The Effect of Pictorial Annotations on Saudi EFL Student's Incidental Vocabulary Learning

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Abstract. This study investigates the effect of textual and pictorial annotations on incidental vocabulary learning. Eighty eight male first-year undergraduate Saudi students read a 367-word text which included 16 glossed words. The reading text was adapted into four forms: a text with L1 (Arabic) text-only glosses, a text with L2 (English) text-only glosses, a text with text (Arabic)-picture glosses, and a text with text (English)-picture glosses. Subjects were randomly selected and randomly assigned to one of the four groups; Arabic text-only, English text-only, Arabic text- picture, and English text-picture. Without any advanced notice, subjects were tested immediately after reading the text and one week after. Tests were definition-supply and word recognition. Results revealed a superiority of the Arabic text-picture gloss group over all the other three groups in the immediate and delayed definition-supply tests. In the immediate and the delayed word recognition tests, both English text-picture and Arabic text-picture gloss groups recognized more words than other groups did but the differences were insignificant.

Introduction

Reading a text in a second language (L2) can be a tough work when the reader encounters words that he/she does not know their meaning or cannot get the main idea. Therefore, researchers have been studying reading comprehension and reading strategies over the past decades (Ying-Hsuen, 2005) [23]. A considerable attention has been directed to investigate techniques to facilitate reading comprehension in a foreign language. One of the techniques which has gained saliency and helped to make the L2 text comprehension more effective is glossing. Glosses use has recently become a common approach in adapting L2 reading materials. Its use in the L2 reading materials is more preferable than dictionary use. It does not interrupt the reading process since the definition is available in the text (Yanguas, 2005) [21]. A number of studies have revealed that the use of glossing is more helpful to students to comprehend texts and learn vocabulary items than having no glosses (Davis, 1989; Lomica, 1998).

Researchers have been investigating the effect of glossing on developing students' incidental vocabulary learning. A large number of studies found a significant effect for the first language (L1) or the second language (L2) glosses on vocabulary learning and that glossing can foster English as a foreign language (EFL) learners' vocabulary learning. (Holly & King, 1971; [7] Jacobs, DuFon, & Fong, 1994; [11] Hulstijn, Hollander, & Greidanus, 1996; [10] Watanabe, 1997; [26] Grace, 1998; [5] Gettys, Imhof, & Kautz. 2001; [4] Rott, Williams, & Cameron, 2002; [19] Huang Yu-Ching, 2003) [9]. Recently, studies have been investigating which type of glosses is more effective. A great body of research has been done using different types of glossing (marginal, textual, pictorial, multimedia). Some researchers have focused on the use of pictorial glossing in learning vocabulary as well as in reading comprehension. As stated in Kost, Foss, & Lenzini (1999) [12], one of the first empirical studies that investigated the effect of pictorial glosses on reading comprehension was done by Omaggio in 1979. [15] Since then, researchers have studied the effect of these different gloss types on reading comprehension (Chun & Plass 1996; [2] Hong, 1997; [8] Lomica, 1998; [13] Taylor, 2006) [20] and incidental vocabulary learning (Plass, Chun, Mayer, & Leutner 1998; [18] Kost *et al.* 1999; [12] Al-Seghayer, 2001; [1] Yeh & Wang, 2003; [22] Yoshii & Flaitz, 2002; [25] Yoshii, 2006) [24] in printed materials as well as multimedia environment.

Kost et al. (1999) [12] investigated the effect of textual and pictorial glosses on vocabulary learning in printed materials. Fifty-six students of German at an American university participated in this study. They were assigned to one of three gloss conditions: textual (English translation), pictorial, and combination of the two. They read a 272-word narrative text passage with 20 glossed words and had three assessment tasks on 14 target words: a production task: is the provision of the English translations for the given words, a picture recognition task: is the choice of the correct picture of the word in question, and a word recognition task: is the choice of the correct English translation of the word in question. They were tested twice; immediately after reading the text to measure short-term memory and two weeks later to measure the vocabulary retention. Results showed that subjects who had textual and pictorial glosses outperformed subjects under the combination of the two in the recognition tasks on the immediate and delayed tests. Kost et al. confirmed that these results are the outcome of different degrees of cognitive effort employed by subjects to process information. Furthermore, they added that "the mapping of pictures onto the mental model provides and stronger bond than the mapping of words due to the different representations of their information (analog vs. symbolic)" (p. 94)

A similar study was done by Plass et al (1998) in which the effect of different gloss types was examined in a multimedia environment. One hundred and three university students studying German as a second language participated in the study. They read a 762-word text which included 12 words with L1 text and picture gloss options and 12 words with L1 text and video gloss options. Results of definition supply tests showed that selecting test and picture was better than selecting text and video. The performance of subjects who selected verbal and visual glosses was the best while that of those who selected none was the worst.

