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The effects of picture vs. translation mediated instruction on L2 vocabulary learning

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Abstract

This study aims to investigate the effectiveness of pictures and first language (L1) vocabulary items both as instruction methods and as cues for recall in the learning of second language (L2) vocabulary items by children. In an experimental study with Turkish EFL learners, L2 vocabulary items were presented with L1 words in one group and with pictures in the other one. In the post-tests which required learners to provide the L2 vocabulary items for pictures and L1 words, both the L1 word instructed group and picture instructed group performed better in their L2 responses to pictures than to L1 word items. The results of the study suggest that superiority of pictures over L1 words in the recall of L2 vocabulary items by children is due to their effectiveness as cues for recall rather than due to their superiority as a learning method.

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1. Introduction

The recognition of vocabulary as a crucial component of second language knowledge and skills has led to the investigation of different strategies and techniques of vocabulary instruction in classrooms and their effects on the learning and retention of vocabulary items. One of the well known vocabulary instruction strategies involves presenting the novel L2 vocabulary items with their L1 translations. The effectiveness of using L1 words in learning L2 vocabulary items is supported by Kroll and Stewart's (1994) Revised Hierarchical Model (RHM) which aims to explain how L2 vocabulary items are represented and accessed in the mind. According to this model, for less proficient

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L2 learners, the link between the L2 vocabulary items and the conceptual system is established through L1 lexicon which has already linked to the conceptual system. In other words, less proficient learners process words in L2 by depending on their lexical knowledge in their L1. However, as proficiency increases, the dependency of L2 lexicon on L1 lexicon to reach conceptual system decreases and learners use the direct concept-to-L2 lexicon link to process words rather than relying on their L1 lexicon. With this model, the effectiveness of using L1 words to establish the initial form-concept link of the new L2 words has been supported by several researchers and it has been proposed that novel L2 vocabulary items are stored more effectively when they are linked to their L1 equivalents (Barcroft, 2002; Kroll & Curely, 1988).

Another well-known L2 vocabulary instruction method involves the use of pictures. Up to present several studies on memory have pointed out to the importance of pictures in enhancing memory performance (e.g., Nelson, 1979; Paivio, 1991; Paivio & Csapo, 1973). In general, these studies demonstrate that in tasks which requires the recall of a list of items, items presented in the form of pictures are recalled with more ease than those items presented in verbal form.

Research on foreign language learning also indicates that visual aids such as pictures and videos promote comprehension of L2 text materials better than purely verbal descriptions (e.g., Mueller, 1980; Omaggio, 1979). However, whether pictures promote learning of L2 vocabulary items is less clear. Studies investigating the effectiveness of picture-based methods in L2 vocabulary retention and recall demonstrate different results depending on various factors such as the age and proficiency of learners, the type of vocabulary items targeted (e.g. cognates vs. non-cognates, concrete vs. abstract) and the type of tasks used for evaluating learners' performance after instruction sessions.

The present study focuses on child learners and investigates whether pictures, compared to L1 words facilitate better retention and recall of foreign vocabulary items.

In order to have a better understanding of the motivation behind this investigation, the following presents an overview of some studies which compared the effects of pictures and L1 words on the processing and learning L2 vocabulary items.

2. Pictures vs. L1 words: L2 vocabulary processing and learning

Studies which focused on the processing of L2 words and compared learners' production of L2 words in response to pictures and L1 words demonstrated different results depending on learners' proficiency level and age. For instance, Kroll and Curley's (1988) study showed that while the more proficient adult learners performed equally in providing L2 items for L1 words and pictures, learners at lower levels of proficiency performed better in providing L2 items for L1 words. Similar results were also obtained in several other studies (see e.g., Chen & Leung, 1989; De Groot, 1993; Kroll, 1993). While Chen and Leung (1989) demonstrated similar results with adult learners, a different pattern emerged in their experiment with children around the age of seven. It was observed that children performed better in producing L2 words for pictures than for the corresponding L1 translations. Contrary to the Revised Hierarchical Model (RHM), which assumes that less proficient learners process L2 vocabulary items by relying on their L1 vocabulary knowledge, Chen and Leung (1989) suggested that children did not rely on their L1 lexical knowledge even if they were elementary level learners.

There also studies which especially investigated the effects of instruction and compared the effectiveness of picture-based and L1 word-based instruction in learning novel L2 vocabulary items.

