



The Efficacy of Captions on Students' Incidental Vocabulary Acquisition

Elias Bensalem¹

¹Department of Languages and Translation, Northern Border University, Arar, Saudi Arabia

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Abstract: An increasing number of videos enhanced with captions are used in foreign language classes to help second language (L2) learners process authentic input, which is a real challenge for them. This study investigates whether the availability of two types of captions (full captions and keyword captions) facilitates L2 vocabulary acquisition. Fifty-seven adult English-as-a-foreign language (EFL) learners watched an English video clip under one of the following three conditions: full captions (FC); keyword captions (KC); and no captions (NC). After viewing the video clip, the participants immediately completed vocabulary recognition and meaning recall tests. The results from ANOVA indicated that the FC group significantly outperformed the KC group and the NC group on the vocabulary recognition test and the overall vocabulary test (combination of vocabulary recognition and meaning recall tests). Conversely, no significant difference was found between the KC and NC on all vocabulary tests. Furthermore, there was no significant difference between all groups on the meaning recall test. These results suggest that FC help improve L2 vocabulary acquisition among EFL learners. This study does not lend support for the efficacy of keyword captions. Pedagogical implications based on the study findings are discussed.

Keywords: Captions, Video, CALL, Vocabulary, EFL

1. INTRODUCTION

Listening has received the attention of many researchers in the field of second language (L2) learning. It is one of the sources of L2 acquisition (Rost, 2002) and it plays a major role in developing other language skills (Rost, 1994; Vandergrift, 2007). What makes listening challenging for L2 learners is that it is difficult to comprehend authentic aural input in real life situations. In order to help learners overcome this barrier, many instructors resort to the use of videos enhanced with captions, which have gained popularity because of the accessibility to video media platforms such as YouTube (Winke, Gass, & Sydorenko, 2010). The availability of free do-it-yourself captioning tools has made it easier to add captions to videos. Both instructors and learners can add captions to video clips either in the students' first language (L1) or in the target language to facilitate comprehension (Mohsen, 2016). Therefore, captions have become a potential useful pedagogical tool. The value of captioned videos is supported by the generative theory of multimedia learning, which argues that mixed modes of delivery (text, graphics, audio, and video) enhance the learners' ability to learn and recall vocabulary (Mayer,

2001; Paivio, 2007). Previous research has reported the usefulness of captioned videos as a tool to facilitate vocabulary learning in a multimedia listening environment (Markham, 1999; Winke et al., 2010). Furthermore, captions aid learners to attend more to words in the captions, as reported in eye-tracking studies (Montero Perez, Peters, & Desmet, 2015; Winke, Gass, & Sydorenko, 2013). However, the answer to the question regarding which type of captioning such as full captions and keyword captions is more effective in facilitating vocabulary acquisition remains inconclusive (Bensalem, 2016b). Therefore, this study aims to investigate the efficacy of full captions and keywords on aiding incidental L2 vocabulary learning by English-as-a-foreign language (EFL) learners.

2. LITERATURE REVIEW

Video captioning refers to the combination of on-screen text and soundtrack in a certain language (Danan, 2004). Its main role is to convert images and sounds into text, which may facilitate decoding native speech language learning (Aldera & Mohsen, 2013). Danan (2004) argues that captions aid learners divide the speech stream and recognize word boundaries. This can enhance



vocabulary learning as long as the audiovisual input is within the learners' language proficiency (Danan, 2004; Vanderplank, 2010). Captions are meant to provide learners with the correct word form, which could result in better word recognition (Peters, Heynen, & Puimège, 2016).

