A Study on Taiwanese College Students' Use of Global Reading Strategies in Different Discourse Types

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Abstract

This study is intended as an investigation of the influence of two western expository structures, namely collection and problem/solution, on the reading strategies used by Taiwanese English L2 speakers during real-time reading. After the administration of an intermediate-level reading proficiency test to a sample of 479 students, 280 intermediate L2 English readers were selected from four colleges in Taiwan. The 280 intermediate-level participants selected were given a passage to read. The participants were grouped by the two discourse types. The participants at two of the Taiwanese colleges read a passage written in the collection structure, and those at the other two colleges were instructed to read a passage containing the same information, but organized in the 'problem/solution' structure. After reading, the participants filled in a reading strategy survey based on their reading of the passage. They also took a reading comprehension test based on the passage they had read. Both descriptive and inferential statistical analyses such as t-tests were applied to the results, to examine whether there were significant differences in the participants' choice of reading strategies when they read the two types of reading passage. The t-test result showed that there were significant differences between the two discourse types, problem-solving and collection, in the participants' use of global reading strategies ($p<.01$).

Keywords: Discourse Types, Problem-solving, Collection, Global Reading Strategies

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1. Introduction

During the past six decades, the focus of reading comprehension has been moved from skill mastery to strategy learning (Akhondi et al., 2011). McNamara (2009) remarked that "the importance of reading strategies is becoming increasingly recognized" (p. 34). As a L2 English learner, I have acknowledged that the effective use of reading strategies is beneficial to my own English reading; given this, I have gradually come to recognize the importance of reading strategies in reading comprehension generally. Employing reading strategies, such as guessing meaning from the context and noting the characteristics and organizational pattern of a text, makes reading English an easier task for me; and I assume this must be true for other readers as well. However, while I recognized the significance of reading strategies, from my past English reading experiences, I have found my application of reading strategies to differ across various discourse types. For instance, I tend to use a wider variety of reading strategies when reading fiction than when reading expository texts. Similarly, as a language teacher, by asking some of my college students in Taiwan how they comprehended English texts during reading tasks, I noticed that they seemed to utilize different strategies in response to various discourse types. This perplexing phenomenon compelled me to speculate that there exists a link between discourse types and learners' reading strategies.

The research literature tends to support the experiences I have had, both as a reader and as a teacher. Meyer (1984) pointed out that different discourse types would affect readers' expectations during reading and influence their search plans during retrieval. Commenting on the interaction among types of organizational structures, reader expertise and reader strategies, she stated that "[their] interaction affects the mechanisms of cognitive processing that form a representation in the reader's mind of the text" (p. 45). Fitzgerald (1995) suggested that schemata affect comprehension and recall for ESL readers in the United States. In most of the studies reviewed by Fitzgerald, it was also found that participants were better able to comprehend or remember passages if they were more consonant with their native cultures or were deemed more familiar. In an earlier review article, Carrell (1985) claimed that, due to

the interaction between the rhetorical organization of a text (discourse types) and the reader's formal schema, the impact of discourse types on reading comprehension has been demonstrated by various measurements—written recall protocols, summaries, and retellings as well as question-answering.

Addressing what factors affected the learner's choice of language learning strategies, Oxford (1989) provided a list of variables which included the following: (a) the language being learned; (b) the level of language learning; (c) the degree of awareness; (d) age; (e) sex; (f) affective variables including attitudes, motivation level/intensity, language learning goals, motivational orientation, personality characteristics as well as general personality type; (g) learning style; (h) aptitude; (i) career orientation; (j) national origin; (k) language teaching methods; (l) task requirements. As indicated by Oxford and Nyikos (1989), although some of the factors, such as language learning level, national origin, field of specialization and language teaching methods were strongly related to language learners' choice of strategies, other factors, such as motivation and sex, did not receive the same amount of attention. Nevertheless, in the article in which Oxford (1989) synthesized the previous studies, discourse types were not recognized as variables influencing the learner's reading strategies, even though it cannot be denied that reading is one of the basic language skills and discourse type is one of the components contributing to a reader's mental representation of a text.

While Kucan and Beck (1996) indicated that psychological inquiry into the reader's cognitive process has started to examine the influence of discourse types, only a small number of studies have included L2 English readers in Taiwan as their participants. In order to better understand Taiwanese English L2 learners' application of reading strategies in response to discourse types, this study includes this specific population as its participants. Additionally, few studies have focused on the link between discourse types and learners' reading strategies. Thus, this study is intended as an investigation of the influence of two western expository structures, namely collection and problem/solution, on the reading strategies used by Taiwanese English L2 speakers during real-time reading.

2. Literature Review

(1) Language Learning Strategies

Cohen (1998) offered a more recent view on the issue of defining *strategies*. Cohen commented that the definition of the term *strategies* includes those actions that are clearly aimed at language learning, as well as those that may lead to learning but do not ostensibly have learning as their main goal. As indicated by Cohen (1996), language-learning strategies are clearly aimed at language learning, while language-use strategies are "those that may well lead to learning but which do not ostensibly have learning as their primary goal" (p. 11).

According to Cohen (1998), the term *strategies* is generally used to refer to general approaches and to specific activities undertaken in the course of learning and using a second language. In addition, Cohen (1998) divided the category of specific strategies into sub-strategies such as checking whether a text is coherent or not during a reading task. In this way, these specific strategies can be divided ad infinitum.

