

A study of cognitive learning strategy use on reading tasks in the L2 classroom

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Abstract

Recently there has been a surge of interest in the use of cognitive learning strategies in second language (L2) acquisition. This can be seen in the number of textbooks and teacher prepared materials that are being developed promoting strategy as a key approach to skill instruction L2 learning. It is also evident in research that is being conducted on various aspects of learning strategy use in L2 acquisition (e.g., Green & Oxford, 1995; Rost, 1993; Oxford, 1996). The study reported here addresses the use of cognitive learning strategies by L2 learners. To determine the relationship of cognitive learning strategy use and task performance, 204 freshman students at a Japanese university participated in this study. The relationship is explored through the following two questions. First, what is the effect of cognitive learning strategy use on task performance in the L2? and second, which of the learning strategies used lead to more successful task performance? In order to address these questions two reading passages spaced six weeks apart were given to the students to be studied as homework. In the following class period a set of comprehension questions assessing understanding and retention of information from the readings was given. The materials and notes the students used to study the reading passages were examined for strategy use. The strategies used by the learners were then compared for differences in their effect on task performance.

Key Words: L2 learning strategies

1. INTRODUCTION

Research has revealed that the use of cognitive learning strategies in classroom instruction and learning is fundamental to successful learning (Chamot & O'Malley, 1987; Harris & Pressley, 1991; Pressley, Borkowski, & Schneider, 1987; Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989; Pressley, Snyder, & Cariglia-Bull, 1987; Wood, Woloshyn, & Willoughby, 1995). This is due in part to the quality of empowerment which learning strategy use allows. Learning strategies provide the learner with a framework for independent efforts and well established learning strategies can be applied by learners across content and skill areas, for example,

mathematics, science, reading, writing, and language learning. For example, a student may use mnemonic devices such as the phrase "RoY G. BIV" to remember the colors in the rainbow (i.e., Red, Yellow, Green, Blue, Indigo, Violet), or utilize catchy acronyms to represent goal specific strategies. One of these is "LCWC", which involves four strategies executed in a fixed order: look, cover, write, and check, to learn and remember vocabulary and their spellings. A strategy such as "LCWC" is not limited to a specific learning context but rather applicable in any context where memory of spelling and vocabulary is the goal.

Furthermore, studies by educational researchers and psychologists have shown that one of the key characteristics of successful learners is that they are active learners and take charge of their learning (Baker & Brown, 1980; Brown, Bransford, Ferrara, & Campione, 1983; Clifford, 1984; Gagne, Yekovitch, & Yekovitch, 1993). This research demonstrates that successful learners are aware of how to think about learning situations, for example, studying a textbook chapter in preparing for a test, and are aware of how to regulate the learning process, such as making specific plans to pass a test successfully. More importantly, successful learners are able to apply appropriate learning strategies and this leads to effective learning, for example, learners who use appropriate learning strategies, such as highlighting key ideas and taking notes, remember more from a study session than those who do not.

Appropriate learning strategies are those strategies that are effective in their context of use. For example, strategies such as notetaking and highlighting key ideas in studying prose such as reading texts are effective because they encourage the learners to recognize and elaborate on main ideas. Bretzing & Kulhavy (1979) found that writing paraphrase notes in which the main idea is stated in different words is an effective learning strategy because it requires a high degree of mental processing of the information. Strategies such as notetaking also contribute to learning because they enhance the learner's understanding (Levin & Pressley, 1981) and, they enhance the text's memorability by organizing it into manageable units (Levin & Pressley, 1981). For example, understanding is enhanced by notetaking because it encourages the learners to ask their own questions about the content of the text and to elaborate when recording information into their notes.

Elaborating encourages learners to write their own version of the information and therefore requires understanding (Gagne, Weidemann, Bell, & Ander, 1984).

The text's memorability is enhanced by the learner's organizing it into manageable units. For example, effective notetaking serves to direct the learner's attention toward certain information in the text such as main points, and away from other information. If the learner actually does this, then notetaking improves performance in retention of the noted information. Another benefit to notetaking is that it compels the learner to build a coherent outline or organization for the material. As a result, notetaking increases performance on tests of inference and increases recall of information related to the main idea.

Finally, effective notetaking gives opportunities for elaboration on the text as it encourages learners to add their own comments or reactions to the material (Woodward, 1992), and in this way, is involved in building connections and integrating the information into what they already know. Kiewra & Fletcher (1984) stress that the opportunity for elaboration in notetaking is a key element in the value of the activity. For example, notetaking may involve writing about a related example that fits in with the ideas presented in the passage (Twining, 1991). Bransford, Sherwood, Vye, & Reiser (1986) purport that only when the learning process involves active use of the information as in elaboration and identifying levels of information does the information prove active rather than inert. Inert as used here (Bransford et al., 1986) describes information which has been learned successfully in one context yet fails to impact on another to which it is immediately relevant or applicable. Notetaking provides opportunity for active use of the text information as it is organized and elaborated on into a notetaking format.