The bulk of studies on captions have explored its effects on listening comprehension (e.g., Bensalem, 2016a; Garza, 1991; Guillory, 1998; Markham, 1993, 1999; Mohsen, 2016; Montero Perez et al., 2013). However, the line of studies that focuses on the impact of different types of captions on incidental L2 vocabulary acquisition is still relatively scarce (Bensalem, 2016b; Mohsen, 2016; Montero Perez et al., 2013). Most of the research conducted on the impact of captioning on incidental vocabulary acquisition has reported an improvement in learners' vocabulary as measured primarily by aural recognition and recall of meaning tests (Aldera & Mohsen, 2013; Baltova, 1999; Garza, 1991; Mohsen, 2016; Montero Perez, Peters, Clarebout & Desmet, 2014; Neuman & Koskinen, 1992; Stewart & Pertusa, 2004; Sydorenko, 2010; Winke et al., 2010).

In one of the first studies that explored the effects of captioned videos on students' vocabulary, Neuman and Koskinen (1992) found that advanced EFL students who viewed fully captioned video had higher scores in vocabulary recognition and acquisition exercises than students who viewed non-captioned video segments. In another study that involved the same profile of students, Markham (1999) investigated the effects of captioning on aural word recognition skills. The first group of students watched videotapes with full captions, while the second group watched the same videotapes without captions. Both groups took oral vocabulary recognition tests. The researcher reported that the availability of captions significantly fostered the students' ability to recognize new words from the videotapes they viewed.

In another study that involved beginning and intermediate French college students, Danan (2006) explored the impact of three video viewing modes of a short video segment (L2 audio only, standard subtitling with English subtitles), and reversed subtitling (English dialogue with French titles) on vocabulary recall. Results showed that students who watched the video clip with reversed subtitling (captions) were able to recall more words than the other two groups.

The positive impact of captioning was also found among learners of some of the least commonly taught languages namely Arabic, Chinese, and Russian. Winke et al. (2010) examined the impact of captioning with second and fourth-year learners who watched short-captioned and non-captioned video clips. The results showed that captions helped learners with different levels

of language proficiency boost their vocabulary recognition abilities and overall comprehension of content.

In an experiment that involved the use of both aural and written tests, Sydorenko (2010) examined the effects of different types of input (video, audio, and captions) on form recognition and meaning recall among second-semester learners of Russian. The participants watched short video clips from a Russian comedy series. Results showed that the captioning group significantly outscored learners who watched captionless video clips on written form recognition tests. Conversely, the video-only group had a higher score on the aural form recognition test than the captioning group. The researcher found that learners who watched the videos with audio and captions were able to acquire more word meaning than learners who watched video with audio only.

A meta-analyzed study on 10 articles and dissertations was conducted by Montero Perez, Noortgate and Desmet (2013) to summarize the efficacy of captions on L2 vocabulary learning. Results showed that beginning and intermediate levels of learners who had access to captions while watching videos significantly outperformed learners who watched non-captioned videos on recognition and recall tests.

In a more recent study, Mohsen (2016) investigated the effect of two types of help options in multimedia listening: (1) annotations + captions + animation and (ACA) and (2) annotations + transcripts + animation (ATA) on EFL Arab learners. Thirty-four participants viewed an animated story before taking a vocabulary spelling test and a translation test from Arabic into English. Results suggest that while both groups scored equally well on vocabulary tests, the ACA group, which had access to captions, achieved higher scores on L2 form recall delayed tests than the ATA group. The author concluded that ACA enhanced learners' word retention.

Despite the overall positive impact of full captioning on vocabulary learning, some researchers have undermined its usefulness. They argue that captioning is a tool that helps learners read the target text rather than listen to the auditory input (Mohsen, 2016). Therefore, the improvement in L2 vocabulary learning could be the result of reading rather than listening (Bird & William, 2002). Furthermore, full captioning leaves limited space in working memory to process visual input in a video (Reese, 1984). This does not allow learners to adequately process information because they may not attend to visuals before reading captions (e.g., Rayner, Rotello, Stewart, Keir, & Duffy, 2001; Underwood, Jebbett, & Roberts, 2004). The concern about the amount of reading required by learners while exposed to captions was addressed by reducing the amount of textual density in



the captioning line. Keyword captioning was suggested as a replacement to full captioning (Garza, 1991; Winke et al., 2010). It could facilitate word boundary recognition, especially for beginning-level learners as reported by Guillory's study (1998). The researcher found that the majority of participants who used keyword captions, which represented 14% of the full captioning text, felt that keywords assisted them in identifying word boundaries. Conversely, only about one third of the full-script group thought the full captions helped them in identifying word boundaries.