Cohen (1998) pointed out that the role of consciousness is closely related to the concept of strategies. Based on Schmidt's (1994) studies, Cohen (1998) stated that "language learning strategies are either within the focal attention of the learners or within their peripheral attention" (p. 11). In other words, Cohen thought that language learners are either conscious of or partially conscious of their use of language strategies. According to Cohen, there is a difference between a strategy and a process. If the use of a strategy becomes so automatic that the learners are not conscious of it, this kind of behavior cannot be referred to as a *strategy*, but rather as a *process*.

Cohen (1998) indicated that language learners can improve their language performance if instructors can help them reinforce strategies that enable them to speak the target language more effectively. If the language teachers explicitly describe, discuss and reinforce strategies in the language classrooms, their instruction can raise the learner's conscious awareness of these strategies and this increased awareness will in turn have positive impacts on the learner's performance on language tasks.

According to Zhang (2003), early researchers in second language acquisition (SLA) searched for the strategies used by successful and unsuccessful learners. This research trend was driven by the notion that giving less successful learners access to a large

repertoire of effective learning strategies would enhance their language-learning efficiency. Reiss (1981) noted that establishing what constitutes a successful learner and determining what strategies and techniques the successful learners use are steps we can take toward finding ways that the unsuccessful learner might be helped by the successful learner. Rubin (1975) indicated that ". . . by considering how [the good language learner] is successful, what strategies, what cognitive processes he uses to learn a language, we may be led to well-developed theories of the processing of linguistic information which can be taught to others" (p. 49).

Zhang (2003) further noted that, in this early body of language learning strategy research, the terms *strategies* and *tactics* tended to be used interchangeably. As Zhang noted, different terms such as *techniques*, *tactics* and *moves* were in fact used interchangeably with the term *strategies* in the early LLS (language learning strategy) studies (Zhang, 2003). In fact, a range of terms available in the literature seem to refer to roughly the same, or overlapping concepts; these include the terms *techniques* (Stern, 1975), *tactics* (Seliger, 1984), and *moves* (Sarig, 1987)—to name a few. Given this, it is somewhat problematic to refer to the various cognitive or metacognitive processes that this set of terms refer to.

Shemeck (1988) made a distinction between the two mostly commonly used terms. For Shemeck, the term *tactics* refers to the learners' specific activities, while *strategies* refers to their more general approach or plan. Shemeck observed that in this sense the meanings of the two terms are in accordance with the dictionary definition and the military usage. That is, tactics are the observable activities by which certain strategies are being carried out.

In actual usage, the terms *strategies* and *tactics* tend to co-exist in a hierarchical structure. As an umbrella term, the term *strategies* is generally used to refer to a higher level cluster of learning activities that function to produce a unified learning outcome (Shemeck, 1988). The learners' strategies determine their choice of tactics. Schemeck (1988) further suggested that the tactics can be divided into two sub-groups: those that are memory-directed and those that are comprehension-directed.

Likewise, Anderson (2003b) considered strategies as conscious actions which language learners employed to improve their learning. In addition, he indicated that strategies can be either "observable" or "mental" as follows:

Strategies may be observable, such as observing someone take notes during an academic lecture and then comparing the lectures notes with a chapter in a textbook in order to understand and remember information better, or they may be mental, such as thinking about what one already knows on a topic before reading a passage in a textbook. (p. 3)

Oxford and Crookall (1989) stated that if the researchers could come to some consensus on the definitions of various strategies, this endeavor would help the field greatly. However, since there are no agreements on an overall, hierarchically organized LLS taxonomy and on the way of defining a given strategy or clusters of strategies, this issue is far from being settled.

Zhang (2003) noted that, even though Cohen's proposal regarding the distinction between strategy and process is feasible, it does not solve all of the definitional problems involved. The task of defining and categorizing strategies is still compounded by the various operations that any given strategy entails. For instance, a cognitive strategy such as language learners' checking a difficult sentence several times can also be considered as a metacognitive strategy because the readers here are purposely checking for accuracy (Phakiti, 2003). Moreover, different researchers still tend to give various names to identical strategies. For this reason, Zhang suggested that LLS researches need to standardize the names to be given to the strategies based on the available research findings.

As a working definition for this study, I drew on Oxford's (1990) definition of strategies. That is, I viewed strategies as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (Oxford 1990: 8). In addition, in terms of the level of learners' consciousness, I tend to agree with Cohen's (1998) view that the learner is either conscious of or potentially conscious of the strategies he/she employs. Strategies are deliberate and conscious actions taken by language learners. This factor was important to the present study, as I depended on learners' conscious reports to explore their use of language learning strategies.

(2) The Survey of Reading Strategies (SORS)

Based on the Metacognitive–Awareness-of-Reading-Strategies Inventory (MARSI) created by Mokhtari and Reichard (2002) for native English speakers, Mokhtari and Sheorey (2002) developed the Survey of Reading Strategies (SORS) to measure adolescent and adult ESL learners' perceived use of reading strategies. Poole (2005) noted that the SORS is a thirty-item survey containing three kinds of strategies: global reading strategies (13 items), problem-solving strategies (8 items) and support strategies (9 items). As explained by Poole, global reading strategies are used to plan, monitor and direct the learner's reading; these include strategies such as checking to see whether one's guesses are correct, and deciding what material to pay close attention to, and what to ignore. This type of strategy also includes visualizing information to help one remember it and guessing the meaning of unknown words. Problem-solving strategies refer to the procedures used by the learners when they read a text in order to clear up misunderstandings or difficulties in text comprehension. Supportive strategies are auxiliary materials and resources which are used to increase text comprehension. Instances of such strategies include note taking and highlighting important information.

Nevertheless, as specified by Mokhtari and Sheorey (2002), the purpose of the SORS was to collect information about the various techniques an ESL learner used when he/she read academic materials in English; in other words, the SORS was designed to investigate ESL learners' use of reading strategies in their reading of a general academic article.

