

# On Non-English Majors' Strategy Training in English Reading Comprehension

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## Abstract

This paper reviewed the literature of the previous research and questionnaire survey on reading strategy. Based on theories of psycholinguistics, a five-week experiment was carried out in order to probe into the effectiveness of strategy training. The experiment was designed to answer the following question: Can reading comprehension be improved by strategy training? Two groups of subjects from non-English majors participated in the experiment and questionnaire survey. Experimental group received training on reading strategies while control group didn't. By comparing the results of the pretest and posttest of the two groups, the effectiveness of strategy training was examined. The results of data analysis indicated that both efficient and non-efficient readers use strategies to facilitate their reading and there was no significant difference between them with regard to strategy use in general, but some strategies were especially favored by the efficient readers and that reading competence could be improved by strategy training.

**Keywords:** Non-English majors, strategy training, reading comprehension

## 1. Introduction

“What are the determining factors in learners' performance?” According to Bloom, the famous American educationist, it was teachers who should take the sole responsibility for learners' performance. But with the change of people's belief in education, especially after the student-centered educational reform started in the Western educational circle in 1960s, researchers realized that the decisive factors were learners themselves. And hence since the 1970s, western applied linguists and psycholinguists have begun to pay more attention to the internal factor in learners' performance — the learners themselves. Research interest shifted from teacher's teaching to learner's learning, from the quest for the perfect teaching method to the learner's individual differences (ID s) in learning.

The notion that special learner techniques or strategies might assist language acquisition is actually quite new, having emerged in the research literature just over twenty years ago. In her report what the good language learner can teach us in 1975, Rubin, a leading researcher in the area of language learning strategies, delineated the strategies good learners use. The work by Rubin (1975) and by Stern (1975) anticipated that competent individuals are effective because of special ways of processing information and that these strategies are not the preserve of highly capable individuals, but could be learned by others who had not discovered them on their own. From then on, there has a great upsurge in research on learning strategy in the west. A great deal of studies were conducted in a second language context mainly about: 1) the strategies used by the good language learners; 2) the difference between good and poor learners in strategy use; 3) the relationship between strategy use and language learning outcomes; 4) factors that affect learners' strategy use; 5) the effects of strategy training.

In China, research on English learning strategy has begun from the early 1980s and has been increasing in recent years, among which the following are worth mentioning: investigation of the psychological and socio-psychological factors of English language learning; studies on learners' variables and its relationship with learning outcomes; study on vocabulary learning strategies. Strategy training has been carried out in a few colleges and universities in recent years, but research on the effects of strategy training is practically neglected.

## 2. Psycholinguistic Perspective

Reading is by far the most important means of learning a second language or foreign language. For many years,

the process of reading and reading comprehension has always been the research subject for psycholinguists and psychologists. Based on researches on the nature of reading, some theories about reading have been established. Generally speaking, these theories can be divided into three types: the Bottom-up Model, represented by Gough's model; the Top-down Model, represented by Goodman's model; and the Interactive Model, represented by Rumelhart's model.

### *2.1 Bottom-up Model*

Before 1960s, reading in English was viewed as a decoding process. The writer has a message in his mind which he wants somebody else to share. To make this possible he must first put it into words, that is, he must encode it into a text. The reader must interpret the author's intended meaning, that is, he must decode the message the text contains. Reading means decoding words and getting the meaning. It is "a decoding process of reconstructing the author's intended meaning via recognizing the printed letters and words, and building up a meaning for a text from the smallest textual units at the 'bottom' to larger and larger units at the 'top'". This is that we call Bottom-up Model. According to this model, the reader relies on the text to get the ideas. He proceeds from identifying words, to putting them together into clauses and sentences, to establishing the meaning of the text. Reading is basically a process of building symbols into words, words into sentences, and sentences into meaning; and problems of reading and reading comprehension are purely linguistic problems. That is why it is also termed as code-driven, or data-driven process.

But psycholinguists and reading researchers find that such model is too simple to explain the process of reading comprehension and that it is inappropriate to define reading as word identification. They find that, although the reader has the ability to combine letters to form words and to combine the meanings of words to get the meanings of sentences, it does not necessarily mean that he fully comprehends the text and really understands the author's intention in writing the text. Moreover, rather than being an active information-processor, reader's role in this model is a totally passive one. Obviously, the Bottom-up Model is unsatisfactory in explaining the process of reading comprehension.