One of the first empirical studies that examined the impact of keyword captioning was conducted by Baltova (1999). She investigated the effects of captions on students' ability to learn and retain content video content as well as vocabulary among Canadian high schoolers learning French as an L2. The participants watched a video clip under one of three conditions: (1) English audio and French subtitles; (2) French audio and French captions; or (3) no captions. Baltova (1999) included important keywords in the captions because she thought that the selected video clip was too fast for her lower-level students as they had about 160 words per minute. The keywords represented half the total script. A C-Cloze test was administered to all groups. Results showed that students of the bimodal group significantly outscored the rest of students. According to a post-treatment questionnaire, participants of the bimodal group thought the keyword captions were useful as they facilitated understanding the content of the video.

In another experiment that involved Flemish undergraduate students, Montero Perez et al. (2014) explored the effects of keyword captioning on vocabulary acquisition. The researchers compared the efficacy of three types of captioning (full captions, keyword captions, full captions with highlighted keywords) on students' incidental learning of new words and listening comprehension. The participants watched French video clips under any of the following conditions: (1) full captions; (2) keyword captions; (3) full captions with highlighted keywords; or (4) no captioning. Results showed that the three captioning groups outscored the no-captioning group on form recognition and clip association. Concerning meaning recognition, the keyword captioning and full captioning with highlighted keywords groups were able to outperform the control group. However, no significant differences were reported between the captioning groups and the no-captioning group on the meaning recall test. These results corroborate the findings of previous research which showed that captions can enhance written form and recognition (e.g., Neuman & Koskinen, 1992; Sydorenko, 2010).

In a more recent study, Bensalem (2016b) examined the impact of two captioning types on beginning-level university ESL students' incidental vocabulary learning. The participants were 70 students enrolled at a public university in the Arabian Gulf region. They were assigned to one of three listening treatments. The first group watched video clips with full captions; the second group watched the video clips with keyword captions; and the control group watched the video clips without captions. All groups completed vocabulary tests in written and oral formats to test their vocabulary word recognition and meaning recall. The results showed no significant differences between the captioned groups and the non-captioned group on word recognition and meaning recall test scores. The researcher attributed the lack of evidence for the positive effects of captioning to students' lack of familiarity with captions. Furthermore, he argued that learners' native Arabic could have been the cause of the low performance of captioned groups on vocabulary tests. This argument was based on the evidence provided by an eye-tracking study which found that students of Arabic as a foreign language spent significantly more time reading captions than students of Spanish and Russian (Winke et al., 2013). Unlike learners of language that use the same script as English, Arabic learners may need more extensive processing in order to extract meaning of new words (Winke et al., 2010, 2013). Bensalem (2016b) reported that his participants complained about the restricted number of times viewing the videos (twice) which impaired their ability to achieve higher vocabulary scores.

The few studies that have examined the impact of keyword captioning have yielded inconclusive results. Hence, the need to further explore the potential benefits of keyword captioning, and conduct more studies on vocabulary acquisition through audiovisual input (Peters et al., 2016).