The original version of the SORS which was composed of 30 reading strategy items was not a suitable instrument to use in this study, because it was not sensible to provide the participants with a relatively great range of reading strategy items on a survey, some of which they probably did not use at all during their reading of a short passage containing only 258 words. For instance, in my study, it was impossible for the participants to use tables, figures, and pictures in text as a strategy to increase their reading comprehension, since there were no such things in the short passages they read. Based on Kintsch and Van Dijk's (1978) theory that discourse types would influence the learner's goal of reading, I examined the possible impact of these two discourse types on the reader's employment of the global reading strategies, which focus on setting the purpose for the reading act (Wu, 2005). As a result, the reading strategy survey used

in my own study mainly covered the category of global reading strategies listed in Mokhtari and Sheorey's strategy classification scheme (2002). Using a five point Likert Scale (1=strongly disagree, 5=strongly agree), participants judged eleven statements about global reading strategies in English as they felt they had used them in reading these short passages.

(3) Discourse Types

The term *discourse type* has been used interchangeably with others such as *genre*, *text structure*, *text type* and *rhetorical structure*.   While these similar terms all refer to the discourse patterns in text, different researchers tend to use the terms which they deem appropriate to denote the same concept.   Without a standardized term, the line of research which explores the relationship between discourse patterns and reading strategies has been perplexing from the beginning of its development.

Meyer and Freedle (1984) used the term *discourse type* to refer to the five basic discourse organizations: collection, description, causation, problem/solution and comparison.   As employed by Meyer and Freedle, the term refers to the overall organizing principle of the text, such as causality, problem/solution and so on.   Roller (1990) used the term *text structure* to include the overall organizing principles referred to by Meyer and Freedle (1984).   In addition, Roller (1990) specified that her concept of *text structure* also covers specific "pointer words or signals, such as *first, second,* and *third*, which identify chronological relations, and *because, therefore,* and *however*, which indicate logical relations" (p. 81).   In other words, Roller used the term *text structure* to refer to the discourse patterns in the text that can be identified, as well as to the overall text organization.

Vacca and Vacca (1999) noted that exposition is the primary mode of discourse in academic texts because content area textbooks are aimed to inform their readers. Authors of academic texts use two text structures to inform their readers: external and internal text structures (Vacca and Vacca, 1999).   External text structures refer to the text's format features, including a preface, a table of contents, appendixes, a bibliography, indexes and so on.   As to the text's internal text structures, Vacca and Vacca (1999) indicated that "[its] internal text structure is reflected by the interrelationships among ideas in the text as well as by the subordination of some ideas

to others" (p. 394).   Using a similar framework proposed by Meyer (1975), Vacca and Vacca (1999) identified five predominant internal text patterns in informational writing: description, sequence, comparison and contrast, cause and effect, and problem and solution.

Urquhart and Weir (1998) also used the term *text type* to refer to such rather generalized written discourse patterns as narrative, descriptive, and argumentative types, based largely on the writer's purpose, rather than on the internal or external features of the text.   Urquhart and Weir (1998) reserved the term *text structure* to refer to both the components in models of text representation (such as the macrostructure in Kintsch and Van Dijk's model) and discourse patterns detected by various analysis frameworks.   It seems to me that when Urquhart and Weir employed the term *text type*, they had in mind something like what Kintsch and Van Dijk (1978) would have called *highly conventionalized text types*.

Swales (1990) commented on the term *genre*, indicating that the elements of a genre are a set of communicative events in which the participating members share commutative purposes.   These shared communicative purposes are recognized by the expert members of a discourse community and turn out to be the rationale for a genre.   As a result, the schematic structure of the discourse and the participating members' choice of content and style are under the influence of the rationale embedded in a genre. Urquhart and Weir (1998) pointed out the two terms *text type* and *genre* are very similar. Urquhart and Weir did not specify that *text type* solely refers to written texts, even though they mentioned that the term *genre* is more useful in accounts of writing. Since the terms *text type* and *genre* are difficult to distinguish, these two terms are sometimes used interchangeably.   For instance, Kucan and Beck (1996) used the term *genre* to refer to the narratives and expository texts in their study, which Urquhart and Weir would have labeled as *text type*.

Compounding the perplexities embedded in terminology, Lee (2006) employed the term *rhetorical text structure* to refer to the expository texts she rearranged in different discourse patterns.   It seems that regardless of which term the researchers used for their studies, the terms such as *discourse type*, *text structure*, *text type* and *rhetorical text structure* all refer to the discourse patterns at different levels of the author's content structure.   In order to reduce the confusion regarding the terms used by the researchers,

I have used *discourse type* as an umbrella term referring to the characteristics of a text which assign a label to it based on the writer's communicative goals; thus, this term contains the referents of similar expressions such as *text types*, *text structure, rhetorical structure*, and *genre*.   Naturally, since I view *discourse type* as an umbrella term, I treat the term as relating to a number of features of a text: these include the interrelationships among items of information (Meyer and Freedle, 1984), intertextual references such as topic sentences, pointer words, signals (i.e., first, second, third), and other features identified under these other terms in the literature.

