way, I tried to translate it into Japanese.   I thought I can probably do that at first.   I am less familiar with the content of this text.   It was difficult for me to read.

As for familiarity with the topic, Misaki also commented on the "Purpose of Guilds" text that was used as the post-test.

Misaki: I did not understand the text very well.   I was less familiar with the topic and remembered little of the content of the text.

5.7 Identification of Rhetorical Organisation

In the immediate written recall tests that all the participants took, after they recalled the information from the text, I also asked whether they identified the rhetorical organisation pattern of the text that they read as a recall test.   Regarding the two types rhetorical organisation of *comparison* and *problem/solution*, a chi-square test was carried out in order to investigate whether there was significant difference in the proportion of the identification of rhetorical pattern in the pre- and post-tests of immediate written recall.

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5.7.1 *Comparison* organisation

By the pre-test and post-test, a Chi-square goodness-of-fit test indicated that there was a significant difference in the proportion of the identification of a rhetorical pattern in the pre-test of immediate written recall identified in the current sample (21%), χ^2 (1, n=80) = 26.450, p<.000, and that there was also a significant difference in the proportion of the identification of the rhetorical pattern in the post-test of immediate written recall identified in the current sample (37.5%), χ^2 (1, n=80) = 5.000, p<.025.

For the four groups of lower control, lower experimental, upper control, and upper experimental, the results of the Chi-square test for independence regarding the identification of a rhetorical pattern in the pre-test indicated that a significant difference was found in the identification of the rhetorical pattern (Chi-Square = 9.981, df = 3, p = 0.019). The effect size was 0.353. This means a moderate effect (Muijs, 2004:126). The results of the post-test indicated that a significant difference was not found in the identification of the rhetorical pattern by the four groups (Chi-Square = 4.461, df = 3, p = 0.216). The effect size was 0.236. This means a modest effect (Muijs, 2004:126).

The number of the participants who identified the rhetorical organisation of *comparison* approximately doubled in the post-test. Looking at increases by groups of participants, the largest number of those who identified belonged to the upper control group, followed by the lower experimental group. As McCormick (2003:384) suggested, many good readers note and use text structure either intuitively or as the result of reading extensively. The participants from the upper control group have the potential to use the rhetorical organisation of *comparison* intrinsically and their ability to identify the rhetorical organisation is awoken by encountering tightly organised text. In general, good readers use several strategies while reading to make sure their attention is focussed on meaning construction (Almasi, 2003; Fisher and Frey, 2010) and search for meaning, using text cues and their background knowledge in combination to generate predictions, to monitor those predictions, and to construct a representation of the author's meaning (Block and Duffy, 2008). It is quite possible that the participants from the upper control group made deliberate cognitive effort such as using text cues, background knowledge and so on to identify the type of text organisation even if they did not know the name of the *comparison* organisation. On the other hand, the lower experimental group seemed to recognise how the organisation of text helped the

participants identify since they received explicit instruction in the ways written text is structured to convey ideas.

Concerning the amount of information recalled, the three groups of upper experimental, lower experimental, and lower control increased in the post-test. Only the participants from the lower experimental group increased the amount of information recalled and improved the identification of the rhetorical organisation. In the upper control group, the amount of information recalled decreased slightly in spite of their improvement in identifying the rhetorical organisation. The identification of the rhetorical organisation was not necessarily associated with recalled information. This adds another research question, and will be what I should track in further studies with follow-up inquiries.

5.7.2 *Problem/solution* organisation

For the pre-test and post-test, a Chi-square goodness-of-fit test indicated that there was no significant difference in the proportion of the identification of a rhetorical pattern in the pre-test of immediate written recall identified in the current sample (21%), χ^2 (1, n=80) = 0.000, p>.05, and that there was no significant difference in the proportion of the identification of the rhetorical pattern in the post-test of immediate written recall identified in the current sample (37.5%), χ^2 (1, n=80) = 1.800, p>.05.

For the four groups of lower control, lower experimental, upper control, and upper experimental, the results of the Chi-Square test for independence regarding the identification of a rhetorical pattern in the pre-test indicated that a significant difference was found in the identification of the rhetorical pattern (Chi-Square = 9.683, df = 3, p = 0.021). The effect size was 0.348. This means a moderate effect (Muijs, 2004:126). The results of the post-test indicated that a significant difference was found in the identification of the rhetorical pattern by the four groups (Chi-Square = 12.026, df = 3, p = 0.007). The effect size was 0.388. This means a moderate effect (Muijs, 2004:126).

As for the identification of the rhetorical organisation of *problem/solution* as well as the amount of information recalled, only the participants who belong to the lower experimental group improved. In the *problem/solution* organisation unlike the *comparison* organisation, the improvement of recalled information and identification

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was achieved only by the lower experimental group. As Almasi (2003) suggested, it seems that the upper experimental group were already able to use their knowledge of text structure. Hence, the text structure instruction in this research affected the lower experimental participants' ability to understand and use how texts are structured.

Both the *comparison* and *problem/solution* organisational types are tightly structured organisations compared to the *description* organisation (Carrell, 1984b; Meyer and Freedle, 1984; Zhang, 2008). The effect of the intervention was confirmed in the *problem/solution* organisation while it was not supported in the *comparison* organisation. I suppose that the difference rests on the easiness of clue words for the participants. As stated already in section 5.7.1, Aoi could not grasp the word "contrasting" but could pay attention to "another way to solve". In finding the organisational structure in text, this process could be aided through finding clue words (Duke, Pearson, Strachan, and Billman, 2011; Meyer et al., 2002). I think that there should be more emphasis on the clue words in text structure instruction.

5.8 Summary

This chapter has summarised this study's quantitative findings, and discussed them with reference to each of the research questions. The interview data was used in order to discuss the quantitative results, primarily in the discussion of recall test results. The method, duration and materials of the intervention were discussed, referring to other previous studies.

The participants in this study exhibited the feature of applying both top-down and bottom-up processing skills when reading expository text. The characteristic reading behaviour of Japanese learners of English was observed. The reading behaviour of the participants was discussed in the context of Automaticity Theory. As for the prior knowledge of text structure, more than half of the participants did not know about text structure. In reading class, vocabulary and grammar were perceived as important by the teachers who are affected by the *Yakudoku* traditional teaching method.

The intervention was effective in understanding text and was of particular value in the lower ability group. It would appear that the lower ability group could process structural information automatically through the intervention. Graphic organisers were thought to be helpful in promoting effective instruction.

Significant differences were not observed in the amount of information recalled. However, concerning the *problem/solution* organisation, the enhancement of the lower experimental group was recognised. The identification of the *problem/solution* organisation was improved in the lower experimental group. In identifying the rhetorical organisation, the importance of clue words was worthy of notice.

Chapter 6

Conclusion

6.1 Introduction

The concluding chapter restates the aims and methodology of this thesis research and presents a summary of the key findings with respect to each of the research questions. Implications for teaching are explored for English reading classes in Japan. Limitations of this research are discussed.   Finally, implications for further research are considered.

6.2 Summary of Key Findings

The primary research aim was to investigate the relationship between the teaching of text structure and the reading comprehension of EFL Japanese college students. Previous research in L1 contexts has revealed that text structure instruction can improve reading comprehension and can develop the ability to remember important information in text (Duke, Pearson, Strachan, and Billman, 2011; Meyer and Wijekumar, 2007). Some studies in L2 contexts showed that teaching text structures facilitated ESL reading comprehension of expository texts (Carrell, 1985; An, 1992; Raymond, 1993; Leon and Carretero, 1995; Nakamura and Hirose, 2009).   In recalling information from text, the following features have been observed.   In Carrell's (1984b) study, Asian students (Korean and Chinese) recalled twice as much information from the *problem/solution* and *causation* texts as from the other two text types (*comparison* and *description*).   The recall scores for the *problem/solution* pattern were higher than those for the *description* pattern (Foo, 1989).   Zhang (2008) suggested that participants displayed better recall of the text with highly structured organisation (*comparison* and *problem/solution*) than the loosely organised texts (*description*).   The intervention of this research could improve the participants' reading comprehension.   However, a significant association between text structure and recall performance was not shown except for the recall tests of *comparison* organisation conducted for extracted participants across three time periods.