3. RATIONALE AND RESEARCH QUESTIONS

Studies exploring the effects of full captions have demonstrated that this tool may foster L2 vocabulary acquisition. However, comparing the efficacy of full captions and keyword captions on incidental vocabulary learning has been understudied. There is a need to create a broader database that includes learners of languages with non-Latin writing systems (Winke et al, 2010) especially beginning learners, who have received little attention among scholars in comparison to intermediate and advanced learners (Matielo, D'Ely, & Baretta, 2015). According to eye-tracking studies, Arab EFL learners tend to spend more time reading captions than learners whose native languages are related to Latin such as French and Spanish. To the author's best knowledge, only one study examined the effect of full captions and



keyword captions in the context of Arab EFL. Therefore, this study contributes to further elucidate Arab EFL students' incidental learning of vocabulary using full captions and keyword captions. The outcome of the study will add to the growing body of literature about captions in the field of second language learning.

The current study raises the following research questions:

- 1) Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental learning of target vocabulary words, as measured by oral and written word recognition tests?
- 2) Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental learning of target vocabulary words, as measured by oral and written meaning recall tests?
- 3) Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental overall learning of new vocabulary?

4. METHODOLOGY

A. Participants

The participants were 57 college-level ESL students enrolled at a public university in Saudi Arabia. They were native speakers of Arabic and were taking English courses. Their average age was 20 years. Most students were freshmen. They would have had four years of instructed English at high school prior to their enrollment at university. However, the recruited participants had an elementary level of English as measured by the Department of Languages and Translation. Only male students were recruited as education is gender-segregated in Saudi Arabia. Therefore, the researcher had no access to female students. Students were reassured that their participation was anonymous and that their test scores would be kept confidential.

B. Learning Materials

The selected video clip for this study was a documentary about major landmarks in the United States. The video clip was divided into three parts, each approximately 3 minutes long. All three parts of the video clip had an average of 100 words per minute. The author used Aegisub, a free open source tool (<http://www.aegisub.org>), to create the English captions. A group of ESL professors who were familiar with the participants' level of English conducted the selection of each caption. Their task was to choose words they deemed important for understanding each segment of the documentary. The total number of keywords represented about one third of the documentary full script. This rate of keywords was within the norm used in previous

studies on keyword captioning (e.g., Baltova, 1999; Bensalem, 2016b; Rooney, 2014).

C. Target Items

An initial list of 18 words were selected from the video clip with the collaboration of the ESL professors who also served as keyword selectors. However, during the pilot study six words proved to be familiar to a number of students. Therefore, the researcher decided to remove them from the final list of 12 target words (TWs), which consisted of nouns and verbs. There were two main criteria for selecting the TW. First, each target word should be visually represented in the video. Second, the TWs should be key in understanding content.

D. Vocabulary Tests

1) Pretest:

In order to measure participants' knowledge of the TWs, a vocabulary knowledge test was administered. The test included TWs and easy words to help boost the learners' confidence.

2) Posttest

The vocabulary posttest was divided into parts: recognition and meaning recall. Recognition and supplying meaning of vocabulary are two different skills (Nation, 2001). Recognition involves noticing the forms in the input, which is the first step in vocabulary learning (Sydorenko, 2010). Meaning recall, however, is an indication of whether learners have managed to understand the meaning of the acquired forms (Pulido, 2004).

In the vocabulary recognition test part, participants were given a list of TWs and non-words. This test portion consisted of 24 items, the 12 target items and 12 non-words. They were instructed to mark the words they heard in the video clip. The non-words were selected from a database compiled by Rastle et al. (2002). Following Sydorenko (2010), half of the TWs and non-words were presented orally. The second half was presented in written form. Non-words were meant to reduce the possibility of learners guessing.

The meaning recall test part consisted of 12 items. Learners were asked to provide an L1 translation of the TWs. The use of translation as a tool to measure meaning recall was adopted in many studies (e.g., Bensalem, 2016b; Peters et al., 2016; Sydorenko, 2010; Winke et al., 2010; Montero Perez et al., 2013, 2014). The test has an acceptable level of reliability with Cronbach's alpha value .79. The total possible for the whole test is 24 points with one point assigned for each correct answer.