The specific rationale for strategy work grows from a desire to promote student success by articulating strategies used by successful learners and supported by current educational research. Research has shown that in the educational setting, successful learners are good strategy users and they are defined as knowing a lot of strategies and transferring them readily and appropriately to new settings (Pressley, Borkowski, & Schneider, 1987; Pressley, Goodchild. et al., 1989;

Pressley, Snyder, & Carglia-Bull, 1987). A good strategy user has a host of strategies, many of them specific to the domains in which they are an expert.

The purpose of this study is to investigate some of the key points of this research in the FL context. This is addressed in the following two questions. First, what is the effect of cognitive learning strategy use on task performance in the L2? and second, which of the learning strategies used lead to more successful task performance? In order to investigate these questions two reading passages were administered six weeks apart during the regular English class sessions. The readings were followed by comprehension tests which focused on main idea recognition and understanding of the readings. The learning strategies used by the learners in studying the reading passages were examined and a comparison of learning strategy and score on the comprehension tests was done.

2. METHODS

2.1 Subjects

Subjects were 204 freshman students at a Japanese university enrolled in English 1, a compulsory core subject. For all the students this was their second term. The students were Japanese and had an average of 6 years English language experience in their secondary school years (years 7-12).

2.2 Design

In order to counterbalance a teacher effect in the study, two teachers participated. The teachers had four classes each with a total number of students approximately the same. Both teachers followed the same curriculum, the same time frame and procedures for assigning the reading passages and administering the comprehension tests. No teacher effect was noted in the study.

2.3 Instruments

2.3.1 Readings

In order to determine that the level of difficulty and the number of main ideas among the reading passages used in this study was consistent, inter-rater consensus, that is, agreement amongst the evaluators on the criteria required for the reading passages was addressed by the use of three independent raters. Two of the raters were first language English (L1) speakers and the third rater was Japanese L1. Raters read the passages and then assessed them based on three criteria: first, level of difficulty of both the English and the content in each passage, second, number of main ideas, and third, similarity of the content between the readings in terms of general subject area. There was no discrepancy between the raters on the three criteria used for passage selection. The readings were approximately 450 words each and were of an expository kind on general topics. The readings were used to collect information on "how" the students studied them.

2.3.2 Comprehension questions

Comprehension questions were developed to assess the learners' ability to understand the content of the reading passages and make meaning from the language of the text. A set of ten comprehension questions for each of the reading passages was developed to measure the learner's understanding and retention of information.

Inter-rater consensus, that is, agreement amongst the evaluators on the comprehension questions was addressed by the use of three independent raters. The comprehension questions were rated for appropriateness and relative difficulty by two independent raters. Of the raters, one rater was English L1 and the other rater was Japanese L1. The criteria used to define appropriateness of a question was the ability of the question to elicit information reflecting the learner's understanding of the text generally, and of the main ideas specifically. The difficulty of a question was considered in terms of the English used and the content of the text. Where a discrepancy arose between the two raters in the assessing of a particular question, a third rater was introduced. Then, based on the input of the third rater, discussion commenced to decide if the

question under disagreement should be either rewritten and re-rated or completely discarded. In all cases, the question was rewritten into a clearer form and rated again. Complete agreement was needed for a question to be included in the set of 10 on a particular text. The questions used a three choice model for the response, True/False/Doesn't Say.

The comprehension questions were developed with the knowledge that comprehension is a complex matter. Sometimes the process is instantaneous and understanding occurs simultaneously. At other times, the process takes much longer. Connections are sometimes made in a piecemeal way, and a process of experimentation, logical deduction, discounting and reconsideration has to take place before comprehension is reached. Because of the complex nature of comprehension, it is not surprising that a text can be perceived in different ways by different learners. Learners, for instance, make meaning from what they read through the knowledge and skills which they bring to the text.

This raises particular difficulties for SL learners, especially low level SL learners. In developing the comprehension questions consideration was given to the learners' understanding as influenced by cultural background and language experience. Therefore, bearing in mind the potential difficulties posed by the many variables, learners were always given homework time to study and take notes on the text prior to answering the comprehension questions.

2.4 Procedure

The first reading was given to the students as homework to be studied ready for the next class. The teacher did not indicate to the students that any particular style of study was preferable. There was at least a two day period between classes. Next class the students completed 10 comprehension questions (True/False/ Doesn't Say) on the reading passage and all their study materials from the homework, the passages included, were collected. The materials were scored by the teacher and one other person. The second reading was given six weeks later to the students as homework to be studied ready for the next class. The same procedure as for the first reading was followed.

2.5 Scoring

The materials used by the students, including notes they made to study the reading passages, were analyzed for information on learning strategy use. Learning strategy use was categorized into four general subgroups of own style, full translation, vocabulary identification, and none. These four subgroups were developed from data on two earlier reading passages which indicated how the students studied. The learning strategies were defined as follows: Own style was defined as a study technique such as underlining, highlighting, numbering points; full translation was defined as rewriting the passage into Japanese; vocabulary identification was defined by the definitions of words or similar words being written either in English or in Japanese; and none, which meant that no evidence of study was found. The collected materials were rated by the teacher and one other person for learning strategy use into one of the four subgroups. Where the raters did not agree or could not decide on the strategy used, a third rater was introduced.