Al-Seghayer (2001) [1] investigated the effect of different gloss modes on vocabulary learning in a computer environment study. Thirty ESL students read a 1300-word text with 21 glossed words; seven words were annotated with text only, seven words were annotated with text and picture, and seven words were annotated with text and video. Subjects had immediate recognition and production tests. Results of tests showed that subjects' performance on text-plus-video was significantly better than their performance on the other types of annotation.

The use of pictorial glossing was further studied by Yoshii & Flaitz (2002) [25] to examine the effect of different gloss types on L2 incidental vocabulary retention in a multimedia reading setting. One hundred fifty

one adult ESL students with different first languages read a 390-word story with fourteen glossed words under three gloss types: textual only, pictorial only, and a combination of the two. Vocabulary retention as assessed by picture recognition, word recognition, and definition supply tests. Results of the immediate tests showed that the text-picture group significantly outperformed the other groups on all three tests. Results of the delayed tests showed that the text-picture group also outperformed the other two groups but the differences were smaller than those for the immediate tests.

In another computer environment study, Yeh & Wang (2003) [22] investigated the effect of three multimedia gloss types: text only, text plus picture, and text, picture, and sound. Eighty two university students were randomly assigned to the three groups. Those in the first group read the text which included Chinese translation and English explanation for each glossed word. Subjects in the second group had a still image associated with the vocabulary item in addition to the Chinese translation and English explanation. Subjects of the third group not only did they view the textual and pictorial annotations, but also they listened to audio annotations in which they listen to the glossed word pronounced by a native speaker, to the spelling of the word, and to the sentence in which the word occurred. All participants had three posttests: word association questions, multiple choice questions on word meanings, and a cloze test. Results showed that text plus picture was the most effective gloss type for vocabulary learning.

Yoshii (2006) [24] investigated the effect of L1, L2, and pictorial glosses on incidental vocabulary learning in a multimedia environment. A total of 195 university students learning EFL participated in the study. They read a 390-word text including 14 target words under four gloss conditions: L1 text only, L2 text only, L1 text-picture, and L2 text-picture. They were tested immediately after reading the text and also two weeks later. The tests consisted of a production test in which subjects provided the definition of the 14 target words in L1 and a recognition test in which they chose the appropriate meaning out of the four Choices written in the L2. Results showed that picture groups outperformed the text groups on the definition supply tests. On recognition tests, L1 text group remembered words better than other groups did. These results as Yoshii believes "leads to a suspicion that using L1 glosses more often and over a longer period of time might reveal an advantage of L1 over L2 glosses"(p. 95).

The effectiveness of text-plus-picture type of vocabulary annotation can be explained through the dual coding theory proposed by Paivio (1971) [17]. The theory assumes that there are two cognitive subsystems, a verbal system which is specialized to deal with language, and a nonverbal (i.e. imagery/visual) system which is specialized to deal with nonlinguistic objects and events. Paivio also proposed two different types of internal representational units: "imagens" for mental images and "logogens" for verbal entities. These two units are activated when one thinks about words or things. The representations are modality-specific; therefore, we have different logogens and imagens corresponding to the visual, auditory, and motor properties of language and objects. The verbal and visual systems can function independently but there are interconnections between the two. These interconnections allow dual coding of information. Therefore, dual coding theory is based on the use of imagery in associative learning. In order for verbal learning to be effective, it must be accompanied by nonverbal (i.e. visual) learning. Oxford and Crookall (1990) [16] believe that the use of picture and text together leads to more depth of processing than when text is processed alone. They stated that

Most learners are capable of associating new information to concepts in memory by means of meaningful visual images, and that visual images make learning more efficient. …. Moreover, the pictorial-verbal combination involves many parts of the brain, thus providing greater cognitive power (p. 17).

In summary, most of the empirical studies curried out during the last 30 years show that the use of glosses appears to aid incidental vocabulary learning. It is also the combination of textual and pictorial glosses is more effective for enhancing incidental vocabulary learning. The current study aims to answer the following questions:

1. Which type of glosses is enhancing incidental English vocabulary learning more than the others?
2. To what extent does pictorial annotation enhance Saudi EFL students' incidental vocabulary learning?
3. Is the combination of text and picture the most facilitating type of glossing?