E. Procedure

Students who accepted to participate in the study were notified of the time and location of the experimental treatment session one week prior. For logistical reasons, the data collection took place in three sessions in the same week. About one third of the participants attended each session. At the beginning of the session, learners were briefed that the purpose of the study was to measure their understanding of a documentary. It was not mentioned that they would be tested on new vocabulary items. Students were randomly assigned to three groups. The control group (NC) watched the captionless video. One of the experimental groups watched the video clip with full captions (FC), while the last group watched the video with key word captions (KC).

The captioning groups were instructed to pay attention to captions as they were meant to help them understand the video clip content. Students watched the video twice. They were not allowed to rewind or pause the video. Prior to watching the video clip, students took the vocabulary pretest. The vocabulary posttest (form recognition and meaning recall) was administered immediately after viewing the video clip.

F. Data Analysis

The statistical analyses were performed using SPSS version 22. A one-way analysis of variance (ANOVA) was conducted for each of the three research questions.

The dependent variable was the vocabulary test scores and the independent variable was the type of video clips (FC, KC, and NC). The level of significance was set at .05 in all statistical analyses.

5. RESULTS

A. Research Question 1

The first question examines whether the presence of full captions and keyword captions will result in better vocabulary learning than non-captioned videos as measured by oral and written vocabulary recognition tests. The descriptive statistics show that the NC group was associated with the smallest mean of test scores (see table 1). To examine whether significant differences existed between groups, a one-way ANOVA was performed. The assumption of homogeneity was tested and satisfied based on Levene's F test, $F(2,54) = 2.713$, $p = .075$. The independent between-groups ANOVA yielded a statistically significant effect, $F(2,54) = 4.732$, $p = .013$, $\eta^2 = .175$ (see Table 2). Post hoc comparisons using Fisher's LSD test indicated that the mean score for the FC group ($M = 8.00$, $SD = 1.17$) was significantly different than the NC group ($M = 5.82$, $SD = 2.22$). However, the KC group ($M = 6.64$, $SD = 2.42$) did not significantly differ from the FC and NC groups (see table 3). These results suggest that full captions helped FC group achieve higher scores in vocabulary recognition tests than the KC and NC groups.

TABLE 1. MEAN SCORES AND STANDARD DEVIATIONS ON THE VOCABULARY RECOGNITION TESTS

	<i>FC (N = 18)</i>		<i>KC (N = 22)</i>		<i>NC (N = 17)</i>		<i>All Groups</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Vocabulary recognition tests	8.00	1.17	6.64	2.42	5.82	2.22	6.82	2.26
Meaning recall tests	4.39	4.49	3.55	4.40	1.76	2.41	3.28	4.00
Overall vocabulary tests	12.39	5.36	10.18	6.16	7.59	3.52	10.11	5.49

TABLE 2. ONE-WAY ANOVA OF RECOGNITION VOCABULARY TESTS

	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η^2
Between groups	42.68	2	21.34	4.73	.013	.211
Within groups	243.56	54	3.85			
Total	286.25	56				



TABLE 3. FISHER'S LSD COMPARISON FOR VOCABULARY RECOGNITION TESTS

(I) Group	(J) Group	Mean Diff (I-J)	Std. Error	P	95% Confidence Interval	
					Lower Bound	Upper Bound
NC	KC	-.813	.686	.241	-2.19	.56
	FC	-2.176*	.718	.004	-3.62	-.74
KC	NC	.813	.686	.241	-.56	2.19
	FC	-1.364*	.675	.048	-2.72	.01
FC	NC	2.176*	.718	.004	.74	3.62
	KC	1.364*	.675	.048	-.01	2.72

* $p < 0.05$

B. Research Question 2

The second question examines whether the presence of full captions and keyword captions will result in better vocabulary learning than non-captioned videos as measured by oral and written meaning recall tests. The descriptive statistics show that the NC group was associated with the smallest mean of test scores (see table 1). To examine whether significant differences existed between groups, a one-way ANOVA was performed. The analysis yielded no significant differences between groups (FC, KC, and NC) on the oral meaning recall test, $F(2, 54) = 2.029, p = .141$. This indicates that the availability of captions had no significant effect on participants' ability to recall the meaning of a larger number of new words.