Generally speaking, as Goldman and Rakestraw (2000:324) pointed out, even native speakers of English do not acquire sufficient knowledge of text structure by the end of

high school.   It is said that a lack of understanding of text structure causes difficulties (Gersten, Fuchs, Williams and Baker, 2001).   Regarding a very low percentage of the Japanese students who follow rhetorical organisation, Connor (1984:252) pointed out that this might be the result either of interference from L1 discourse conventions or of lack of instruction in English text conventions.   Since the structure of Japanese text differs considerably from that of English text, it is desirable to provide instruction of text structure in English expository text.   However, teachers at Japanese primary school are more likely to choose narrative text to teach than expository text (Kishi, Watai, and Taniguchi, 1989).   Japanese students do not seem to receive sufficient instruction on the text structure of expository text.   In fact, there were not many participants who possessed the knowledge of the text structure of expository text.

This study employed a mixed methods design with an emphasis on a quantitative approach.   The research was quasi-experimental and attempted to give an experimental group the intervention of text structure.   Both quantitative and qualitative data were collected in sequence and qualitative findings were used for explanation, clarification, and expansion of quantitative findings.   Predominantly, questionnaires, reading comprehension tests, and immediate written recall tests were used as data collection methods, complemented by interviews.

The following are key findings to permit discussion around each of the research questions sequentially.

Research question 1: To what extent does the teaching of text structure alter the reading behaviour of Japanese college students when they read expository texts?

The results indicated that Japanese college students acknowledge both top-down and bottom-up processes as important.   The students thought that there were four difficult items that include recognising words, grammatical structures, getting the overall meaning of the text, and the organisation of the text.   In other words, the students believe that text is well understood when they achieve these items.   In order to improve ability related to these items, different approaches should be taken between good readers and poor readers.   Good readers tackle the tasks of decoding, comprehension, and comprehension monitoring at the same time while poor readers perform those tasks separately (LaBerge and Samuels, 1974; Samuels, 2002, 2006).   As evidenced by the interview data, the participants from the lower group had difficulty

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understanding the meaning of words. This may be due to the fact that the vocabulary size is small. Teachers require thought about taking steps to improve the depth and breadth of vocabulary words.

With respect to a prior knowledge of text structure, more than half of the participants as a whole lacked the knowledge of text structure. The participants who reported having the knowledge appeared to have various degrees of knowledge, from "heard it but can't quite define it" to "can't define it, but can use it in a text" to "knows it extremely well and can use it properly". Pedagogical importance for text structure instruction is recognised.

From the viewpoint of the reading behaviour of the experimental group, some changes were observed. The upper experimental group acquired confidence in recognising the difference between main ideas and supporting details after the intervention. The lower experimental group exhibited one of the characteristics of good readers, which is to question the significance or truthfulness of what the author says (Block, 1986; Block and Duffy, 2008). The lower group was able to focus on the author's ideas. As Block (1986) suggested, this characteristic reflects the ability to integrate information in the text.

Research question 2: To what extent does teaching text structure improve students' reading comprehension?

The results of reading comprehension tests revealed that the intervention could strongly improve the participants' reading comprehension. The results ascertained the effectiveness of text structure instruction as previous research has shown. Text structure instruction in both L1 and L2 research produced a positive effect on comprehension (e.g., An, 1992; Williams et al., 2005). I suppose that the participants learned to organise the information in their minds similar to the text's organisation and this well organised information increased their understanding of the text.

The types of rhetorical organisation vary from research to research. Five types of rhetorical organisation, which contained *description*, *sequence*, *causation*, *problem/solution*, and *comparison*, were covered in Meyer, Young, and Bartlett (1989), Meyer and Poon (2001), Meyer et al. (2001), and Meyer et al. (2002). In contrast, Hall, Sabey, and McClellan (2005), Williams et al. (2005), and Williams et al. (2009)

focussed exclusively on the *compare/contrast* organisation. In L2 research (Carrell, 1985; An, 1992), four types of rhetorical organisation, which included *comparison*, *causation*, *problem/solution*, and *description*, were taught to students. Considering the time constraint (around 5 hours), the teaching of four types would be a realistic choice.

Research question 3: To what extent does the teaching of text structure improve the reading comprehension of poor readers and good readers?

According to the results of the reading tests, the lower experimental group showed a notable increase. There was a very large effect size. Thus, poor readers could benefit greatly from the teaching of text structure.

Text structure instruction especially benefits students who may struggle with reading (Gersten, Fuchs, Williams, and Baker, 2001). The use of text structure is thought to be a characteristic of skilled L2 reading (Raymond, 1993). The upper experimental group is thought to have already used this knowledge unconsciously. Whether the knowledge of text structure is possessed differs in degrees of the effect from text structure instruction. It is believed that the lower experimental group used the acquired knowledge of text structure consciously to retrieve and summarise information (Lems, Miller, and Soro, 2010).

Research question 4: To what extent does teaching the text structure increase the amount of information remembered from the text?

Recall data collected from all the participants did not show significant increase in the post-test of immediate written recall in two types of *comparison* and *problem/solution* organisation. However, as for the *comparison* organisation, the three groups of the upper and lower experimental groups and lower control group increased the amount of information recalled in the post-test. The improvement of the lower control group was thought to be due to the topic familiarity. Furthermore, analysis of recall data obtained from extracted participants indicated that the experimental group significantly increased the amount of information.

Concerning the *problem/solution* organisation, there was no statistically significant difference across two time (pre- and post-tests) and three time (pre-, post-, and delayed tests) periods although a slight increase in the amount of information recalled was

produced only in the lower experimental group.

Research suggests that any form of instruction to recognise and use text structure enhances comprehension and short-term and long-term memory of text (Pearson and Fielding, 1996). Graphic organisers were used during the instruction. This form of instruction was effective for some extracted participants in recalling information in the text of the *comparison* organisation and was slightly effective for the experimental group in recalling the information in the text of *problem/solution* organisation.

As students become more familiar with text structures, they create mental templates that make it easier to access other texts that contain the same structure (Lems, Miller, and Soro, 2010). When it comes to the *causation* and *description* organisation, there was no significant difference. This would be caused by a lack of familiarity.

Research question 5: To what extent does teaching the text structure alter students' identification of rhetorical organisation?

As for the *comparison* organisation, the results of the Chi-square test for independence revealed that there was a significant difference in the pre-test but no significant difference in the post-test. A modest effect was observed.

The number of the lower experimental participants who identified the *comparison* organisation nearly tripled, while the number of the upper experimental participants who did so was the same as the number at the pre-test. Thus, the teaching of text structure modestly alters students' identification of the *comparison* organisation, especially for the lower experimental participants.

Regarding the identification of the *problem/solution* organisation, the results of the Chi-Square test for independence showed that there was a significant difference in the pre- and post-tests. A modest effect was observed.

The number of the lower experimental participants who identified the *problem/solution* organisation increased about 1.7 times as many as in the pre-test, while the number of the upper experimental participants was almost the same as the number in the pre-test. Because of this, the teaching of text structure modestly alters students' identification of the *problem/solution* organisation, especially for the lower experimental participants.

Text containing ample signals or cues about the structure is said to be reader friendly (Almasi, 2003:140). Clue words could be helpful in finding the organisational structure in text (Duke, Pearson, Strachan, and Billman, 2011; Meyer et al., 2002). The inclusion of a range of clue words should be considered for designing the instruction program so that students are familiarized with as many clue words as possible.

6.3 Pedagogical Implications

Firstly, traditional teaching of reading in Japan has followed the *Yakudoku* method, which is still applied widely at the high school and college level (Hino, 1992). In the *Yakudoku* method, the target English sentence is first translated word by word and the resulting translation is reordered to match Japanese word order. Students are taught lexical items and syntactic structures as well as translation to Japanese. The disadvantage of the *Yakudoku* method is that students are not aware that reading English in the original word order is natural and that it is desirable to read text directly in English without recourse to a Japanese translation (Hino, 1992). In order to work out effective measures to cope with this disadvantage, text structure instruction would be one of the choices that we can make.

Secondly, a key to reading and learning from expository text is to become familiar with the way the ideas are organised by the writer (Blachowicz and Ogle, 2008:106). Junior high school teachers are more likely to attempt a new teaching approach than senior high or college teachers. In L1 research, Williams et al. (2005) gave text structure instruction to 2nd graders and obtained successful results from an instructional program. Text structure instruction may have applicability to Japanese junior high school third year students. According to the course of study for junior high schools, teachers are supposed to teach how to grasp the outline of a story or the main points of an explanation correctly (MEXT, 2003). Short informational text can be introduced to the third year students of junior high school. As students reach high school and college, the instructional program can be upgraded to a higher level of more clue words and more complicated organization of text. Each time text structure instruction is repeated, students will find it is easier to use the text structure and will make progress in their ability to comprehend.