In Chen's (1990) study two groups of Cantonese-speaking college students were presented novel L2 French words either with the corresponding L1 words or with pictures. During the test session, learners were asked to provide L2 words for items congruent (i.e., pictures for picture learning) and incongruent (i.e., L1 translations for picture learning) with their learning method. The results showed that the group which received L1 based instruction performed better in providing L2 words for L1 translations and the picture group performed better in naming pictures in L2. However, the results of the study did not demonstrate a main effect of the learning method.

In Lotto and De Groot (1998), adult Dutch learners were taught vocabulary items in Italian by using the two different methods. Similar to Chen's (1990) results, learners performed better when test items were the same with the method of instruction. In contrast to Chen's study, a main effect of learning method was found. The results

demonstrated that the learning of L2 vocabulary items with L1 words lead to better performance than learning with pictures.

While both in Chen (1990) and Lotto and De Groot (1998) the target of instruction was adult learners, in Tonzar, Lotto and Job (2009) the effects of the L1 based and picture-based instruction were tested with Italian fourth graders and eighth graders learning English and German as foreign languages. The fourth graders, who were about nine years old, were absolute beginners. The eighth graders, who were about thirteen years old, had some knowledge of English. In half of the classes word-based method was used presenting novel L2 words together with L1 equivalents. The other half of the classes was exposed to L2 words with the related pictures. In the test sessions which evaluated learners' performance, either pictures or L1 words were used depending on the learning method. In other words, the groups which had L1 word-based instruction were asked to provide L2 items for L1 words and the groups which had picture-based instruction were asked to provide L2 items for pictures. According to the results, the picture-learning method enabled both graders to get higher scores than the L1 word-learning method. However, since the test conditions in this study were congruent with the learning method of the groups, that is, since picture instructed group provided L2 items for pictures and L1-word instructed group provided L2 items for L1 words, a question that arises is whether the observed difference between the picture instructed groups and L1 word instructed groups is due to the difference in their instruction method or due to the difference in the test items for which they were expected to provide L2 vocabulary items.

In order to clarify this issue we conducted a study to investigate how child learners' recall of L2 vocabulary items is modulated by the type of learning method used (picture-based vs. L1-based method) as well as by the type of cue used to elicit their responses. More specifically, this study seeks for an answer to the following question: Are pictures more effective than L1 words for child learners (a) as an instruction method to present novel L2 vocabulary items and (b) as cues to elicit L2 vocabulary items?

3. The study

3.1. Participants

The participants who were chosen through convenient sampling consisted of 75 Turkish EFL learners at elementary level enrolled in the seventh grade of a public school in Istanbul. Their mean age was about twelve and they have been learning English for four years.

3.2. Materials and procedure

Firstly, a pre-test was used to select twenty unfamiliar vocabulary items out of forty English words which refer to concrete objects. After the selection of unknown words, the students were divided into two groups: picture-based instruction group and L1 word-based instruction group. There were two treatment sessions for each group. In each session, ten English words were presented by using a Power-Point presentation with their Turkish equivalences to one group and with corresponding pictures to the other. During the presentation the experimenter read each L2 word aloud. After the presentation the students in each group practiced the words through repetitions and question-answer drills using the same mode of instruction used to present the L2 items. After each session, immediate tests consisting of ten items were given to each group. In the immediate tests each group was asked to provide the L2 words for items congruent with their instruction method. In other words, L1 word instruction group was given Turkish correspondents of the target words and was required to write down their English equivalents. The picture group was given pictures and was asked to write corresponding English words for the pictures. One week after the treatment sessions a delayed post-test was applied to each group. In this delayed post test the students were asked to provide all of the twenty words they were taught during the two sessions. Similar to the immediate tests the items for which groups were asked to provide the English words were congruent with the instruction method of each group. Approximately one month later, another delayed post-test was applied to both groups. As this test was given during the last week of the semester, only 31 students from the L1-word instruction group and 29 students from the picture group participated in the test. This delayed test was different from the first delayed post-test in that both the picture and L1-word instructed groups were

given the same test consisting of both congruent and incongruent items with their instruction method. The test included ten pictures and ten Turkish words for which the students were expected to provide the target English words.

3.3. Data analysis

In the evaluation of the answers, each correct answer was given one point. Minor spelling mistakes were disregarded and such responses were counted as correct. The data was analyzed using SPSS 15.0. Mean scores of the correct responses from each instruction group were calculated and independent samples t-tests were conducted to see whether there was any significant difference between the scores of two groups in the immediate and delayed post-tests.

3.4. Results

The mean scores for correct responses of picture-based and L1 word-based instructed groups for the two immediate tests and the two delayed pos-tests are presented in Table 1. The scores are out of 10 for each immediate test and out of 20 for each delayed test.