C. Research Question 3

The third question examines whether the presence of full captions and keyword captions will result in better

vocabulary learning than non-captioned videos as measured by participants' overall vocabulary tests (all tests combined).

The descriptive statistics show that the FC group was associated with the largest mean of test scores (see table 1). To examine whether significant differences existed between groups, a one-way ANOVA was performed. Independent between-groups ANOVA yielded a statistically significant effect, $F(2, 54) = 3.67, p = .032, \eta^2 = .135$ (see Table 4). Post hoc comparisons using Fisher's LSD test indicated that the mean score for the FC group ($M = 12.39, SD = 5.36$) was significantly different than the NC group ($M = 7.59, SD = 3.52$). However, the KC group ($M = 10.18, SD = 6.16$) did not significantly differ from the FC and NC groups (see table 5). These results suggest that full captions help FC group achieve higher scores in overall vocabulary tests than the KC and NC groups.

TABLE 4. ONE-WAY ANOVA OF OVERALL VOCABULARY TESTS

	SS	Df	MS	F	P	η^2
Between groups	201.70	2	100.850	3.67	.032	.135
Within groups	1483.668	54	27.475	27.475		
Total	1685.368	56				



TABLE 5. FISHER'S LSD COMPARISON FOR OVERALL VOCABULARY TESTS

(I) Group	(J) Group	Mean Diff (I-J)	Std. Error	P	95% Confidence Interval	
					Lower Bound	Upper Bound
NC	KC	-2.594	1.693	.131	-5.99	.80
	FC	-4.176*	1.773	.009	-8.35	-1.25
KC	NC	2.594	1.693	.131	-.80	5.99
	FC	-2.207	1.666	.191	-5.55	1.13
FC	NC	4.801*	1.773	.009	1.25	8.35
	KC	2.207	1.666	.191	-1.13	5.55

* p < 0.05

6. DISCUSSION

The purpose of this study is to explore which type of captions (FC or KC) fosters more students' ability to recognize and recall the meaning of words in video clips. The results suggest that for EFL students, full captions facilitate recognition of new words, while keyword captions seem to have no impact. Second, captions do not seem to facilitate meaning recall. The availability of full captions or keywords captions did not result in recalling the meaning of new words compared with the group that did not have access to captions (NC group). Third, full captions help FC group achieve higher scores in overall vocabulary tests than the KC and NC groups, while keyword captions seem to have no impact. These findings are discussed below.

A. Research Question 1

Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental learning of target vocabulary words, as measured by oral and written word recognition tests?

The statistical analyses revealed that the FC group significantly outperformed the KC on the vocabulary recognition tests. Participants of the KC and NC groups achieved similar scores on the vocabulary recognition tests. This suggests that full captions are more effective than keyword captions in recognition of new words.

The results of the current study are not in line with Sydorenko's (2010) findings for beginning L2 learners of Russian. She found that participants who had access to video with audio and captions, and participants who had access to video and captions, scored significantly higher on written than on aural word recognition tests, while the group that had no access to captions scored higher on

aural than on written recognition vocabulary tests. Sydorenko's study did not involve keyword captions.

The findings of the current study also contradict the results reported by Montero Perez et al. (2014) for Flemish high-intermediate learners of French. Their findings show that the captioning groups including the keyword captions group outperformed the non-captioning group on word recognition. It is worth mentioning that Montero Perez et al. (2014) used only written vocabulary tests to measure word recognition, while in this study, vocabulary tests were both in oral and written format.