Thirdly, five hours or more should be secured for an instructional program. In the L1 research, the training period ranged from 4 hours (Hall, Sabey, and McClellan, 2005) to 10 hours (Meyer et al., 2002). In the L2 research, the training time varied from 5 hours (An, 1992; Carrell, 1985; Nakamura and Hirose, 2009) to 5.3 hours (this research). An instructional program of five hours can expect to achieve an effect. I suppose that text structure instruction to take about five hours in all can be realistically integrated into lesson plans.

6.4 Limitations

The present research has several limitations, however, these make all the conclusions drawn from it tentative rather than definitive.

Firstly, this research is limited to investigating reading comprehension and takes note of textual aspects, especially text structure in expository text. As Pressley (2002b) suggested, skilled reading comprehension is complicated, depending on letter-, word-, and above-the-word level processes. Comprehension skills consist of: knowledge of morphology and syntax, use of content to gain meaning, use of schema, use of metacognitive knowledge, recognition of text structure, and an ability to predict what will come next in a text (Hudson, 2007).

Secondly, the number of participants is limited. Although the sample size is not so small since Borg and Gall (1989) recommended about 15 participants per group in quasi-experimental research, the participants could not be assigned randomly to groups. 40 students were allocated to the experimental group and another 40 students were distributed to the control group. Relevant differences between groups cannot be controlled and it is likely to be biased.

Thirdly, the period of text structure instruction was restricted to 5.3 hours because the instruction program was incorporated into regular classes. One of the key factors for success in an instructional program is familiarity with a variety of text structures (Blachowicz and Ogle, 2008:106). By securing sufficient time for practice so that students can make use of the knowledge of text structure subconsciously, the acquired knowledge would be transferred to the comprehension of uninstructed text, and information in the text would be successfully retrieved, stored, and summarised.

Fourthly, the types of rhetorical organisation for the intervention were confined to four types: *comparison*, *problem/solution*, *causation*, and *description*. In addition to these four types, Meyer and Poon (2001) and Meyer et al. (2001) adopted the *sequence* organisation in which ideas are grouped on the basis of order or time and the main idea is procedure or history related (Meyer et al., 2002:490). Genre is also useful to understand how discourse is organised and used for various purposes. Genre reflects real uses of written discourse among cultures, social groups, and communities of users (Grabe, 2002b:250). Text structure and genre represent different yet complementary perspectives on texts (Paltridge, 2002:74). Learning genre as well as text structure would contribute to understanding of texts.

Fifthly, the types of rhetorical organisation for the immediate written recall tests were limited. The immediate written recall tests of the *comparison* and *problem/solution* organisation were conducted for the all participants. The recall tests of the other two types were carried out for the selected six participants. This imposed a limitation on a generalized statement about the results of the immediate written recall tests.

Sixthly, short texts were adopted for the intervention so that the participants could easily understand the basic concepts of text structure. As Keene (2008:188) suggested, the participants should read texts comprising two or more paragraphs in which authors may even change the text structure as frequently as every paragraph in order to address the content appropriately. After the key concepts of text structure are understood, the participants would apply knowledge about text structure that they learnt through the intervention to rhetorically difficult texts.

Finally, the results of interviews were limited by the small number of interviewees. This research employed mixed methods, that is, both quantitative and qualitative approaches in order to elicit a more complete data set. Data on the reading comprehension tests, questionnaire, and immediate written recall tests were reinforced by stimulated recall interviews in which data were obtained from the selected six participants. It was really useful to know about the participants' reflections on their own mental processes and behaviours during taking the immediate written recall tests. The interview data were restricted to the selected six participants' reflections.

6.5 Implications for Further Research

Firstly, participants in this research were college students. In the L1 context, instruction in text structure is given to grade school children (Williams et al., 2005). Even in the L2 context, the implementation of the text structure intervention should be considered for junior or senior high school students although follow-up experiments intended for college students need to be performed.

Secondly, *comparison* and *problem/solution* are the two types of rhetorical organisation that are thought to be tightly organised, compared to the *description* organisation.   The analysis of recall data reported different results.   Where the difference came from, from the participants, the text read, clue words, or topic requires further research.   The identification of the rhetorical organisation was not associated with the amount of information recalled.   The relationship should be investigated.

Finally, it is worthy to investigate whether the teaching of expository text in Japanese is a facilitative factor or a barrier in understanding expository text in English.   There are differences in the organisation of a paragraph or a text between the Japanese and English languages.   A paragraph in English expository text is structured around main ideas and supporting information (McKenna and Stahl, 2009:19) while the Japanese language originally lacks the notion of the paragraph (Toyama, 2010:41), and the Japanese *danraku* which corresponds to a paragraph in English is just a major division in a long passage and embraces no concept of a topic sentence and supporting details (Shinmura, 2008).   An expository text in English is rhetorically organised, e.g., *comparison*, *description* and so on (Meyer et al., 2002).   However, the Japanese expository text is organised according to the *ki-shoo-ten-ketsu* pattern that is characterised by an unexpected topic shift (Connor, 1996).   English education was introduced to 5th and 6th graders in Japan in 2011.   Learning to read an expository text in Japanese and English concurrently might cause confusion at primary school.

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Appendix A: Reading comprehension test

The average score for the pre-test which was conducted in April 2011 is 12.5 (full marks are 20.0).　There seemed to be some room for improvement.

Pre-test

1.次の英文を読み、その文意にそって(　　)に入れるのに最も適切なものを選び、その記号を書きなさい。

Desert Oasis

To most people, the idea of fish living in a desert sounds crazy.　With so little water on the surface of deserts, it might seem impossible for fish to survive there.　In fact, however, for the past 10 years people have succeeded in raising fish in some of the ①
(　　　) parts of the world.

The reason for their success is that, surprisingly, deserts often contain a great deal of water.　The only problem is that most of it lies about 15 to 50 meters below the ground. In order to raise fish in desert areas, it is ②(　　　) to bring this water up to the surface. To do this, people use drilling machines similar to those used for finding oil.　The water that is found can be used to create pools for fish and other creatures to live in. Water found under the desert is often slightly salty and warm, and this makes it ideal for raising some kinds of fish and shrimp.　Because these pools do not use water from the sea, the fish are ③(　　　) from many diseases that are common in the ocean.

Raising fish in the desert is already a big business in some parts of the world.　In Israel, for example, over 30 million tons of fish and shrimp, valued at $40 billion, are produced in fish farms in the desert every year.　Underground desert water will not ④
(　　　) forever, but some experts believe that there is enough water to raise fish for as long as 200 years.　Desert fish farms are one example of the way in which modern technology ⑤(　　　) people to create new businesses in the most difficult environments.

①	(a)strongest	(b)earliest	(c)driest	(d)oldest
②	(a)necessary	(b)clear	(c)strange	(d)difficult
③	(a)studied	(b)invited	(c)checked	(d)protected
④	(a)last	(b)travel	(c)cover	(d)change
⑤	(a)proves	(b)allows	(c)tests	(d)leaves

2.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、そ

の記号を書きなさい。

The Four-Day School Week

Most students in the United States attend school five days a week. Some schools, however, have decreased the number of days that students have to attend classes to create a four-day school week. Because each school day has been made longer, the total number of class hours has not changed. This system has been shown to have a number of advantages.

The four-day school week was first introduced by public schools in rural areas, mainly in the western part of the U.S. Since many of the students in these areas live on farms that are far from schools, it is not uncommon for them to spend over three hours every day on school buses. This is not only inconvenient for students, but also very expensive for schools because they have to pay for this bus service. By running the buses one less day a week, schools are able to save a lot of money. The shorter school week also helps them save on heating and lighting costs.

The system is popular for other reasons, too. Students are happy to have another free day to do what they like – go shopping, play basketball, or just spend time with friends. Also, after introducing a shorter week, some schools found that fewer students missed classes and that test scores rose. For these reasons, the four-day school week has recently been introduced in other areas of the country.

There are, however, some problems with a shorter school week. While the system is ideal for high school students, the longer school day can be tiring for elementary school students. Moreover, parents who work full time must now find someone to look after their children on the extra day off. But despite these problems, the four-day school week has helped schools to cut costs without damaging the quality of students' education.

① (　　　) Some schools in the United States have
   (a) increased the number of students per class.
   (b) cut the total number of class hours in a week.
   (c) made students attend school for more days a year.
   (d) shortened the school week by one day.
② (　　　) What is one advantage of the four-day school week?
   (a) Students can get home from school earlier than before.
   (b) Students can travel more conveniently to school.
   (c) Schools do not have to teach so many subjects.
   (d) Schools can save money by running buses one day less.