### *2.2 Top-down Model*

Based on oral miscue analysis, Goodman proposed a model from the psycholinguistic perspective to explain the reading process. This psycholinguistic model of reading was later elaborated by Coody and was referred to as Top-down Model, in contrast with the Bottom-up Model, although Goodman did not characterized his theory as a top-down model and resisted this characterization himself. Goodman described reading as "a psycholinguistic guessing game" in which the "reader reconstructs, as best as he can, a message which has been encoded by a writer as a graphic display". Goodman views this act of construction of meaning as being an ongoing cyclical process of sampling from the input text, predicting, testing and confirming or revising those predictions, and sampling further. It is a selective process. It involves partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectation. As this partial information is processed, tentative decisions are made to be confirmed, rejected, or refined as reading progress. In other words, reader selects some of the textual cues instead of all of them to make predictions which are confirmed by relating them to his past experiences and knowledge of the world. That is, the reader's idea about the topic of a text allowed an initial interpretation of the information on the page, and confirmation or rejection of that interpretation comes as he samples the print. Thus from the top-down view of reading, the reader plays an active role and supplies more information regarding meaning than the printed text does he brings meaning to rather than obtains meaning from the text. To promise successful reading, reader not only needs knowledge of language, but also knowledge of the general world. Everything in the reader's prior experience or background knowledge plays a significant role in the reading process. Top-down Model is also termed conceptually driven model.

### *2.3 The Interactive Model*

The introduction of a top-down processing perspective into second language reading has had such a profound impact on the field that there has been a tendency to view it as a substitute for the Bottom-up Model, rather than its complement.

However, with the introduction of the schema theory, the limitation of the top-down model became apparent. Some researchers pointed out that top-down models tend to emphasize such higher-level skills as the prediction of meaning by means of context clues or certain kinds of background knowledge at the expense of such lower-level skills as the rapid and accurate identification of lexical and grammatical forms. They note that efficient and effective reading requires both top-down and bottom-up strategies operating interactively. Therefore, they praised pretty highly the Interactive Model a newer and more insightful model of reading process first proposed by D. Rumelhart in 1977.

Unlike the top-down model, the interactive model does not presuppose the primacy of top-down processing skills the gradual replacing of painful word-by-word decoding with educated guessing based on minimal visual cues but rather posits a constant interaction between bottom-up and top-down processing in reading, each source of information contributing to a comprehensive reconstruction of the meaning of the text. As the reader perceives visual information from the text, he calls on a number of sources of knowledge, including awareness of letter-sound correspondences and spelling patterns, knowledge of word meaning, knowledge of syntactic possibilities and language patterns, and memory of the preceding text. The sources interact to help the reader compile information about the textual input, attribute meaning to it, and integrate it with what has come before. In other words, reading comprehension is an interactive process, in which the reader constructs meaning by integrating text information with information already in memory. The information the reader supplies and the information on the page influence each other simultaneously to produce comprehension. Successful reading can result only from a constant interaction between bottom-up recognition skills and top-down interpretation strategies.

Among the above three models of reading, both the Bottom-up and Top-down Model reflect the traditional concept of reading that reading proceeds in sequential steps, while the Interactive Model, which suggests that the reader uses all levels of processes simultaneously and in parallel, is more popularly applied today. One corollary of the Interactive Model is that the use of reading strategies in the process of reading comprehension is indispensable.

### **3. A Study of Strategy Training in English Reading Comprehension**

The controversy about the definition of language learning strategy mainly revolves around the following four aspects: Whether learning strategies are to be perceived of as behavioral (and, therefore, observable) or as mental, or as both. Whether learning strategies refer to the learner's general 'approaches' to learning which are something relatively abstract or learner's specific 'techniques' to some specific tasks which are something relatively concrete: whether learning strategies are to be seen as conscious and intentional or as subconscious and whether learning strategies have a direct effect or indirect effect on language development.

#### *3.1 Classifying Learning Strategies*

In O'Malley and Chamot's framework, three major types of strategy are distinguished, in accordance with the information-processing model of learning developed by Anderson. They are metacognitive strategies, cognitive strategies, and social/affective strategies.

Wen synthesizes the several researchers' classification schemes and puts forward her own one. She divides the strategies into two groups of management strategies and language learning strategies. The former involves the learning process while the latter directly relate to language input. Examples given as management strategies are setting learning goals, planning study, strategy selection, self-monitoring, self-evaluation and affective-control. Language learning strategies can be subdivided into traditional one which includes form-focused strategies, accuracy strategies, using-mother-tongue strategies and non-traditional one which includes meaning focused strategies, fluency strategies, and mother-tongue-avoidance strategies.

So based on the above Classifying, the purposes of the study are as follows to investigate the difference of strategy use in reading comprehension between the proficient and non-proficient EFL readers and to examine the effect of strategy training.

#### *3.2 Strategy Training*

Three models leads naturally to the hypothesis; subject and material. That reading performance can be improved through strategy training.