Admitting that the number of discourse patterns that can be identified at any given level of text is very large, Meyer and Rice (1984) acknowledge that each researcher may need to establish his or her own definitions: "[what] is necessary is to determine which distinctions are salient and useful, and again, this determination will depend to a large extent on the purpose of the investigator" (p. 343).   In this study, I have chosen to rearrange my selected passages into two discourse types, collection and problem/solution because the collection structure and the problem/solution represent the two opposite ends of a continuum.   Meyer and Freedle (1984) pointed out that problem/solution is the most organized type of their five basic discourse types, while collection is the least organized.   Because I aimed to find out whether the overall discourse organization would have an impact on the participants' strategic processing, it was easier for me to examine the effects of the overall discourse organization on the participants' use of reading strategies when an expository text is rearranged into these two discourse types.   I have drawn these terms from Meyer and Freedle's framework for classifying texts, as this framework is generally accepted in classifying western texts.

(4) Evidence That Discourse Types Affect Reading

The major research questions posed in Kletzein's (1991) research were the following: (1) Did good and poor comprehenders differ in their use of strategies when they were reading passages of the same relative difficulty? (2) Did good comprehenders use different strategies for passages of differing difficulty? (3) Did poor comprehenders use different strategies for passages of differing difficulty?   The participants in the study were tenth and eleventh graders in the U.S. who were divided into proficient and

less proficient readers based on the results of standardized comprehension tests. While the foci of the study did not include the effects of discourse types on readers' strategic processing, the analysis of the data showed that the learners used more strategy types on the causation passages than on the collection passages presented to them.

Kucan and Beck (1996) explored what reading strategies or categories of processing a group of learners used when they read five narratives and five expository texts. The learners were selected from two fourth-grade classrooms in an elementary school. The learners were asked to read excerpts from ten children's trade books. Using think aloud protocols for analysis, the results showed that the learners made more inferences, predictions and interpretations while reading narratives than other types of text. When reading expository texts, the learners used personal knowledge and experiences more often, responding more to details and local text information.

Using L2 English learners as participants, Sun (2003) explored the influence of two expository text structures, collection and comparison/contrast, on EFL learners' strategy use. The learners were 4 proficient and 4 less proficient third year junior high school students in Taiwan who were asked to read two passages written in two different structures. In terms of the effects of the text structures on the learners' choice of strategies, the structure of collection posed more difficulties to both groups. However, when reading the passage in the collection structure, proficient readers still were able to use a variety of reading strategies. In contrast, less proficient readers tended to skip unknown words and ignored problems, and were incapable of utilizing the strategies of which they were aware.

In the same vein, including L2 English learners as the participants, Chomphuchart (2006) investigated whether different English text types had an impact on the reading strategies used by Thai graduate students enrolled in U.S. universities. Using survey research methodology, the author asked what reading strategies are used by 253 Thai graduate students enrolled in U.S. universities in their interactions with different English texts.

The learners were randomly assigned to two different groups where two different English texts were utilized. In the first week of the study, one group received a reading strategy questionnaire with an academic text, whereas the other group received the same questionnaire with a literature text. One week later, the learners in both

groups received a text of a different type from what they had received in the previous week.

As indicated by the data analysis, the two task conditions resulted in a significant difference among the mean frequency of strategy use for only three strategy items. When reading the academic text, the learners used titles to help predict the content, guessed the meaning of unknown words by using context clues and checked what each pronoun referred to significantly more often.   This study showed limited effects for text genres (an academic text versus a literary text) on the L2 English learners' use of reading strategies.

Motivated by the differences in Chinese and English rhetorical structures, Lee (2006) investigated whether Taiwanese EFL learners' reading performance was under the influence of rhetorical text structures, this time focusing on inductive versus deductive organization.   As participants, Lee randomly selected 160 freshmen who were not English majors from a public college in Taiwan. Based on their English test scores on the Taiwanese Joint College Entrance Exam, they were assigned to four different proficiency groups.   Two different English texts were selected from a Taiwanese bilingual supplementary reading textbook. Both passages were rewritten, so that each text had one version in the Chinese inductive structure and another in the English deductive rhetorical structure.   This process resulted in four different readings for the study.

The data collection procedure included two sessions. In the first session, one fourth of the participants from each English reading proficiency level read one of the two expository texts which were rearranged either into the inductive or deductive rhetorical structures.   They were then asked to take a reading comprehension test and to fill in a reading strategy questionnaire.   The procedure for the second session was the same as the first.   Accordingly, in the second session, one fourth of the participants from each English reading proficiency level read the other expository text either in the inductive or in deductive rhetorical structures prior to taking a reading comprehension test and answering a questionnaire.

The results of the study showed that the learners' proficiency level contributed to their strategic processing.   The learners at the higher level used more types of reading strategies than those at the lower level. In addition, a higher reported use of

metacognitive strategies was found among the learners at the higher proficiency level than among those from the lower proficiency level.   Nevertheless, the learners' use of reading strategies and their comprehension performance were not significantly different in the conditions where they read the English texts written in the two different rhetorical structures (inductive and deductive).

Nevertheless, the review of the studies on language learners' use of strategies has confirmed Van Dijk's (1995) critique that studies of typical text structures beyond the sentence level either receive little attention or are still treated in more or less informal terms.   This phenomenon is more visible among the studies which include L2 English learners as their participants.

3. Hypotheses

The main hypothesis to be considered in this study is the following: there are significant differences between the two discourse types, problem-solving and collection, in the participants' use of global reading strategies.

4. Research Questions

In the light of the scant research conducted on the influence of discourse types on the learner's choice of strategies, I developed the following set of research questions to be addressed in this study.

1. How do the students' reading strategies differ when reading English texts written in the two discourse types?
2. What global reading strategies are used by intermediate L2 English readers at Taiwanese colleges when they read English texts written in the discourse types of collection and problem/solution?
3. Which of the two discourse types, collection or problem/solution, seems to create more difficulties for intermediate-level L2 English readers at Taiwanese colleges?