③ (　　　) Students at some schools using a four-day week are

    (a) playing more basketball at school.

    (b) doing better on their tests at school.

    (c) spending more time shopping after school.

    (d) talking more with their friends after school.

④ (　　　) What is one problem with the four-day school week?

    (a) Parents are spending less time with their children.

    (b) Elementary school students are missing more classes.

    (c) The longer school day can make younger students tired.

    (d) More high school students are leaving school to work full time.

⑤ (　　　) Which of the following statements is true?

    (a) U.S. schools have stopped paying for bus services for students.

    (b) Most public schools in the U.S. have introduced a shorter week.

    (c) The four-day school week can be a problem for working parents.

    (d) Teachers go to students' homes to teach them on their days off.

3.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、その記号を書きなさい。

A Taste for Sharks

Sharks have been seen as especially dangerous by human being for a long time. Strangely, however, people also find them attractive. For example, sharks have become one of the biggest attractions at aquariums and museums. At one California aquarium, the number of visitors increased greatly when the aquarium bought two dangerous-looking sharks. Also, the movie *Jaws* – about a giant shark that attacks people – was the first film to make a profit of over $100 million. Television programs about sharks are also much more popular than programs about other animals.

Recently, sharks have become popular in other ways, too. For example, these days many people are eating shark meat in restaurants. Also, the skin of sharks is used to make leather, their teeth are used to make jewellery, and oil from sharks is being used for medicine and skin-care products. For all these reasons, fishermen now catch more and more sharks every year. Sharks have become big business in a number of different ways.

Many experts are worried, however, that the large number of sharks being caught means that their future may be in danger. Over 100 million sharks are being killed every year, and some kinds of sharks may even disappear completely. The survival of sharks is very important for several reasons. In particular, a large decrease in the number of

sharks will damage the balance between different kinds of fish in the sea.   Sharks eat smaller fish, so they help keep the numbers of fish at ideal levels.   It seems these days that it is human beings who are dangerous to sharks rather than the other way around.

① (   ) Why did the number of visitors increase at one California aquarium?

(a) Two new sharks were put into the aquarium.

(b) The movie *Jaws* was filmed at the aquarium.

(c) The aquarium was shown on a TV program.

(d) The aquarium bought the world's biggest shark.

② (   ) More sharks are being caught nowadays because

(a) they eat too many other fish in the ocean.

(b) their oil has harmful effects on the ocean.

(c) many kinds of medicine are made from their skin.

(d) people can make money from them in many ways.

③ (   ) What are experts beginning to worry about?

(a) The drop in the price of shark meat.   (b) The survival of sharks in the future.

(c) The growing number of sharks.   (d) New kinds of dangerous sharks.

④ (   ) What will happen if sharks disappear?

(a) Fish in the ocean will reach ideal numbers.

(b) Smaller fish in the ocean will decrease greatly.

(c) The balance between different kinds of fish will change.

(d) The future of human beings will be in danger.

⑤ (   ) Which of the following statements is true?

(a) Over 100 million people around the world are attacked by sharks each year.

(b) Many small fish have recently been caught to help save the sharks.

(c) People are attracted to sharks even though they are seen as dangerous.

(d) Television programs about sharks are not as popular as they used to be.

4.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、その記号を書きなさい。

Aid for Families

Catherine Bertini has a very important job.   She is head of the United Nations World Food Program (WFP), the largest agency in the world providing food to hungry people. The WFP receives a large amount of money and food from governments and other groups, and Bertini must decide when and where to send these resources.   The WFP sends food aid to nations throughout the world, including Ethiopia, India, Vietnam, and

Mexico.   The people it helps are mainly victims of wars and other disasters.

As the first female director of the agency, Bertini has started a whole new way of giving out food aid.   She has decided to give most of the WFP aid directly to women.   One reason is that most refugees* are women and children.   But Bertini also realized that it is women who do the most to keep families together.   As a result, they are much more likely than men to share food aid with all family members.

Bertini is also trying to use WFP food aid for school lunches to improve the chances of girls receiving education in developing countries.   Currently, many governments still pay more attention to education for boys than girls, and families often send only their sons to school.   Bertini has decided to make sure that half of the food aid for school lunches goes to girls.   She thinks that this new system will make it easier for families to educate their daughters.

During her nine years as director of the WFP, Bertini's new ideas have been very successful.   In 2000, the WFP helped more than 80 million people in 83 different countries.   It is hoped that the efforts of the WFP will help many more families escape poverty.

*refugee: 難民

① (   ) Catherine Bertini leads an agency that

    (a) receives food aid from such countries as Ethiopia and India.

    (b) provides a large amount of money for the United Nations.

    (c) gives food to hungry people around the world.

    (d) tries to stop wars between various nations.

② (   ) Under Bertini, the WFP has

  (a) shared food with other agencies.

  (b) given out most food aid to women.

  (c) started sending food aid to refugees.

  (d) reduced the amount of food aid to children.

③ (   ) How has Bertini tried to support education for girls?

  (a) By helping families send their sons to school.

  (b) By helping governments develop new schools.

  (c) By letting children eat their lunches at home.

  (d) By giving half of the food aid for school lunches to girls.

④ (   ) What has happened during Bertini's years at the WFP?

  (a) Two thousand people have worked for the agency.

  (b) She visited 83 countries throughout the world in 2000.

(c) The agency sent food aid to over 80 million people in one year.

(d) Developing countries have helped the agency provide food aid.

⑤ (　　　) Which of the following statements is true?

(a) The WFP is trying to give food to all members of families.

(b) The WFP provides food aid and money to the United Nations.

(c) Bertini started a new way to help people make money.

(d) Bertini has decided to pay more attention to educating boys.

Post-test

1.次の英文を読み、その文意にそって(　　)に入れるのに最も適切なものを選び、その記号を書きなさい。

Australian Lifesavers

Australia is well known for its beautiful beaches.　On warm days, many Australians living along the coast go to the beach to enjoy the wonderful swimming and surfing there.　Thanks to the ①(　　　) of lifesavers, the beaches in Australia are some of the safest in the world.

Most lifesavers have spent their whole lives near the ocean.　People who want to become lifesavers must first get a license known as the Bronze Medallion.　In order to do this, they have to take a special course that includes tough physical training.　They also learn first-aid techniques such as how to help people ②(　　　) breathing again after they have almost drowned.

The qualities needed to be a good lifesaver have not changed very much over the years, but some of the equipment used by lifesavers has ③(　　　).　For example, lifesavers once had to carry wooden boats out to sea in order to save swimmers.　Now, however, they use light rubber boats that are easier to carry.　Because these new boats have motors, they are much faster and can also be used to ④(　　　) swimmers from sharks by frightening the sharks away from beaches.

The job of lifesaving is open to people of all ages, but it is especially ⑤(　　　) with young people.　Many children between the ages of 7 and 13 join junior lifesaving clubs. On fine Sunday mornings, these youngsters can be seen training with adult lifesavers. They are getting ready to become the Australian lifesavers of tomorrow.

① 　(a)rest 　　　　　(b)work 　　　　(c)turn 　　　　(d)call

② 　(a)hold 　　　　　(b)send 　　　　(c)start 　　　　(d)hear

③	(a)continued	(b)improved	(c)returned	(d)finished
④	(a)select	(b)invite	(c)develop	(d)protect
⑤	(a)popular	(b)clever	(c)formal	(d)angry

2.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、その記号を書きなさい。

The Battle of the Oranges

Every year, a little town in Italy has a very interesting festival.　The town is called Ivrea, and its festival is called the Carnival of Ivrea.　There are many parades and parties, and people make special food, too.　But the most exciting part of the festival is the Battle of the Oranges.　For the last three days of the festival, teams of people throw oranges at each other in the streets of the town.

People started the Carnival of Ivrea to remember a battle that happened more than 800 years ago.　In 1194, the ruler of the town was a very bad man.　One day, the people of Ivrea decided to fight him.　They only had stones to throw at the ruler and his soldiers, but the people fought hard and won the battle.

Now the battle is just for fun, so people don't throw stones anymore.　Many teams take part in the orange battles, and each one has its own special uniform.　Some teams ride on carts which are pulled by horses.　The others have to walk, and they throw oranges at the teams on the carts.　Thousands of visitors come to see the orange battles, and some even join a team.　People how only want to watch have to wear special red hats. If they don't, everyone throws oranges at them, too.