##### **3. 2.1 Stage one: Awareness Raise**

In the experimental group, the instruction began with a discussion on reading strategies based on the result of the questionnaire survey. The students exchanged ideas on the reading habits, reading problems, strategy use, and so on and so forth. The teacher guided their discussion on such issues as what strategies are used? When and how? Attention was particularly paid to those selected for training, that was, those showed significant difference between the efficient and non-efficient readers in their use of individual strategies. These strategies involved predicting, note-taking or underlying, contextualization, elaborating, inferencing and summarizing, which were the strategies our training focused on. This took two periods of class.

In the next four periods, the teacher explained the selected strategies in detail and demonstrated how to use them to solve reading problems. For example, when training the strategy predicting and inferencing, the teacher first

explained to the students what was predicting and inferencing and why and when was such strategies necessary. The teacher explained to them that reading was all activity involving constant guesses or predicting that later rejected or confirmed. This meant that one did not read all the sentences in the same way. It relied on a number of words or cues to act an idea of what information likely to follow. Then the teacher gave examples in which predicting and inferencing were used to facilitate understanding. One of such examples was predicting and inferencing the content of a passage by a title and the first paragraph. And lastly, the students would do some exercises to consolidate the use of the strategy. Such activities were done with the aid of multimedia-computer.

The aim of this stage was to raise the students' awareness of their reading process strategy use. Awareness of their own learning process is generally recognized as one of the general characteristics of the good language learners. Therefore, awareness-raise can lead students to read better.

### 3.3.2 Stage Two: Application Practice

For the following weeks, the teacher integrated the strategy training into the regular classroom activities. First, at the beginning of the class, the teacher demonstrated how to apply reading strategies to achieve a better understanding of a text from the extensive reading book. Usually the students were not asked to preview their lesson before class. This would be done in class under the teacher's guide. The teacher demonstrated them how to approach a text by title guessing, content prediction, topic-sentence recognition, etc. This kind of activities might interest and motivate the students, and build a connection between their prior experiences or background knowledge and the text to be read. Such activities are important because, as Tobias (1994) suggests, motivation and interests seem to go hand in hand, leading the reader to engage in deeper cognitive processing. During the text understanding process, instead of just explaining in detail language points and analyzing sentence structures to students, the teacher demonstrated them how to employ reading strategies to facilitate reading comprehension. Students learned why, when, and how to apply the strategies.

Then the students would apply the strategies they learned to their reading activities in extensive reading class. This was done by group work or pair work. In language teaching, group work refers to a learning activity which involves a small group of learners working together. The group may work on a single task, or on different parts of a larger task. A concept of cooperative study is always instilled into students. In part it was based on Vygotsky's theory that 'cognitive development occurs when concepts first learned through social interaction become internalized and made one's own'. Students discussed the texts, and more often, they discussed what strategies to be used for a specific task.

After the students finished their reading and checking understanding with their peers, some representatives would be asked to report what strategies they used for a specific task and what results they got. And then a summary task was followed. Students were asked to summarize the content of the reading passage by writing down the main points, or vocabularies and expressions related to the topic of the reading passage, followed by a group discussion. After that, some of them were asked to report the result. One example was offered. The contention was that reading competence could not be considered as a discrete behavior independent of the other three skills, especially writing skill.

### 3.3.3 Treatment for Control Group

Although 130 students take part in the questionnaire, 110 of them provide with valid ones, so we choose them as our subjects. They are second-year Non-English majors in Nanchang Normal University, among which are 46 boy students and 64 girl students. The participants are selected for two reasons: Firstly, all of them have extensive reading course during their studies. It is fair to say that most of them have constructed their own learning strategies including reading comprehension strategies. Certainly, they all come from Jiangxi Province, therefore, they have roughly similar cultural and educative background. Secondly, it is evident that the final examination is often not the most accurate measure of a student's proficiency of a language while the CET score is taken as a yardstick, whose values of validity reliability and discrimination are high and which are the true reflection of students' achievement. So we take them as data pool.

Students of control group attended the same English courses as students of experimental group did (4 lessons per week, 50 minutes per lesson). In the control group, a relatively traditional and more or less bottom-oriented approach was adopted. That was, in the intensive reading class, the teacher guided the students through a text carefully, explaining the new words and phrases, analyzing the grammatical structures in detail, translating some parts of the text if necessary. As for extensive reading, the teacher would first explain some of the new words to the students, and passed on some culture-specific background knowledge to the students. Then the students were asked to read the text without paying any attention to their reading habits. Finally, the teacher asked the students to answer questions following the text and checked the answers afterwards.