5. METHODOLOGY

(1) Participants

After the administration of an intermediate-level GEPT reading proficiency test to a sample of 479 students, 280 intermediate L2 English readers were selected from four colleges in Taiwan. The two hundred and eighty intermediate-level participants completed all the data collection procedures in the study. One hundred and sixty-seven participants read a passage written in the 'collection' structure, and one hundred and thirteen participants were instructed to read a passage containing the same information, but organized in the 'problem/solution' structure. The two groups were unequal in size because the numbers of students in the four colleges who took the GEPT were different. This sample, totaling 280 students, included 121 freshmen, 58 sophomores, 99 juniors and 2 seniors from the four colleges in Taiwan.

(2) Instruments

In the sections that follow, I will discuss each of the research instruments in turn.

(a) The General English Proficiency Test

Commissioned by the Taiwanese Ministry of Education in 1999, the Language Training & Testing Center (LTTC) developed an English proficiency test called the General English Proficiency Test (GEPT) to measure the competence of English learners in Taiwan (http://www.gept.org.tw/#). There are five different levels for the GEPT test: Elementary, Intermediate, High-Intermediate, Advanced, and Superior. The examinees' listening, reading, writing, and speaking are all tested in the LTTC GEPT test. Replicating the method utilized by Wu (2005), I gained permission from LTTC to use the Intermediate-Level reading comprehension section to measure the learners' English reading proficiency. I limited myself to this one test, since it was a prerequisite for my study that I assessed the participants' reading comprehension, and I felt that this test would be adequate for that purpose.

(b) Reading Passages

(i) Text Selection Criterion

In selecting these texts, the participants' content schemata were my major concern. Even though I have used the textbook from which all three texts were chosen (Anderson,

2003a) for some of my English classes at a five-year program in a university of science and technology a few years ago, most of the undergraduate students in my study had no previous access to the selected reading passages before taking part in my study. According to my contact with the English teachers who taught in the institutions of technology where the data was collected, I was informed that this textbook was not normally chosen for the classes from which I drew my participants. In addition, the expository text for the study was a science text which covered some surgical techniques. Considering the participants' backgrounds, I assumed that the topic of the expository text was not entirely unfamiliar to them. That is, since these participants came from programs in science and technology, the selected text may be reasonably familiar to them. Besides, it does not contain culture-specific knowledge which might affect the Taiwanese L2 English learners' use of reading strategies.

(ii) Text Manipulation

One text was adapted to retain as much information as possible from the original, while fitting that information into the two discourse types of collection and problem solving. I rearranged one selected passage into two discourse types, collection and problem/solution, to see whether the overall organization of a single very limited discourse had an impact on the learners' strategic processing. The collection and problem/solution structures represent the two opposite ends of a continuum, following Meyer and Freedle's (1984) analysis. My selection of this classification scheme was due to the consideration that Meyer and Freedle's (1984) framework is still capable of classifying western texts. Therefore, these organization types seemed well suited to a study whose goal was to examine the effects of the overall organization of a western discourse on the participants' use of the reading strategies.

In order to have the original article adapted to the structure of collection, the hook, "The use of robotic equipment is no longer make-believe", is added to get the reader's attention. Then, the introductory sentence, "Two types of surgical procedures will be introduced", provided the background. Finally, the transition words, "first" and "second", are added to indicate the ordering of items. For the sake of having the original text adapted to the structure of problem-solution, the first sentence, "A serious problem is that traditional surgical procedures require surgeons to make large incisions in a patient's body to gain access to internal organs", introduces the problem and gives

Table 1: *The Features of the Two Rearranged Reading Passages*

	Collection	Problem/solution
Total words	258	258
Reading ease (Flesch-Kincaid)	45.80	45.30
Flesch-Kincaid grade level	11.40	11.80

needed background.   The transition, "A solution to this problem is the development of new surgical techniques", is added to announce solutions.

Table 1 summarizes some basic features of the two reading passages used in Phase I of the study.   Both of the versions had 258 words (239 words in the two passages were the same and 19 were different.)   Based on the Flesch-Kincaid Formula (Kincaid et al.), the two passages had relatively the same reading ease and grade level.   As indicated by the Flesch readability formula (Flesch, 1948), since the reading ease of the texts ranged from 45.8 to 45.3, both passages were considered to be moderately difficult. In addition, according to the Flesch-Kincaid Formula (Kincaid, Fishburne, Roger, Chissom, 1975), one of the texts was assigned the grade level of 11.40 and the other the grade level of 11.80.   As the participants in the study were undergraduate students and had already passed the high-school level, the reading material was not expected to be difficult for them to read.

(c) The Adaptation of the Survey of Reading Strategies

Since my study examines the use of reading strategies in two particular English passages in different discourse types, rather than the use of strategies in general academic reading, I found it necessary to revise the Survey of Reading Strategies (SORS) for use in the study (Mokhtari and Sheorey, 2002).

To adapt the SORS to serve the purpose of the study, I made some minor changes to the original survey.   For example, I changed the opening statement to indicate that the purpose of the questionnaire was to collect information about the various techniques the participants used when reading a particular reading passage.   What is more, I changed the adverbial clause on one of the reading strategy items from "when reading" into "when reading this article" and altered the verbal tense in the items in order to let the survey takers know that they were supposed to respond only in terms of their

experience with this particular reading. Furthermore, in order to put this particular task in context, at least as the participants themselves saw it, I added two optional, open-ended items at the end of the short survey, including "How does your normal reading practice differ from what you did as you read this article?" and "Is there anything you would like to add about your experience in doing this reading?"