After the festival, there are a lot of oranges to clean up.　But the people of Ivrea enjoy their festival and are proud of its long and interesting history.

① (　　　) What do people do during the Battle of the Oranges?
　　(a) They fight each other with stones.　(b) They throw oranges at each other.
　　(c) They take their carts to get oranges.　(d) They ride horses in the streets of Ivrea.
② (　　　) Why was the Carnival of Ivrea started?
　　(a) To learn how to make special food.　(b) To choose the best team in the town.
　　(c) To show visitors around the town of Ivrea.
　　(d) To remember a battle from a long time ago.
③ (　　　) Who won the battle in 1194?
　　(a) The ruler of Ivrea.　(b) The people of Ivrea.　(c) The team pulling carts.
　　(d) The soldiers riding horses.
④ (　　　) Who has to wear red hats during the orange battles?

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(a) People who just want to watch.　(b) People who have to clean the town.

(c) People who don't want to walk.　(d) People who don't like eating oranges.

⑤ (　　　) What is this story about?

(a) The best way to travel in Italy.　(b) The history of many towns in Italy.

(c) A special kind of orange in Italy.　(d) A special festival in a small town in Italy.

3.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、その記号を書きなさい。

I Can Do Anything

Curtis Pride was born in Washington, D.C. on December 17, 1968.　When Curtis was seventeen months old, his doctor told his mother that Curtis could hear almost nothing. In 1971, his family moved to Silver Spring, Maryland.　Curtis started a special school program there.　For three years, he took classes to help his speaking.　Then he started taking classes with students who could hear.　Some students didn't like Curtis because he was different.　Curtis's mother told him that he should not stop doing the things he wanted to do.　He never forgot what she said.

In high school, Curtis was the only student that couldn't hear.　He studied very hard and his teachers said he was a great student.　He loved sports and played soccer, basketball, and baseball.　For all those sports, he made new records for his high school. At college, he studied business, and in the summers he played baseball with the New York Mets, a major league baseball team.　Since he graduated in 1990, Curtis has played for four other major league teams.　He is the first major league baseball player who can't hear since 1945.

Every year, Curtis Pride received hundreds of letters from young men and women with disabilities.　With the help of his family, he answers all the letters he gets.　For the past few years he has also worked with disabled students.　Curtis says that having a disability teaches him never to give up.　He tells this to all the people he meets.

① (　　　) What did the doctor say about Curtis?

(a) He had problems with playing sports.　(b) He had problems with his hearing.

(c) He had to stop going to school.　(d) He had to see another doctor.

② (　　　) What did Curtis's mother say to him?

(a) He should take special classes.　(b) He should stop playing baseball.

(c) He should do anything he wants.　(d) He should not forget his homework.

③ (　　　) When Curtis was a high school student,

(a) he didn't play any sports.　(b) he broke records for some sports.

(c) he didn't talk to any of his teachers.   (d) he studied business at summer school.

④ (   ) Curtis answers the letters he gets with the help of

   (a) young men and women.   (b) business people.

   (c) his family.   (d) his friends.

⑤ (   ) What is this story about?

   (a) A man who never forgets anything he hears.

   (b) A man who never gives up and loves sports.

   (c) A teacher who was the first major league baseball player.

   (d) A teacher who broke the sports records at his high school.

4.次の英文の内容に関して、質問に対する答えとして最も適切なものを一つ選び、その記号を書きなさい。

Two-for-One

In Peru all children are required to attend elementary school.   However, in reality 23 percent of students stop going to school before the fifth grade.   This is often because they find the classes too difficult.   Many of the children come from poor families that cannot even afford to buy books and newspapers.   Sometimes their parents themselves cannot read and write.   This means that the children have little chance at home to learn the basic skills necessary to understand their classes.

To help these children stay in school, UNICEF is working with the Peruvian government to carry out a new program called Two-for-One.   Under this program, first- and second-grade students are taught by teenage volunteers from local high schools.   Two-for-One targets children from poor families who are doing badly at school.   The children meet in groups with the volunteers outside of school hours, and each group select a study project to work on for eight weeks.   These projects help children improve their reading and writing ability while developing social skills through group work.   The volunteers try to make the experience fun so that the children will become more interested in learning.

The Two-for-One program only started a few years ago, but it has proved very successful in helping poor children to do better at school.   After just eight weeks in the program, children score on average 30 percent higher on school tests.   In addition, more than 80 percent of the children who take the program stay in school.   In fact, the program has been so successful that there are now more than 2,000 Two-for-One groups active in Peru.   The Peruvian government hopes to see this number grow even more in the future.

① (　　　) What is one reason children in Peru stop going to school?

(a) The government expects children to work at home.

(b) There are not enough teachers for all of the students.

(c) They have to leave their homes at a young age.

(d) They have a hard time understanding their classes.

② (　　　) What problem do some children from poor families have?

(a) They are busy with their school activities.

(b) They are too young to go to elementary school.

(c)They cannot learn basic skills at home.

(d)They have little chance to go out to work.

③ (　　　) In the Two-for-One program,

(a) high school students are taught in groups.

(b) teenage volunteers teach children in their free time.

(c) poor children teach their parents how to read and write.

(d) elementary school children do volunteer activities.

④ (　　　) As a result of the Two-for-One program,

(a) more children are staying in school.

(b) many children have found good homes.

(c) schoolchildren now have more money to spend.

(d) parents can spend more time with their children.

⑤ (　　　) Which of the following statements about Two-for-One is true?

(a) It is run by UNICEF and the Peruvian government.

(b) It is now helping over 80 percent of children in Peru.

(c) It makes it possible for people over 18 to go back to school.

(d) It helps develop the social skills of volunteers through group work.

Appendix B: Immediate written recall test

The following twelve passages are for the immediate written recall tests that include four types of rhetorical organisation, *comparison*, *problem/solution*, *causation*, and *a collection of description*. Computer-The Brain Machine (*comparison*) and Air pollution (*problem/solution*) are used for all the participants as a pre-test. The EU (*causation*), and To Your Health (*a collection of description*) are used for extracted participants as a pre-test. Nuclear Power Plants (*comparison*) and Water (*problem/solution*) are used for all the participants as a post-test. Warming Up (*causation*) and The Purpose of Guilds (*a collection of description*) are used for extracted participants as a post-test. The Early Railroad (*comparison*) and Energy Crisis (*problem/solution*) are used for all the participants as a delayed recall test. Global Warming (*causation*) and Picking Up Rubbish (*a collection of description*) are used for extracted participants as a delayed recall test.

Computer – The Brain Machine

There are contrasting views on the use of computers in business and industry. The industrialists welcome the automation brought about by the use of computers, and in the last decade a number of computers have been installed in industry to raise its productivity. Computers have come to the aid of men's brain and perform many difficult tasks. Most of the computers used in business and factories are expensive. The cheapest on the market is the micro-computer for personal use. The use of computers spread rapidly and computers became the most important part of production. At one plant a single computer performs 500 separate operations; before, it took seventy men to do the same work.

Computers are not popular with everybody. Many workers blame computers for much of the unemployment, and they are afraid that they may be some day replaced by a computer. Some scientists predict computers may rule the world and destroy mankind. Conservative people think that computers make people idle and lazy.

Air Pollution

One of the greatest problems facing mankind today is that of how to remove the pollution of the air we breathe. We have learnt that most cities in the world suffer from heavy pollution. The air is getting polluted at such a rapid rate that medical

research predicts there will be a considerable increase of heart and lung disease in the near future.

One way to attack the problem of air pollution is to reduce it by filtering. Filter systems in factory chimneys or exhaust pipes prevent the direct release of fumes, dust and smoke. Many governments take action to install filter systems in every industry in order to reduce harmful effects on public health. Another way to solve the problem of air pollution is to promote changes in a means of transportation which is a major cause of air pollution – the car. If we can change from cars to railroads or bicycles, we can be sure of removing a large amount of air pollution.

The EU

In May 1998, a group of 11 European countries, who already constituted the economic bloc of the European Union, agreed to adopt a common currency – the Euro. How will Europe change as a result of this strengthening of economic and political ties?

This unification is primarily intended to benefit member countries economically. The EU now forms the second largest economic bloc in the world. Unification has re-enforced its power to compare against the American and other economic blocs.

This economic unification will bring about cultural unification too. As there are no borders inside the EU, people can move freely between nations. There will be more chances for contact with each other, and the common languages will probably be English. Under one language, Europe will become more united culturally.