Method

Participants

A total of 88 male students enrolled at the Department of English, Umm Al-Qura University, Makkah, Saudi Arabia participated in the study. They are freshmen EFL learners. All had studied English for six years before entering the university. All are non-native speakers of English. They were randomly selected and randomly assigned to one of the four groups; text (L1)-only, text (L2)-only, text (L1)-picture, and text (L2)-picture. Each group had 22 participants.

Instruments

Pretest

A pretest was administered two weeks prior to the treatment to gauge participants' familiarity with the glossed words in the text. The test contained 21 words from the 367-word text in addition to 9 additional distracters. Participants were instructed to put a check mark by the word they know and provide the meaning of the words they know in either L1 (Arabic) or L2 (English). The result of the pretest showed that participants did not know the meaning of 16 words. These 16 words were glossed in the text.

Reading material

The participants read a 367-word text. The text was selected by two professors of English from "What's in a word: Reading and vocabulary building (Intermediate)". Words which the subjects knew were not annotated and were excluded from the posttests. The reading text was adapted into four forms: a text with Arabic as an L1 glosses, a text with English as an L2 glosses, a text with Arabic text-picture glosses, and a text with English text-picture glosses. Glosses were placed on the same line as the glossed words. In order to obtain the most appropriate definitions of the English words, a professor of translation checked the definitions of the words against the original text. Glossed words were underlined and boldfaced in the text.

Procedure

Each of the four groups was randomly assigned with 22 participants. They were instructed to read the text. After that, the reading material was collected and two immediate posttests were administered. The subjects did not know they would be given a vocabulary test. The first test was a definition-supply test in which subjects had to provide the meaning of any of the 16 words they remember. This test was similar to the pretest. Once they finished the definition-supply test, they received the second test which was a recognition test in which each of the 16 words was followed by four multiple-choice answers. The subjects were instructed to choose the correct meaning out of the four choices written in English. The correct definitions were rephrased differently from what was used in the text so that the subjects would not use their memory to answer without understanding the meanings. The purpose of presenting the definition-supply test first was that the word recognition test would not provide subjects with additional exposure. Without any advanced notice, the subjects received the same two tests after one week. The formats of both tests were similar to the immediate ones but the order of items in each test was different from the order of items in the immediate test.

Data Analysis

An Analysis of Variance (ANOVA) was conducted to analyze the data collected. A 2 (Type of glossing: text / picture-) by 2 (Language: English / Arabic) by 2 (type of test: Immediate / Delayed) repeated measure factorial design was used. The goal of the ANOVA is to explain the variance in the dependent variable in terms of the variance in the independent variables. In this study the dependent variable is the vocabulary test scores while the independent variables are types of glossing, language, and type of test.

In analyzing the data, measurement of the dependent variable has been achieved by simply counting the number of meanings supplied on the definition-supply test and on the correct answers chosen on the recognition test.

Definition-Supply Tests:

Table (1). Means and Standard Deviation of Immediate Definition-Supply Test

Condition	N	Mean	Std. Deviation
English text-only	22	2.64	3.06
Arabic text-only	22	5.77	3.52
English text-picture	22	5.41	4.07
Arabic text-picture	22	9.36	4.01

As Table (1) clearly shows, participants who had the Arabic text-picture glosses recalled and provided more meanings than participants from the other groups did. In turn, more meanings from the Arabic text-only group were recalled and provided on average than meanings from the English text-only and English text-picture groups. The English text-only group scored poorly since its means were the lowest.

Table (2). Analysis of Variance of Number of Correct Definitions Supplied on Immediate Test Score (out of 16)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	502.955	3	167.652	12.339	.000
Within Groups	1141.364	84	13.588		
Total	1644.318	87			

Table (2) reports an F of 12.339, which with 3 and 84 degrees of freedom is statistically significant at the.000 level (P < 0.05). These figures indicate that the differences across independent variable categories are significant at a very low probability. Eta Square (E²), the correlation ratio, is a proportion that is used to express how much we reduce errors in guessing dependent variable scores. It is also a measure of association; it indicates how strongly the dependent variable is related to the independent variables. Its value is obtained by dividing Between Groups Sum of Square by the Total Sum of Squares. In Table 2 above, E² is 0.31. This means that the four types of glossing explain about 31 percent of the variation in number of definitions supplied. We could say that this relationship is strong.