Although the reading strategy survey used in the study contained many verbatim items from the SORS, it was indeed a revised version which I thought better served the aim of the studies focusing on learners' awareness of reading strategies in their reading of a specific academic text. In addition, the reliability of the 11-item survey is high because its Cronbach Alpha value is calculated as .789. Through my personal communication with the authors of the SORS, I obtained their permission to use this modified form of the SORS for the present study.

(3) Data Collection Procedures

After the administration of an intermediate-level GEPT reading proficiency test to a sample of 479 students, 280 intermediate L2 English readers were selected from four colleges in Taiwan. This fifteen-item test allowed me to identify a group of intermediate Taiwanese L2 English readers, on the basis of their test scores (scored at least five out of a possible 15), for the sake of looking at strategy use results for a relatively homogeneous group when they read the expository texts chosen for the study. Only the results of the reading comprehension section of the GEPT test were utilized because the current study only focused on the participants' reading comprehension. The somewhat idiosyncratic way of identifying intermediate L2 English readers was influenced by Wu's study (2005). Wu (2005) identified three levels of English reading comprehension based on the scores of the reading comprehension section of a GEPT test—four (beginning), six (intermediate), and nine (advanced) out of a possible fifteen.

After completing the reading proficiency test, the 280 intermediate-level participants selected were given a passage to read. The participants were grouped by the two discourse types. The participants at two of the Taiwanese colleges read a passage written in the 'collection' structure, and those at the other two colleges were instructed to read a passage containing the same information, but organized in the 'problem/solution' structure. After reading, the participants filled in a reading strategy

survey based on their reading of the passage.   In order to let the participants understand the wording and implications of the survey, the survey items were translated from English to Chinese verbally before they filled in the survey.   They also took a reading comprehension test based on the passage they had read.   The highest test score was four, measured as one point for each correct response; there were four items in the comprehension test.   It was possible for me to see which of the texts were more difficult for the participants based on their test scores.

Both descriptive and inferential statistical analyses such as *t*-tests were applied to the results, to examine whether there were significant differences in the participants' choice of reading strategies when they read the two types of reading passage.   My goal was to examine whether there were quantitative differences in the participants' use of reading strategies when they read the two passages.   I looked at differences between the statistical results of two discourse types.

5. RESULTS

(1) Results related to Research Question # 1

In order to provide information on the first research question, asking whether discourse type differences correlated with different sets of strategies, I employed two sample *t*-tests to compare the use of strategies in reading two discourse types based on the results from the reading strategy survey.   The independent variable was discourse type, involving the two discourse types of the passages read by the participants.   The dependent variable, the participants' use of academic reading strategies, was measured by their average responses to the first eleven questions of the strategy survey.   After averaging the participants' responses to these eleven items, I compared the average responses of the two groups to these items by doing a single two-tailed *t*-test.   Doing a single t-test was because of the concern that the inflation of Type I error due to numerous t tests might influence interpretation of the results.

As indicated in Table *2*, the corresponding two-tailed *p*-value was .003, which was less than .01 (see Table *2*).   Therefore, the result showed that significant differences were in fact found between the two discourse types, problem-solving and collection, in the participants' use of global reading strategies.   This result is similar to Sun's study

Table 2: *Differences in Self-Reported Strategy Use between the Two Discourse Types*

Category	Problem/Solution (*n*=113)		Collection (*n*=167)		*t*	*p*-value
	Mean	Standard Deviation	Mean	Standard Deviation		
Global Reading Strategies	3.15	.51	3.35	.54	-2.98	.003

(2003).　Based on the analysis of think-aloud protocols, Sun indicated that the group of proficient L2 English readers employed more strategies in the reading passage arranged in the collection structure than in the compare/contrast structure.　That is, discourse types influence proficient L2 English readers' use of reading strategies, if not all the L2 English readers' (Sun, 2003)

(2) Results related to Research Question # 2

As illustrated in Table 3, for 9 of the 11 global reading strategies (82%), the participants employed these nine strategies more frequently when reading the text written in collection than when reading the text in problem-solving.　Differences varied however, and were sometimes minimal, as for strategy 5, "noting text characteristics."　However, given the fact that the participants used more global strategies in the collection text than in the problem-solving text, the collection mode was probably more salient to them than the problem-solving mode.　That is, the participants were probably more familiar with the collection discourse type.

When reading a text written in collection, in all of the reported 11 global reading strategies (100%), the participants' mean reported use of these strategies was above 3.00 (out of a possible 5), implying use of these strategies.　Likewise, while reading the text written in the discourse type of problem/solution, eight global reading strategies (73% of the 11 strategies) were reported to be used by the participants, again based on the fact that their mean reported use of these seven strategies was above 3.00.

Table 3: *Differences in Self-Reported Metacognitive Global Reading Strategy Use by Taiwanese L2 English Readers When Reading the Two Discourse Types*

Strategy	Problem/Solution (*n*=113)		Collection (*n*=167)	
	M	S.D.	M	S.D.
1. Setting purpose for reading	3.25	1.00	3.19	.85
2. Using background knowledge	3.41	.88	3.58	.92
3. Taking an overview of the text	3.19	.86	3.15	.94
4. Checking how text content fits purpose	2.62	1.08	3.17	.86
5. Noting text characteristics	3.16	.96	3.17	.96
6. Determining what to read closely	2.97	1.01	3.13	.99
7. Using context clues	3.37	1.06	3.71	.95
8. Analyzing and evaluating the text	2.62	.94	3.02	.97
9. Checking understanding	3.35	.81	3.40	.91
10. Guessing text meaning	3.52	.90	3.81	.94
11. Confirming prediction	3.28	.91	3.54	.98

In fact, strategy *4*, "checking how text content fits purpose", strategy *7*, "using context clues", strategy *8,* "analyzing and evaluating the text", strategy *10*, "guessing text meaning", and strategy *11*, "confirming prediction", reflected a significant difference between discourse types.　When readers are more familiar with a discourse type, they would have a clear purpose in their reading (Kintsch and Van Dijk, 1978).