How far will the EU expand in the future? If cultural unification is important, it might be safe to limit membership to the European countries with similar cultural backgrounds.

To Your Health

The United States has no national healthcare system. We have Medicare for the elderly. We have Medicaid for the poor. Full-time employees can usually sign up for medical coverage through their employers. But nearly 50 million Americans have no health insurance at all. With medical and hospital costs so high, one illness can lead to financial ruin.

Every presidential election, the candidates pledge to start some kind of national health insurance. But once in office, they back down. Doctors in the U.S. are a powerful lobby. They are also greedy. They don't want a national health insurance system

because they think it would cut into their incomes.   Also, many conservative lawmakers associate national health insurance with "evil" socialism or even communism.   So they always vote it down.

Nuclear Power Plant

Different views were held on the construction of nuclear power plants in the United States.   Scientists recognized certain advantages of nuclear power, and by 1960 several attempts had been made to construct nuclear reactors in the United States.   The first American nuclear reactors were built and produced a large amount of energy.   Most of the early reactors were uranium reactors.   The oldest in the world was a uranium reactor in England.   Nuclear reactors were rapidly developed and nuclear power became an important source of energy.   Generating electric power by modern reactors does not pollute the air; most fossil fuels release harmful fumes into the air.

The construction of nuclear power plants was not favoured by everyone.   The village people near the plants were afraid of the accidental release of radio-active materials and its terrible effects on people.   The peace-groups worried that the plants might be used for the manufacture of nuclear weapons.   The churches feared that nuclear power might destroy the world God had created.

Water

One of the serious problems facing us today is that of how to get more water for men to use.   We are told that the world's population is literally "exploding".   It is expanding at such a rapid rate that scientists predict there will be more people than our planet can house and feed properly by the end of the century.

A partial answer to the problem of water scarcity is to conserve water by recirculating. Circulating water used for cooling the machinery over and over is a way to save the large amounts of water used for industrial purpose.   Many factories examine the possibility of recirculating water as much as possible instead of using it once only. Another way to solve the problem of water scarcity is to learn to make use of the most abundant supply of water we have – the sea.   If we could learn to get drinkable water from sea water, we would be sure of never having a water shortage.

Warming Up

Ice is important to the animals and people who live in the polar regions.   Polar bears walk on the ice to hunt for food, like seals and fish.   Seals come from the water to rest on the ice and to give birth.   The Arctic's indigenous people hunt and live on the ice.   Now life in the Arctic is getting more difficult.   According to a new report called the Arctic Climate Impact Assessment (ACIA), Arctic temperatures have risen by up to seven degrees over the past 50 years.   The warm-up has melted an area of ice about the size of Texas and Arizona combined.   Some scientists believe the Arctic, which has ice year-round, could be ice free during the summers in about 100 years.

The Purpose of Guilds

To protect themselves, merchants often banded together in groups called guilds.   The members of a guild shared the same work roles, and many of the same values as well.   They valued money, business, and the rights of traders and workers.   Their norms of behaviour were practical ones, like hard work and saving money.

Guilds decided which trading routes merchants would use.   Guilds also decided the price of goods so that one merchant could not ruin another's business by selling goods too cheaply.

After the merchant guilds were formed, another kind of guild appeared.   The new guilds filled the needs of another groups of workers.   These guilds were for craftsman and skilled labourers.   For example, there was one guild for bakers, another for brewers, and another for goldsmiths.

The Early Railroad

There are two contrasting views on the usefulness of railroads for early Americans.   American businesspeople were quick to recognize the great economic potential of railroads.   By 1830, several companies had been formed to build railroad lines in the United States.   The first American locomotive was built and made its trial run in the same year.   Most of the early railroads were short.   The longest in the United States was 220 km.   Railway developed rapidly and railroads became the most economical form of transportation.   Travelling by water between New York City and Detroit took ten days.   By rail, the same trip required only four days.

Railroads were not popular with everybody.   Farmers complain that the noise frightened their cattle.   Some physicians feared that the human body could not endure

travel at speed as high as the trains went.

Energy Crisis

One of the serious problems facing our countries is that of how to supply energy for the future.　We have heard that the earth's finite resource of fossil fuels has lead to an energy crisis.　The fossil fuels are consumed at such a rapid rate that scientists predict there will be no more fossil fuels in the earth by the end of the century.

One of the promising solutions to the energy problems is to use nuclear energy. Nuclear energy utilizes the enormous electric power generated by the process of atomic fission.　Many countries attach great hopes to nuclear energy due to its relatively low cost compared to fossil fuels.　Another way to solve the problem of energy is to learn to make use of the resource which is abundantly available over most parts of the earth – the sun.　If we could get most of our energy from solar power, we would be sure of being independent of other countries for the energy supply.

Global Warming

Natural causes can affect Earth's temperatures.　Some scientists say that human activity may be to blame for global warming.　Humans use fossil fuels such as oil, coal, and natural gas for heat and power.　Burning those fuels releases carbon dioxide into the air.　The amount of carbon dioxide is rising every year.　Too much carbon dioxide traps heat in the Earth's atmosphere, causing temperatures to rise.

Although not everyone agrees about global warming and its causes, it's important to find out what can be done to keep the polar bears, penguins, and other creatures happy and healthy on the ice.

Picking Up Rubbish

One day when I was visiting a friend, I noticed a large, untidy ball of straw lying on the grass.　I walked over to pick it up and found that it was a sparrow's nest.

Sparrows build their nests using straw and dried leaves, along with anything else they can pick up.　When I looked inside this particular nest, I couldn't believe my eyes.　It was full of rubbish, or trash, woven carefully together to insulate the nest and keep the sparrow's eggs warm.　I thought it would be interesting to count all the different bits of rubbish in the nest.　And this is what I found: sixty-nine feathers mainly from chickens,

sixteen pieces of candy wrappers, one movie ticket, seven strands of human hair, seven straw wrappers, and two pieces of toilet paper.

Appendix C: A questionnaire

This questionnaire is based on Carrell (1989) and was conducted twice before and after the instruction.

The following statements are about silent reading in English.   In answering the questions we would like to ask you to indicate the strength of your agreement with each statement.   In the boxes after each statement, please tick one box that best describes the extent to which you agree or disagree with each of the following statements.

*When reading silently in English,

	strongly agree	agree	Neither agree nor disagree	disagree	strongly disagree
1. I am able to anticipate what will come next in the text.					
2. I am able to recognize the difference between main points and supporting details.					
3. I am able to relate information that comes next in the text to previous information in the text.					
4. I am able to question the significance or truthfulness of what the author says.					
5. I am able to use my prior knowledge and experience to understand the content of the text I am reading.					
6. I have a good sense of when I understand something and when I do not.					

*When reading silently in English, if I don't understand something,

	strongly agree	agree	Neither agree nor disagree	disagree	strongly disagree
7. I keep on reading and hope for clarification further on.					
8. I reread the problematic part.					
9. I go back to a point before the problematic part and reread from there.					
10. I look up unknown words in a dictionary.					
11. I give up and stop reading.					

*When reading silently in English, the things I do to read effectively are to focus on

	strongly agree	agree	Neither agree nor disagree	disagree	strongly disagree
12. mentally sounding out parts of the words.					
13. understanding the meaning each word.					
14. getting the overall meaning of the text.					
15. being able to pronounce each whole word.					
16. the grammatical structure.					
17. relating the text to what I already know about the topic.					
18. looking up whole words in the dictionary.					
19. the details of content.					
20. the organisation of the text.					

*When reading silently in English, things that make the reading difficult are

	strongly agree	agree	Neither agree nor disagree	disagree	strongly disagree
21. the sounds of the individual words.					
22. pronunciation of the words.					
23. recognising the words.					
24. the grammatical structures.					
25. the alphabet.					
26. relating the text to what I already know about the topic.					
27. getting the overall meaning of the text.					
28. the organisation of the text.					

*Here is the part you feel free to write.

1. Do you know that expository text in English is organised by some patterns, such as *problem/solution,* for instance?
[   ]

If you answered yes in the question above, where did you know that?
[   ]

Appendix D: An example of idea units

Nuttall (2005:225) exemplifies idea units using the following passage. This passage is divided into four idea units.

In free recall, students are asked simply to read a text, to put it to one side, and then to write down everything they can remember from the text. The comprehension score is the number of idea units from the original text that are reproduced in the free recall.

1. In free recall, students read a text.
2. Students put a text on one side.
3. Students write down all they can remember.
4. Comprehension score is the number of idea units reproduced.