The same amount of reading text was provided to the two groups during the five weeks.

### 3.3.4 Data Collection and Analysis

There were three sets of raw data collected: Data from the pretest of the two groups; Data from the first part of the posttest of the two groups; Data from the second part of the posttest of the two groups. The relationships between different variables were then tested.

Table 1. The mean scores of the two groups in the posttest (objective test)

	Experimental Grop	Control Grop	U-Value	DF
Mean	74.918	72.759	1.605	117
SD	5.880	8.490	(P=0.951)	

Note: U 1.605>1 indicates a significant difference.

The results of Table 1 showed that there was a significant difference between two groups in the objective test of the posttest. Significance test on the standard deviation showed A U-test was used because that there was a significant difference between the two groups. The U-value was 1.605, so  $U > 1$ , which meant that there was a significant difference between the two groups in the posttest. That was to say, the difference of the reading comprehension between the two groups was significant.

Table 2. The mean scores of the two groups in the posttest (subjective test)

	Experimental Group	Control Group	t-Value and significance level	DF
Mean	17.392	10.529	4.039	115
SD	3.342	7.493	(P<0.0005)	

As for the scoring of the subjective test, two raters, both of whom were college English teachers, scored the test papers. Before scoring the test papers, the two raters discussed and agreed on the criterion of scoring. It was decided that attention should mainly be paid to the idea rather than the grammar when scoring, because besides writing skill, the main purpose of this part was to test the students' understanding of the passage and their grasp of the summarizing skill. If the student's idea was close to the key but with some minor grammatical mistake, 8-9 points would be given. For example, 9 points was given to such answer "Mental activeness and age". 6 points was given to such answer "Mental decay not due to old age".

After scoring the test papers, the inter-rater correlation was calculated to examine the reliability of the scores. First, we calculated the correlation between the two raters ( $r=0.945$ ). Then we calculated the inter-rater reliability by using this formula:  $r_{xx1}=2r/1+r$ . The inter-rater reliability ( $r_{xx}\approx 0.972$ ) indicated a high reliability of the scores. Then the means of the scores by the two raters were calculated and served as the final scores.

Table 2 showed the results of the subjective test of the posttest of the two groups. Again, a significance test on the standard deviations was used. Since  $F=5.026 > 170.01$  (57,60), there was a significant difference between the two groups. Moreover, the SD of the experimental group was smaller than that of the control group (3.345 vs. 7.499), a conclusion could be made that students in the experimental group did better in summarizing than students in the control group.

Table 3. The mean scores of the experimental group in the pretest and in the posttest

	Pretest	Posttest	t-Value and significance level	DF
Mean	68.274	74.902	4.764	
SD	7.173	5.865	( $P \leq 0.001$ )	57

Comparing with the pretest, students in the experimental group made progress in the posttest (68.279 vs. 74.918 in the mean score). There was a significant difference between the pretest and the posttest. The T-value was 4.701, that was,  $T > T_{0.001}$  (60). Thus, the level of significance was on 0.001. From this, a conclusion could be

made that the reading comprehension of the students of the experimental group was improved after the strategy training. Besides, the S Ds in the two tests (7.181 vs. 5.880) indicated that the difference among students at different levels within the experimental group became smaller, which was, to some extent, partly due to the group work which enabled them to make progress at a relatively balanced pace.

Table 4. The mean scores of the experimental group in the pretest and in the posttest

	Pretest	Posttest	t-Value and significance level	DF
Mean	71.980	72.749	0.511n.s	55
SD	7.775	8.470		

The results of Table 4 showed that students in the control group also made progress in the posttest (71.983 vs 72.759 in the mean score) but it was not  $T < T_{0.10}$  (57), which meant that there was no significant. The T-value was 0.513 significant difference between the two tests. Moreover, the SDs in the two tests (7.776 vs. 8.490) indicated that while some students made progress in the posttest, some others made little progress or even slipped back in the posttest.

#### 4. Conclusion

In this paper, strategy training was successfully demonstrated in a natural teaching environment with foreign language reading. It supports the idea that the main focus of reading classroom should be on teaching students how to read, or how to become an effective, strategic readers who can deal with their reading independently and autonomously even when the teacher is not there. Strategy training should be taken into account in reading curriculum design.

From the experimental study, two conclusions could be drawn: 1) Although there was no significant difference between efficient and non-efficient readers in the using of reading strategies in general, efficient readers did use some strategies more frequently than non-efficient readers did. 2) The progress in reading comprehension made by the students in the experimental group was much larger and at much balanced pace than that by the students in the control group. This suggested that the training instruction was effective for most of the students. And the hypothesis that reading performance can be improved through strategy training was thus verified.

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