Table (3). Post Hoc Tests (Multiple Comparisons) Dependent Variable: correct definitions supplied on immediate test (out of 16)

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
English text-only	Arabic text-only	-3.1364(*)	1.1114	.015	-5.7987	-.4740
	English text-picture	-2.7727	1.1114	.067	-5.6855	.1401
	Arabic text-picture	-6.7273(*)	1.1114	.000	-9.6117	-3.8428
Arabic text-only	English text-only	3.1364(*)	1.1114	.015	.4740	5.7987
	English text-picture	.3636	1.1114	.989	-2.7056	3.4328
	Arabic text-picture	-3.1364(*)	1.1114	.015	-6.6337	-.5482
English text-picture	English text-only	2.7727	1.1114	.067	-.1401	5.6855
	Arabic text-only	-.3636	1.1114	.989	-3.4328	2.7056
	Arabic text-picture	-3.9545(*)	1.1114	.012	-7.2104	-.6987
Arabic text-picture	English text-only	6.7273(*)	1.1114	.000	3.8428	9.6117
	Arabic text-only	3.5909(*)	1.1114	.015	.5482	6.6337
	English text-picture	3.9545(*)	1.1114	.012	.6987	7.2104

Table (3) shows that there is a statistically significant difference between the number of definitions supplied by the Arabic text-only and the English text-only groups and between the Arabic text-picture and the English text-only groups for participants taking the test immediately after the reading. A particular comparison is statistically significant if the significance value is 0.05 or below.

The fourth section in this chart, which displays the comparisons with the Arabic text-picture group, is the most important section. The differences between the numbers of definitions supplied by the Arabic text-picture group as compared with those of all other three groups are statistically significant in favor of the Arabic text-picture group. Moreover, the difference between numbers of definitions supplied by the Arabic text-only group as compared with the English text-only group is statistically significant in favor of the Arabic text-only group.

In contrast, the English text-picture and Arabic text-only groups do not appear to be significantly different from each other when compared in pairs, as the difference between them is not statistically significant.

Table (4). Means and Standard Deviation of Delayed Definition-Supply Test

Condition	N	Mean	Std. Deviation
English text-only	22	1.32	1.62
Arabic text-only	22	4.05	2.94
English text-picture	22	3.50	2.63
Arabic text-picture	22	7.14	3.69

Table (4) lists the means for number of definitions supplied by participants in the delayed test. These results are similar to those in Table 1. Participants with Arabic text-picture glosses recalled more words than other participants did. Participants with Arabic text-only glosses recalled more words than participants with English text-only and English text-picture glosses did.

Table (5). Analysis of Variance of Number of Correct Definitions Supplied on Delayed Test Score (out of 16)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	380.182	3	126.727	15.940	.000
Within Groups	667.818	84	7.950		
Total	1048.000	87			

Table (5) displays the results of the ANOVA performed on the means of participants delayed test results for definition-supply test.

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With F $(3, 84) = 15.940$, $P = 0.000$ ($P < 0.05$). This result indicates that the difference is statistically significant. The Eta² value of 0.36 tells that the type of glossing explains about 36 percent of the variation in the number of words. This is a strong relationship.

Table (6). Post Hoc Tests Dependent Variable: correct definitions supplied on delayed test (out of 16)

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
English text-only	Arabic text-only	-2.7273(*)	.8501	.003	-4.6605	-.7940
	English text-picture	-2.1818(*)	.8501	.011	-3.9579	-.4058
	Arabic text-picture	-5.8182(*)	.8501	.000	-8.1614	-3.4750
Arabic text-only	English text-only	2.7273(*)	.8501	.003	.7940	4.6605
	English text-picture	.5455	.8501	.915	-1.7042	2.7951
	Arabic text-picture	-3.09099*)	.8501	.019	-5.7875	-.3943
English text-picture	English text-only	2.1818(*)	.8501	.011	.4058	3.9579
	Arabic text-only	-.5455	.8501	.915	-2.7951	1.7042
	Arabic text-picture	-3.6364(*)	.8501	.003	-6.2346	-1.0381
Arabic text-picture	English text-only	5.8182(*)	.8501	.000	3.4750	8.1614
	Arabic text-only	3.0909(*)	.8501	.019	.3943	5.7875
	English text-picture	3.6364(*)	.8501	.003	1.0381	6.2346

The difference between the mean of the recalled Arabic text-picture glossing (7.14) and the mean of the recalled English text-picture glossing (3.50) is statistically significant, as Table (6) clearly shows. Also the difference between the mean of the recalled Arabic text-only glossing (4.05) and the mean of the recalled English text-only glossing (1.32) is statistically significant. Moreover, the difference between the mean of the recalled Arabic text-picture glossing (7.14) and the mean of the recalled Arabic text-only glossing (4.15) is statistically significant. The difference between the mean of the recalled English text-picture glossing (3.50) and the mean of the recalled English text-only glossing (1.32) is statistically significant.