Appendix E: Internal consistency reliability for the questionnaire

Correlations of questionnaire items 1 to 6

	No.1	No.2	No.3	No.4	No.5	No.6
No.1	1.000	.347**	.499**	.272*	.312**	.276*
	.	.002	.000	.015	.005	.013
No.2	.347**	1.000	.185	.224*	.235*	.382**
	.002	.	.101	.045	.036	.000
No.3	.499**	.185	1.000	.190	.070	.088
	.000	.101	.	.092	.536	.435
No.4	272*	.224*	.190	1.000	.265*	.369**
	.015	.045	.092	.	.017	.001
No.5	.312**	.235*	.070	.265*	1.000	.348**
	.005	.036	.536	.017	.	.002
No.6	.276*	.382**	.088	.369**	.348**	1.000
	.013	.000	.435	.001	.002	.

**correlation is significant at the 0.01 level (1-tailed).
*correlation is significant at the 0.01 level (2-tailed).

Correlations of questionnaire items 7 to 11

	No.7	No.8	No.9	No.10	No.11
No.7	1.000	.053	-.047	-.216	.114
	.	.640	.679	.054	.314
No.8	.053	1.000	.526**	.183	-.117
	.640	.	.000	.104	.299
No.9	-.047	.526**	1.000	.207	-.019
	.679	.000	.	.066	.869
No.10	-.216	.183	.207	1.000	-.090
	.054	.104	.066	.	.425
No.11	.114	-.117	-.019	-.090	1.000
	.314	.299	.869	.425	.

**correlation is significant at the 0.01 level (1-tailed).

Correlations of questionnaire items 12 to 20

	12	13	14	15	16	17	18	19	20
12	1.000	-.022	-.032	.300**	-.164	.139	.190	.254*	.017
	.	.847	.776	.007	.147	.219	.092	.023	.884
13	-.022*	1.000	.054	.098	.140	-.014	.253*	.233*	-.017
	.847	.	.636	.388	.214	.905	.024	.037	.883
14	-.032	.054	1.000	-.054	.222*	.297**	-.124	-.019	.348**
	.776	.636	.	.634	.048	.008	.274	.867	.002
15	.300**	.098	-.054	1.000	.036**	.200	.097	.268*	.210
	.007	.388	.634	.	.001	.075	.393	.016	.061
16	-.164	.140	.222*	.360**	1.000	.301**	.282*	.225*	.346**
	.147	.214	.048	.001	.	.007	.011	.045	.002
17	.139	-.014	.297**	.200	.301**	1.000	.349**	.168	.138
	.219	.905	.008	.075	.007	.	.001	.137	.223
18	.190	.253*	-.124	.097	.282*	.349**	1.000	.312**	-.096
	.092	.024	.274	.393	.011	.001	.	.005	.395
19	.254*	.233*	-.019	.268*	.225*	.168	.312**	1.000	.185
	.023	.037	.867	.016	.045	.137	.005	.	.100
20	.017	-.017	.348**	.210	.346**	.138	-.096	.185	1.000
	.884	.883	.002	.061	.002	.223	.395	.100	.

**correlation is significant at the 0.01 level (1-tailed).
*correlation is significant at the 0.01 level (2-tailed).

Correlations of questionnaire items 21 to 28

	21	22	23	24	25	26	27	28
21	1.000	.901**	-.073	.014	.324**	.038	-.070	.110
	.	.000	.519	.905	.003	.740	.539	.330
22	.901**	1.000	-.063	.052	.374**	.041	-.063	.141
	.000	.	.578	.648	.001	.716	.578	.211
23	-.073	-.063	1.000	.347**	.020	.175	.281*	.138
	.519	.578	.	.002	.861	.120	.012	.223
24	.014	.052	.347**	1.000	.041	.255*	.297**	.438**
	.905	.648	.002	.	.721	.022	.007	.000
25	.324**	.374**	.020	.041	1.000	.294**	.219	.216
	.003	.001	.861	.721	.	.008	.051	.054
26	.038	.041	.175	.255*	.294**	1.000	.600**	.436**
	.740	.716	.120	.022	.008	.	.000	.000
27	-.070	-.063	.281*	.297**	.219	.600**	1.000	.654**
	.539	.578	.012	.007	.051	.000	.	.000
28	.110	.141	.138	.438**	.216	.436**	.654**	1.000
	.330	.211	.223	.000	.054	.000	.000	.

**correlation is significant at the 0.01 level (1-tailed).

*correlation is significant at the 0.01 level (2-tailed).

Appendix F: An example of top-level structure

Youths Turn Off on Drugs (Meyer, Young, and Bartlett, 1989:117)

Back at the schoolyard, the young people are turning away from drugs and alcohol. A new survey for the National Institute on Drug Abuse says that the percentage of high school seniors using marijuana 20 or more times a month dropped to 5.5% last year, from 6.3 in 1982. The survey found that daily alcohol use also dipped in 1983-to 5.5%, from 5.7% in 1982. One big reason for the shift to clean living: concern about health.

The above passage is explained as the following top-level structure (Meyer and Poon, 2004:822).
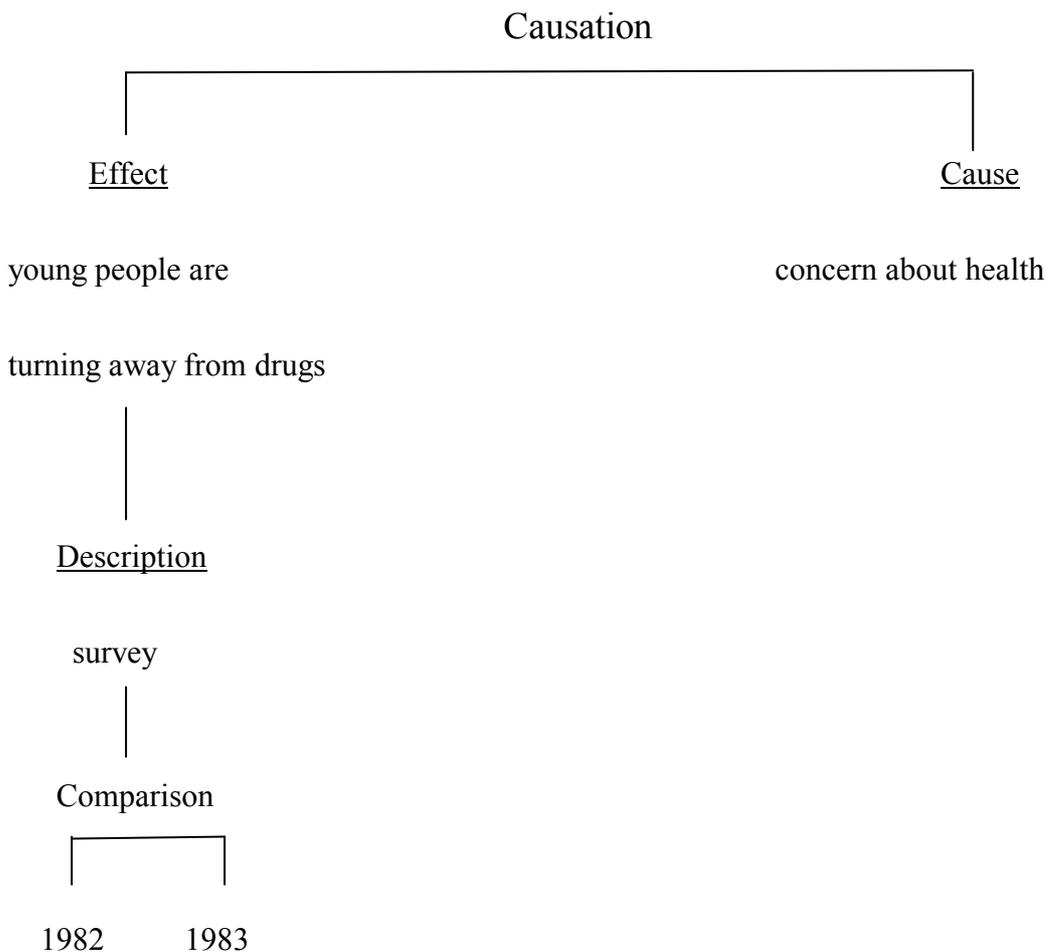
Appendix G: An example of a graphic organiser for *causation*

The following template (Jiang and Grabe, 2009:41) is for a *cause-effect* rhetorical organisation.   Flying across time zones gives possible effects for jet lag.