The comprehension tests were scored on a one point basis for each correct answer to a total of 10 points for each test.

2.6 Data analysis

Means were calculated for the four subgroups of learning strategies on the Reading 1 and Reading 2 comprehension test scores, respectively. Scheffe's post-hoc test was then conducted to determine significant differences between the respective subgroups for Reading 1 and again for Reading 2. The pattern of use and performance on Reading 1 was then compared to the pattern of use and performance on Reading 2.

3. RESULTS

First, what is the effect of cognitive learning strategy use on task performance in the L2? and second, which of the learning strategies used lead to more successful task performance?

Table 1 shows the number of learners in each subgroup of study notes as well as the means for each subgroup. The learners' notes indicated that there were significant differences in scores on

Test 1 between the four subgroups of no notes, random vocabulary identification, full translation, and own notetaking style, $F(3,204) = 22.31$, $p = 0.01$. This pattern of significance was found to be the same for Test 2, $F(3, 193) = 20.13$, $p = 0.01$.

Scheffe's post-hoc test revealed that performance on Reading 1 was significantly different ($p = 0.05$) for the following subgroups: No notes and random vocabulary definition; no notes and full translation; no notes and own style; random vocabulary definition and full translation; random vocabulary definition and own style. On Reading 2 a similar pattern of significance was found: No notes and full translation; no notes and own style; random vocabulary definition and full translation.

Table 1. Table of means for the test scores and study notes' subgroups for learners

Study notes' subgroups	Tests	
	Reading 1 $n = 204$	Reading 2 $n = 193$
1 No notes		
n	5	4
M	2.80	4.00
SD	0.84	0.82
2 Vocabulary		
n	156	126
M	5.94	6.76
SD	1.21	1.18
3 Full translation		
n	38	58
M	6.87	7.60
SD	1.21	0.86
4 Own style		
n	5	5
M	7.80	8.00
SD	0.45	0.00

4. DISCUSSION

4.1 Discussion of the research findings

How do we read these results? In considering the results, one way to assess strengths and weaknesses of the students' learning strategy use is to see how successful the learners perform on the comprehension tests. If things are done that lead to successful task performance this suggests the learners are utilizing an effective learning strategy. If performance on the tests is less successful it suggests there is room for improvement in the strategy used by the learner.

The results suggest that not all learning strategies are equally effective in helping the learners identify main ideas and understand the content of the readings. It appears from the data that learning strategies such as vocabulary identification, full translation of the text and strategies which utilize some form of main idea recognition are more effective in studying the reading materials than situations where there is no evidence of a strategy being used by the learners. Furthermore, the results suggest that learning strategies such as a full translation approach and strategies such as highlighting key ideas and notetaking which involve main idea recognition and organizing the information into levels of information lead to more successful task performance. These findings are consistent with research on notetaking strategy use (Bretzing & Kulhavy, 1979; Gagne et al., 1984; Kiewra & Fletcher, 1984; Levin & Pressley, 1981; Twining, 1991; Woodward, 1992).

Strategies such as full translation of the text and study strategies which utilize some form of main idea recognition and information organization are more effective because they involve the learner in working with the text to understand it and committing time to the task. Because effective strategies require the learner to spend time on the task, interacting with the text in an effort to understand and identify levels of information, this results in active as opposed to inert use of the text information as discussed by Bransford et al., 1986. Active use of the text can be achieved by manipulation of the text in various ways. For example, full translation and own style involve more working with the text in terms of understanding and elaboration or rephrasing when compared to random or isolated word identification. The learners' interaction with the text in this way leads to a

better understanding of the content and retention of information. This was evident in the more successful performance on the comprehension tests for learners who applied these strategies. As the comprehension tests were designed to test for understanding and main idea recognition, it is to be expected that these strategies are appropriate to the context of use and therefore lead to superior task performance.

4.2 Classroom implications

While SL learners appear to have some learning strategies they are likely to use, there is clearly room for improvement and educators need to address this. When language learning is put into the context of classroom learning, we can appreciate that it is not an isolated process, though it does have characteristics unique to itself. Therefore, as responsible educators, we need to concern ourselves with the "how to" of learning as well as the "what" of content materials. Incorporating strategy instruction into SL classroom teaching has the benefit of promoting a way of thinking, a way of approaching a learning task or similar problematic situations to our students. Furthermore, the need to offer strategy instruction becomes more apparent given that increasing numbers of students are being admitted into the college and university context with limited academic experience or with experience they are unable to apply to the SL context. In many instances, students come into the SL classroom with not only developing language skills but low level skills in the area of how to learn. Before they can experience success as learners, educators need to address one of the foremost deficiencies of the students that is, how to approach the learning context. To summarize, the development of learning strategies, therefore, is consistent with one of the primary goals of classroom instruction, that is, the learning and subsequent transfer of information, concepts, and techniques. Furthermore, in response to the needs of students as learners, teaching learning strategies in the SL classroom can provide students with further opportunities for success by encouraging them to apply the learning strategies they have and also, to develop new ones.

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