Table (7). Means and Standard Deviation of Immediate Word Recognition Test.

Condition	N	Mean	Std. Deviation
English text-only	22	8.77	3.68
Arabic text-only	22	7.23	2.33
English text-picture	22	10.18	3.17
Arabic text-picture	22	9.00	3.99

Table (7) shows that participants from the text-picture groups recognized more meanings than text-only groups did. Although the means are close to each other, the English text-picture comes first with a mean of (10.18) followed by the Arabic text-picture, the English text-only, and the Arabic text-only groups respectively.

Table (8). Analysis of Variance of Number of Correct Word Recognition on Immediate Test Score (out of 16).

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	97.318	3	32.439	2.890	.040
Within Groups	943.000	84	11.226		
Total	1040.318	87			

With F $(3, 84) = 2.890$, $P = 0.040$ ($P < 0.05$). Based on Table (8) above, E² is 0.09. This means that the four types of glossing explain about 9 percent of the variation in number of word recognized. This relationship is weak but statistically significant.

In Table (9), post hoc tests examine the data described in Table 8 above to explain the significant findings more specifically

Table (9). Post Hoc Tests Dependent Variable: correct answers on word recognition immediate test (out of 16).

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
English text-only	Arabic text-only	1.5455	1.0102	.356	-.9551	4.0460
	English text-picture	-1.4091	1.0102	.530	-4.1808	1.3626
	Arabic text-picture	-.2273	1.0102	.997	-3.3216	2.8670
Arabic text-only	English text-only	-1.5455	1.0102	.356	-4.0460	.9551
	English text-picture	-2.9545(*)	1.0102	.006	-5.2068	-.7023
	Arabic text-picture	-1.7727	1.0102	.291	-4.4326	.8871
English text-picture	English text-only	1.4091	1.0102	.530	-1.3626	4.1808
	Arabic text-only	2.9545(*)	1.0102	.006	.7023	5.2068
	Arabic text-picture	1.1818	1.0102	.699	-1.7303	4.0939
Arabic text-picture	English text-only	.2273	1.0102	.997	-2.8670	3.3216
	Arabic text-only	1.7727	1.0102	.291	-.8871	4.4326
	English text-picture	-1.1818	1.0102	.699	-4.0939	1.7303

The difference between the mean of words recognized by the English text-picture group (10.18) and the mean of words recognized by the Arabic text-only group (7.23) is statistically significant (P = 0.006) as Table 9 shows. On the other hand, the difference between the Arabic text-picture and the Arabic text-only groups is not significant, nor is the difference between the Arabic text-picture and the English text-only groups.

Table (10). Means and Standard Deviation of Delayed Word Recognition Test.

Condition	N	Mean	Std. Deviation
English text-only	22	7.05	3.33
Arabic text-only	22	6.18	2.56
English text-picture	22	8.18	3.47
Arabic text-picture	22	8.18	3.94

Table (10) reveals that the English text-picture and the Arabic text-picture groups recognized more words on the delayed test than the other two groups. The means of the recognized words by the Arabic text-only is the least. It appears that there are small differences between the means.

Table (11). Analysis of Variance of Number of Correct Word Recognition on Delayed Test Score (out of 16)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	62.307	3	20.769	1.839	.146
Within Groups	948.773	84	11.295		
Total	1011.080	87			

As a result of the tiny differences between the means in Table (11), The ANOVA reports an *F* of 1.839, which with 3 and 84 degrees of freedom is not statistically significant (P > 0.05).

Discussion

The first research question examined which type of glossing is enhancing incidental English vocabulary learning more than the others. The results revealed a superiority of the Arabic text-picture gloss group over all the other three groups in the immediate and delayed definition-supply tests. In the immediate and delayed word recognition tests, both the English text-picture and the Arabic text-picture gloss groups recognized more words than other groups regardless of the insignificance in their differences. Therefore, the Arabic text-picture gloss is enhancing incidental English vocabulary learning more than the others. Participants who had the Arabic text-only glosses were slightly better than the English text-picture group. One possible reason why the first language is found to be more effective than the second language in the definition-supply test is that this test asked the subjects to provide the definition in their first or second/foreign language. If the subjects were required to use L2 in definition-supply test, one might argue that results would be different as the case with the word recognition test in which all the choices were in English. Another reason might be that the conceptual links that the participants have between L1 and concepts are stronger than the conceptual links between the L2 and concepts (Yoshii, 2006). The same idea is claimed by Harites and Nelson (2001) who said

L1 initially serves as a lexical intermediary between L2 and conceptual meaning. As a result, lexical links from L2 to L1 are stronger than lexical links from L1 to L2, and conceptual links to L1 are initially stronger than conceptual links to L2 (p. 419).