Table 1. Mean scores of each group for immediate tests and delayed post-tests.

Test type	L1 word instruction group		Picture instruction group	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Immediate test 1	5.78	2.97	7.17	2.09
Immediate test 2	6.40	3.40	9.09	1.31
Delayed post-test 1	3.55	3.09	6.00	3.72
Delayed post-test 2	7.22	4.33	5.97	3.69

As the mean scores in Table 1 indicate, in the two immediate tests and the first delayed post-test which consisted of test items congruent with the method of instruction of each group, the scores for the picture-based instruction group were higher than the L1-word instructed group.

The independent samples t-test which was used to compare the scores of the two groups demonstrated that the performance of the picture instructed group of learners who provided L2 words for pictures was significantly better than the L1 word instructed group of learners who provided L2 words for L1 translations both in the first immediate test: $t(73) = 2.32, p = .02$ and in the second immediate test: $t(73) = 4.40, p < .01$.

Similarly, the comparison of the scores in the first delayed post-test where the groups were again presented with test items same with their mode of instruction illustrated that the picture group performed significantly better than the L1 word instructed group: $t(73) = 3.12, p = .003$.

The results of the second post-test where the two groups had both congruent and incongruent items with their method of instruction, the mean for the L1 word instructed group was slightly higher than the mean for the picture-instructed group. However, this difference did not reach a level of significance: $t(58) = 1.21, p = .23$. In other words, both instruction groups performed equally in the second delayed test.

The more detailed analysis of the scores associated with each group's responses to pictures and L1 word items separately showed that both the picture instructed group and the translation instructed group performed better in providing L2 vocabulary items for pictures than in providing L2 items for L1-words. For the picture-based instruction group, the mean score for picture items ($M = 4.52; SD = 2.43$) was higher than the mean score for L1-word items ($M = 1.48; SD = 1.93$). Similarly, for the L1-word based instruction group, the mean score for picture items ($M = 4.48; SD = 2.47$) was higher than their mean score for L1-word items ($M = 2.74; SD = 2.22$).

While there was no significant difference between the two instruction groups in terms their L2 responses to picture items: $t(58) = .05, p = .96$, L1 word instructed group performed significantly better in providing L2 words for L1-word items in the test: $t(58) = 2.33, p = .02$.

4. Discussion and conclusions

The findings of the present study demonstrated that children performed better in providing L2 vocabulary items for pictures than for L1 words regardless of their instruction method. Thus, with respect to the first part of our research question, whether pictures are more effective than L1 words for learning L2 vocabulary items, the results of our study suggest that they are not, since L1 word instructed group performed equally well as the picture instructed group when they were asked to provide L2 vocabulary items for pictures. For the second part of our research question, whether pictures are more effective than L1 words as cues in eliciting L2 vocabulary items, our findings indicate that they are, as both groups scored higher in response to pictures than in response to L1 words.

On one hand, these results are in accordance with the previous findings of L2 vocabulary processing studies (Chen, 1990; Chen & Leung, 1989) which compared the effectiveness of pictures to L1 words in eliciting L2 vocabulary items without the mediation of instruction. In these studies children performed better in providing L2 vocabulary items for pictures than for L1 words in terms of retrieval time and accuracy of their responses contrary to adults who performed better in responding to L1 words.

On the other hand, the findings of the present study are contrary to the findings of studies (Chen, 1990; Lotto and De Groot, 1998) which involved instruction and tested both the effects of learning method and the effects of test items in terms of their congruency with learning condition. In these studies with non-proficient adult learners, performance in providing L2 vocabulary items was better for test items congruent with the instruction method. In the present study children were observed to perform better in response to pictures irrespective of their method of instruction.

Another finding of the study was that although both picture and L1 word instructed groups performed equally in their responses to picture items in the second delayed post-test, L1 word instructed learners performed better than the picture instructed group in providing L2 vocabulary items to L1 words. However, it is not clear whether this is an effect of their L1 word based instruction or an effect of being repeatedly tested through L1 words in the previous immediate tests and the first delayed test. One way to understand this would be to have a different experimental design which would involve testing both picture-instructed and L1 word-instructed groups with items congruent and incongruent with their learning method starting with the first immediate tests.

This study was limited to a small group of learners whose performance was evaluated based on the productive aspect of their L2 vocabulary knowledge rather than their receptive knowledge. In addition to that, learning of vocabulary items was limited to the words referring to concrete objects. In spite of these limitations, the findings of the present study draw attention to the effects of items used to evaluate learners' performance when comparing the effectiveness of picture-based and L1-word based instruction methods.

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