Table 4: *Differences in Reading Comprehension Test Scores between the Two Discourse Types*

Category	Problem/Solution (*n*=113)		Collection (*n*=167)		*t*	*p*-value
	M	S.D.	M	S.D.		
Reading Comprehension Test Scores	1.80	1.240	2.13	1.133	-2.33	.02

As a result, they would be more capable of using context clues to check whether text content fits their purpose. Since they have a more coherent purpose in their reading, they could analyze and evaluate the text better. In addition, because the discourse type may be more conventional to them, they could guess text meaning and confirm prediction better.

(3) Results related to Research Question # 3

Table 4 shows the differences in the participants' scores in the reading comprehension test administered after their reading of the two different texts. The highest possible test score was four, measured as one point for each correct response; there were four items in the comprehension test.

One can evaluate significant differences by looking at the *p* value of the *t*-test in the table. As indicated in Table 4, the differences in the participants' reading comprehension test scores after their reading of the two different texts were significant ($p < .05$). Those who had read the collection text achieved a higher mean score than those who had read the problem/solution text (2.13, as compared with 1.80). This result seems to be in contrast with Sun's (2003) claim that discourse types do not exert influence on L2 English learners' reading comprehension.

6. DISCUSSION AND CONCLUSIONS

The *t*-test result showed that there were significant differences between the two discourse types, problem-solving and collection, in the participants' use of global

reading strategies (*p*<.01). The result confirmed the hypotheses that there are significant differences between the two discourse types, problem-solving and collection, in the participants' use of global reading strategies. Kintsch (1998) pointed out that text comprehension requires special strategies and knowledge, stating that "all text genres require domain-specific strategies and knowledge" (p. 167). The results of this study turn out to be in line with Kintsch's assumption.

Oxford and Nyikos (1989) pointed out that various factors are related to L2 English learners' choices of language learning strategies. Although the authors' claim refers to strategies in general, it is relevant here, as this category includes reading strategies. As indicated by Oxford (1989), these factors include—to simply name a few—target language, level of language proficiency, degree of metacognitive awareness, gender, affective variables, and learning styles. However, it is worth our attention that discourse types were not recognized by Oxford (1989) as a variable influencing the learner's reading strategies. Therefore, in a sense, the current study legitimatized discourse types as a factor that might have impact on L2 English readers' employment of strategies.

Singer and Leon (2007) claimed that typically "a coherently organized text facilitates the reader's comprehension and [her] subsequent task performance" (p. 20). While the problem-solution text was considered to be more organized than the collection text (Meyer and Freedle, 1984), the discourse organization was not particularly beneficial to the problem/solution readers in terms of their test scores. As mentioned, after reading the short passages, the participants answered four-item comprehension questions. The results indicated that those who had read the collection text achieved a higher mean score than those who had read the problem/solution text (2.13, as compared with 1.80). This might result from a mismatch between participants' expectations and the discourse the organization of English texts.

Chu et al., (2002) claimed that the Chinese traditional expository structure, *qui-cheng-zhuan-he,* still has significant impact on the Taiwanese L2 English learners' schemata. In fact, *qui-cheng-zhuan-he* is only one model used for analyzing Chinese expository text. There are other general features of Chinese expository texts as well. For instance, comparing Western and Chinese rhetoric, Lee (2006) stated that western expository texts tend to follow a deductive line of reasoning in which main statements

precede supporting statements. In contrast, Chinese expository texts tend to organize concepts inductively by putting supporting ideas before the main statement. Hinds (1990) claimed that "the typical deductive style favored in the West, in which topic is made clear at the beginning, is not favored in Chinese writing" (p. 95). Matalene (1985) noted that Chinese discourse values imitation, inculcation, and indirection. It appeals to history, to tradition, and to authority, but not to the western notion of logic, which argues from a premise to a conclusion. As suggested by Kirkpatrick (1995), in Chinese culture where hierarchical relationships have been very important at a family and political level, argument and persuasion have often been conducted in a bottom-up and indirect way. Given these differences, Chu, Swaffar and Charney (2002) predicted that, when comprehending a passage written in a western discourse type, Chinese L2 English learners could have a mismatch between their expectations and the discourse organization of English texts.

Sengupta (1999) suggested that, when language teachers consider raising rhetorical consciousness, textual or discourse features ought to be an important focus point in the language classroom. Halliday and Hasan (1989) treated the understanding of generic structures—text structures—as an active ingredient in the success of a language teacher. Carrell (1984) indicated that "devoting reading instruction to the identification of different discourse structures may be effective in facilitating ESL reading comprehension, retention, and recall" (p. 465). As suggested by Akhondi et al., (2011), learners need to be introduced to text organization in class because the structures of expository texts are various. In addition, they should be introduced with text structures in order and given opportunities to work on graphic organizers. The present study suggests that it is appropriate to underscore this advice, and to include explicit instruction in discourse type and organization in ESL reading courses.

It is worth keeping in mind that the discourse types, as well as the strategy classifications, used in the present study have been developed in a western framework. I have not tried to study in depth the presentation of the traditional Chinese discourse types in classrooms, and it was not possible to ascertain whether the participants had formal training in strategy use in their Chinese reading, though Chinese reading classes normally do not involve explicit training in strategy use. It is difficult to speculate on what effect the learners' previous reading experiences in Chinese might have had on the

ways in which they approach texts in English.