The second question asked to what extent the use of pictures enhances incidental vocabulary learning. Results differ according to the type of the test. There were significant differences in the definition-supply tests. This supports the dual-coding hypothesis. But there were no significant differences between all the groups in the recognition tests except between the English text-picture and the Arabic text-only groups. The reason for this inconsistency might be the nature of the tests. In the word recognition test, the subjects have all the choices written in English. If the test is picture recognition as the one used in Yoshii & Flaitz (2002) [25], results might be different. Another justification is that the subjects in the definition-supply tests relied on their memory to recall meanings with no hints. But in the recognition test, they used the four choices as hints to help them recall the meanings. Therefore, "the presence or absence of pictorial cues did not have as much effect as they did on the definition-supply tests and, thus, minimizing the effect of the addition of pictures"(Yoshii (2006), p. 95) [21]

The third question investigated whether the combination of text and picture is the most facilitating type of glossing. Regardless of the small differences between the four groups in the immediate and delayed recognition tests, the subjects who had both a text and pictures recognized more words. It seems that the effectiveness of text-plus-picture type of vocabulary annotation; especially when the first language is used, is supported. These results are not surprising to those who did research on the dual coding theory. The results support what research on this theory came up with and support results of similar studies such as Kost et al. (1999) [12], Yoshii & Flaitz (2002) [25], and Yeh & Wang (2003) [22].

Conclusion

The aim of this research was to examine the effects of using pictures in combination with text annotation on incidental learning of English vocabulary by Saudi students. The results provided evidence that L1 text-picture group outperformed all the other groups in the immediate and delayed definition-supply tests. There seems to be some evidence for the strength of Arabic as the first language in the definition-supply tests. The multiple-choice word recognition test results revealed that groups which had text-picture glosses recognized more words especially in the delayed test although the statistics did not indicate a significant difference between the four groups. Results support the claim that the use of pictures in combination with the text has a positive effect on vocabulary learning.

However, future studies need to have a larger number of subjects which would help to draw better conclusions. Meanwhile, further research should be conducted on the four glossing types and reading comprehension in order to discover how they affect reading comprehension positively or negatively. Further research might consider testing participants over longer periods of time like three or six months.

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تأثير استخدام الصور كحواشٍ على التعلم العَرَضي للمفردات

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ملخص البحث. بحثت هذه الدراسة تأثير استخدام النصوص والصور كحواشي في التعلم العَرَضي للمفردات عند الطلاب السعوديين. ثمانية وثمانون طالبا يدرسون في السنة الأولى بقسم اللغة الانجليزية بجامعة أم القرى تم اختيارهم وتوزيعهم إلى أربع مجموعات عشوائياً. المجموعة الاولى قرأت نصاً من ٣٦٧ كلمة واعطيت لهم معاني المفردات بالعربية لـ ١٦ مفردة. المجموعة الثانية قرأت نفس النص بوجود معاني المفردات باللغة الانجليزية. المجموعة الثالثة فقرأت النص مع وجود الصور ومعاني المفردات باللغة العربية. أما المجموعة الرابعة فقد قرأت النص بوجود الصور ومعاني المفردات باللغة الانجليزية. تم اختبار جميع الطلاب مرتين : مباشرة بعد قراءة النص وبعد ذلك باسبوع. كل اختبار تكون من جزئين : الجزء الاول وطُلب فيه كتابة معاني الكلمات أما الجزء الثاني فطُلب فيه اختيار المعنى الصحيح لكل كلمة من أربعة اختيارات . أثبت الدراسة أن المجموعة التي زودت بمعاني المفردات باللغة العربية مع وجود الصور كانت أفضل من المجموعات الأخرى في اختبار كتابة المعنى كما أظهرت الدراسة أن من زودوا بالصور كحواشي قد تفوقوا في اختبار اختيار المعنى الصحيح من الذين لم يزودوا بها ولكن الفرق لم يكن ذا دلالة احصائية.