Cause   Effect

| Jet lag (flying across time zones) | → | 1.
2.
  3. |
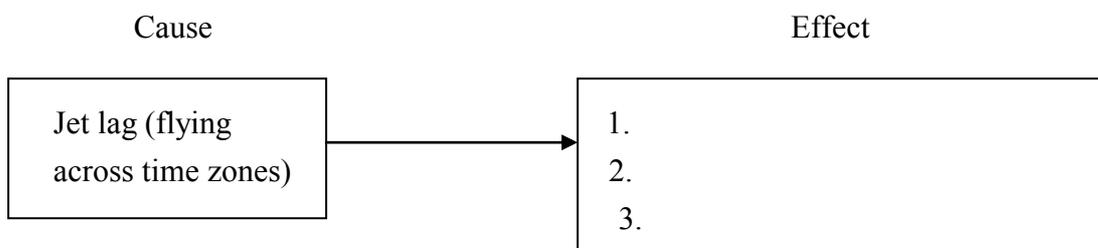
An instructional text titled "Flying High, but Feeling Low?" is used to demonstrate how to identify discourse structures.   The symptoms of jet lag can be depicted as a cause and effect relationship as shown in the graphic representation below.

Cause   Effect

| Jet lag (flying across time zones) | → | 1.makes a person tired and confused
2.causes headaches
  3.causes poor sleep and poor appetite |
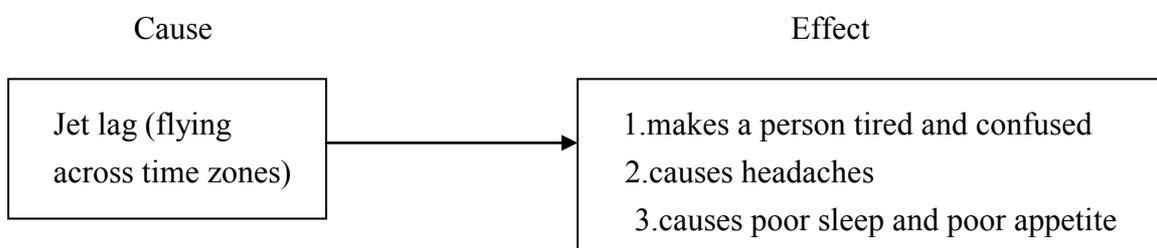
Text:

Do you ever feel sick, confused, or very tired after a long plane ride?   If you were flying east to west or west to east, the problem could have been jet lag.   Jet lag happens when your body's time clock becomes confused.   Crossing several time zones may make you feel very tired.   You may become confused because you are fatigued. In fact, you may get headaches and notice that you have problems eating and sleeping. These are all symptoms of jet lag.

Appendix H: Examples of rhetorical organisation

The following passage is an example of rhetorical organisation: *comparison* (Meyer, Young, and Bartlett, 1989:151).

The Steamboat

The steamboat came of age in the 1825-50 generation.   Early steam vessels were built to operate on Eastern rivers.   They had deep hulls, and carried most of their cargo below decks.   They were able to operate with low-pressure steam engines, and frequently carried sails also.   Steamboats built for western rivers were considerably different.   Their hulls were flat and shallow, and the superstructure – the part of the vessel above deck – sometimes was three stories high.   Low-pressure engines could not be used: The far more powerful (and dangerous) high-pressure engines were installed above the waterline, and fuel, cargo, and passengers all were carried on the main deck and the superstructure.

The following passage is an example of rhetorical organisation: *problem/solution* (Meyer, Young, and Bartlett, 1989:135).

Kindness Cures Rat Allergies

Psychologists who work with rats and mice in experiments often become allergic to these creatures.   This is a real hazard for these investigators who spend hours a week running rats in experiments.   These allergies are a reaction to the protein in the urine of these small animals.

At a meeting sponsored by the National Institutes of Health, Dr. Andrew J. Slovak, a British physician, recommended kindness to rats and mice from the experimenters. Psychologists who pet and talk softly to their rats are less often splattered with urine and the protein that causes the allergic reaction.

The following passage is an example of rhetorical organisation: *causation* (Meyer, Young, and Bartlett, 1989:142).

Where you live affects how fast your eyesight will deteriorate from age. A recent study found that people in warmer countries develop age-related farsightedness earlier than those endure a colder climate. The British ophthalmologist who came to this conclusion says that the temperature of the eye's lens is not well maintained by the body, but is highly influenced by the external environment. Thus, heat may somehow cause changes in the lens that lead to farsightedness.

The following passage is an example of rhetorical organisation: *a collection of description* (Meyer, Young, and Bartlett, 1989:143).

A Graceful Creature

The grace and beauty of the swan has fascinated man for centuries. Swans appear often in fairy tales, poetry, and mythology. In 15-century England, they were even designated as royal birds.

The stately water birds are found in diverse parts of the world, such as the arctic regions, the southern parts of South America, and the United States. The best-known wild swans in the United States are the whistling and trumpeter swans.

A long, slender neck is the most striking feature of the swan. Swans use their long necks to dive for food. They like to eat seeds, roots, and fish eggs. Swans weigh about 40 pounds and measure up to 4.5 feet long. Wild swans travel in flocks and are able to fly long distances in spite of their size and weight.

Appendix I: A sample of interviews

The following is a sample of interviews with Aoi (a pseudonym), a subject of my research.   This one-to-one interview was carried out in Japanese after Aoi read the *Warming Up* text and the *Purpose of Guilds* text in the post-test.   The audio-taped interview was transcribed from Japanese to English.

Interviewer: How was the Warming Up text that you read?

Aoi: I sort of understood the first part of this text but found it a bit hard to understand the latter half.

Interviewer: Did you find it hard to understand the latter half of the text?   The first sentence starts with "Ice is important".   Did you understand a passage around the first part?

Aoi: What is the meaning of "polar regions"?

Interviewer: Regions mean "地域" (land area, district).   So they mean "極地域" (polar areas).

Aoi: Then do "polar bears" mean "北極グマ"?

Interviewer: Yes.   They mean "北極グマ".

Aoi: I sort of understood the first part but didn't understand around the last sentence.

Interviewer: The last sentence may be difficult.   (Reading aloud the last sentence), some scientists believe the Arctic...

Aoi: What is "the Arctic"?

Interviewer: "北極圏" (the Arctic Circle).

Aoi: I didn't quite understand the last sentence.   The problem was mentioned.   But the solution was not provided.

Interviewer: There is no solution in this text.   Global warming increases and temperatures rise.   As a result, what will happen?

Aoi: What is that rhetorically?

Interviewer: Cause and effect.

Aoi: Cause and effect?   I had no idea.

Interviewer: How was the Purpose of Guild text that you read?

Aoi: Is a guild the gathering of something?

Interviewer: It is a gathering of merchants, professionals, and a wide variety of professionals.   At first there was only the guild of merchants.   Later on,...

Aoi: There were the guilds of bakers or brewers.

Interviewer: There were guilds for these occupational groups.   It was a gathering on behalf of people who were in the same business.   They made a system so that they can rely on and support each other.

Aoi: I have never heard of that.

Interviewer: Did you hear about it in history?   It may have been dealt with in your world history class.   It is not a general issue.

Aoi: Because there are some words that I sort of understand, I tried to translate the text into Japanese.   I didn't quite understand the text organisation.   Is "the price of goods" about commercial goods?

Interviewer: It is about commercial goods.

Aoi: It is sort of that the guild decides the price of goods.

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Interviewer: Yes.

Aoi: What does "so that" mean?

Interviewer: It means "〜するように".

Aoi: I didn't understand "one merchant could not ruin another's business".

Interviewer: By selling goods too cheaply, "一人の商人が別の商人の商売を損なわない".

Aoi: It means that they don't sell goods too cheaply.　The guild decides the price, which is not changed.　Do all the merchants sell the goods at the same price?

Interviewer: I think that would be the case.

Aoi: Without injustice to the members of the guild?　The guild is a gathering of merchants, isn't it?

Interviewer: Yes, it is.

Aoi: They discuss and decide the price at a gathering.　Then does each of merchants sell at the same price?

Interviewer: Yes.

Aoi: There is such gathering of bakers, right?　It is difficult to read because I am unfamiliar with the content of this text.

Interviewer: The topic of this text is unfamiliar to you, so it is hard for you to read. What is the rhetorical pattern?

Aoi: The description pattern?

Interviewer: Yes, that's right.

Aoi: I like learning English.   Recently, my English-language ability is worsening.   I think that I would like to learn English more.