Still, future research seems to be needed for the relative influence of different top-level text structures on learners' use of reading strategies. Grabe (1997) pointed out that "it is still not clear that any particular type of text structuring—collection, description, cause-effect, comparison-contrast, problem/solution—is better for the learning of new information" (p. 8). Research suggests that discourse types are not always effective in facilitating the desired interaction between the reader and the text. Thus, much further research still needs to be conducted in order to understand in what ways the effects of top-level text structures on readers' use of reading strategies are activated and deactivated.

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APPENDIX:

THE ORIGINAL FORM OF THE READING PASSAGE USED IN PHASE I

(Anderson, N. J., 2003a, pp. 98-99)

Robotic Surgeons

Images of robotic equipment being used in operating rooms were once seen only in science-fiction movies. Today, the use of robotic equipment for certain types of surgery is no longer make-believe—it's real!   Traditional surgical procedures require surgeons to make large incisions in a patient's body in order to gain access to the internal organs. It was once common for heart surgeons, who perform highly specialized and complex procedures, to make long incisions in a patient's chest and then split the breastbone to reach the heart. The patient then had to recover the trauma of the surgical treatment, the split bone, and the large wound created by the incision. Patients who undergo surgery requiring this kind of invasive procedure are often prone to infection, as bacteria can infect the cut in the skin. In addition, there is often a lengthy recovery period.   A surgical technique known as 'keyhole surgery' has become more common in recent years. This technique eliminates the need for surgeons to make large incisions.   Instead, a couple of small incisions, each measuring about one centimeter, are made around the area to be operated on. Long instruments, which look a bit like

READING PASSAGES REARRANGED IN TWO DISCOURSE TYPES

The differences between the two discourse types are capitalized, while the information shared by the two discourses is written in lowercase letters.

Collection. THE USE OF ROBOTIC EQUIPMENT IS NO LONGER MAKE-BELIEVE. TWO TYPES OF SURGICAL PROCEDURES WILL BE INTRODUCED.   FIRST, traditional surgical procedures require surgeons to make large incisions in a patient's body in order to gain access to the internal organs. It was once common for heart surgeons, who perform highly specialized and complex procedures, to make long incisions in a patient's chest and then split the breastbone to reach the heart. The patient then had to recover from the trauma of the surgical treatment, the split bone, and the large wound created by the incision. Patients who undergo surgery requiring this kind of invasive procedure are often prone to infection,

as bacteria can infect the cut in the skin. In addition, there is often a lengthy recovery period.

SECOND, a surgical technique known as 'keyhole surgery' has become more common in recent years. This technique eliminates the need for surgeons to make large incisions. Instead, a couple of small incisions, each measuring about one centimeter, are made around the area to be operated on. Long instruments, which look a bit like chopsticks, are inserted through the tiny incisions and into the patient's body. At the end of these instruments are small tools that resemble standard surgical tools. A tiny camera, called an endoscope, is also inserted into the body through one of the incisions. The camera relays an image of what is happening inside the patient's body to a large computer monitor, so doctors are able to see what is going on, and where to place the tools.

Problem/Solution. A SERIOUS PROBLEM IS THAT traditional surgical procedures require surgeons to make large incisions in a patient's body in order to gain access to the internal organs. It was once common for heart surgeons, who perform highly specialized and complex procedures, to make long incisions in a patient's chest and then split the breastbone to reach the heart. The patient then had to recover from the trauma of the surgical treatment, the split bone, and the large wound created by the incision. Patients who undergo surgery requiring this kind of invasive procedure are often prone to infection, as bacteria can infect the cut in the skin. In addition, there is often a lengthy recovery period.

A SOLUTION TO THIS PROBLEM IS THE DEVELOPMENT OF NEW SURGICAL TECHNIQUES. FOR INSTANCE, a surgical technique known as 'keyhole surgery' has become more common in recent years. This technique eliminates the need for surgeons to make large incisions. Instead, a couple of small incisions, each measuring about one centimeter, are made around the area to be operated on. Long instruments, which look a bit like chopsticks, are inserted through the tiny incisions and into the patient's body. At the end of these instruments are small tools that resemble standard surgical tools. A tiny camera, called an endoscope, is also inserted into the body through one of the incisions. The camera relays an image of what is happening inside the patient's body to a large computer monitor, so doctors are able to see what is going on, and where to place the tools.

臺灣大專生在不同的說明文結構中
總體閱讀策略之使用

雷竣詠*

摘　要

　　本研究調查兩種說明文結構—「匯集式」及「問題對策式」，對於臺灣第二語言讀者英文閱讀策略使用的影響。易言之，這兩種說明文結構—「匯集式」及「問題對策式」，對於臺灣第二語言讀者在即時英文閱讀中閱讀策略使用的影響是本研究的焦點。

　　在四百七十九位同學接受一份英文閱讀能力測驗之後，有兩百八十位同學被認定為中等程度的英文閱讀者。閱讀能力測驗完成之後，一百六十七位研究參與者閱讀一篇用「匯集式」結構寫成的文章，而其他一百一十三位則閱讀另一篇含有相同內容，但是卻是用「問題對策式」結構寫成的文章。閱讀文章之後，他們填寫一份閱讀策略問卷，並且回答針對剛才讀過的文章所設計的一份閱讀理解測驗。t-test 的結果顯示在這兩種說明文結構—「匯集式」及「問題對策式」之間，參與者在總體閱讀策略使用上有顯著的不同 (p ＜.01)。

關鍵詞：說明文結構、問題對策式、匯集式、總體閱讀策略

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