Perhaps the most likely explanation for failure of KC group to achieve higher scores than NC on vocabulary recognition tests is their lack of familiarity with keyword captioning. According to the participants' instructors, no keyword captioned videos were shown in class. They argued that such materials were lacking so they relied only on fully captioned video clips. Furthermore, it takes some practice to be able to pay attention to aural input while reading only part of the script. It may have been easier for students to just focus on the aural input. After all, they were prompted to watch each video for general understanding. They may have paid more attention to keyword captions if they were told that they would take a vocabulary test after viewing the videos.

B. Research Question 2

Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental learning of target vocabulary words, as measured by oral and written meaning recall tests?



This study has tried to measure meaning recall, which is a different skill from word recognition (Nation, 2001) as it requires deeper processing of TWs. It was hypothesized that participants of the FC and KC groups would outperform participants in the NC group. However, the statistical analyses show that all groups obtained similar scores on both oral and written translation tests. In fact, the NC outscored the FC and KC, but the difference is not significant. This result contradicts some of the previous research conducted on video captioning (e.g., Danan, 1992; Sydorenko, 2010; Winke et al., 2010) which demonstrated the positive impact of captioning on meaning recall. The current study supports, however, the findings reported by a more recent experiment, which revealed that captioning did not affect meaning recall (Montero Perez et al., 2014). In other words, no significant differences were found between the scores of captioning groups and the no-captioning group. There is a difference between their test modality, which was written, while the tests used in this study were both aural and written. In addition, the participants of the current study had a significantly different L1.

A plausible explanation for failure of captions to enhance students' ability to recall meaning of words was provided by Sydorenko (2010). She argues that production of meaning requires deeper cognitive processing than form recognition. Students have to not only deduce the meaning of the word while watching the video, but also recall the meaning when they take the test. Furthermore, inferring word meaning is a difficult process that takes time for foreign language learners (Liu & Nation, 1985). Within the same vein, Montero Perez et al. (2014) argue that the inability of captioned-groups to translate more words than the non-captioned group was perhaps due to the burden of the recall test on students. They believed that the translation test was very demanding as it not only required them to watch the clip and read the captions, but also to remember the content and derive the meaning of unknown words. This may be the case for the participants of this study who were not used to performing many tasks while viewing a video clip. Participants may have performed better on translation tests if they had the chance to view the video clip more than twice. Although the researcher did not conduct a questionnaire to assess the participants' experience, some participants did communicate feeling overwhelmed when they were told they had to watch a video clip, but that they were limited to two viewings.

There have been reports of L2 learners who were able to handle multiple input (images and captions) while watching captioned videos (e.g., Taylor, 2005). According to an eye-tracking study that involved different groups of native speakers of English, learning

different languages including Arabic, Chinese, Russian and Spanish, Winke et al. (2013) found that learners of Arabic spent significantly more time reading captions than learners of Spanish and Russian. This indicates that the way learners use captions is tightly connected with the distance between L1 and L2 (Winke et al., 2010). Arabic learners need more extensive processing in order to extract meaning (Winke et al., 2010, 2013). This corroborates the findings of an earlier study by Vanderplank (1988). He conducted a study that involved Western Europeans from France, Germany, Austria, Denmark, Italy, and Spain, along with Arabic high-intermediate to advanced college ESL students. Participants watched captioned British TV programs for nine weeks. Findings revealed that European students found captions useful, while the Arabic students complained that captions were too fast for them to understand.

In the present study it is the learners' native Arabic which could have been the cause of the low performance on translation tests. Obviously, more research that involves Arabic speakers' use of captions is needed to confirm this hypothesis.

C. *Research Question 3*

Does the type of video captioning (full captions and keyword captions) have a significant effect on EFL students' incidental overall learning of new vocabulary?

The results of our analyses reveal that both captioning groups (FC and KC) outperformed the NC group on overall vocabulary tests that combine both recognition and translation tests. However, only the FC group and NC had a significant difference in test scores. In other words, the difference in test scores between KC and NC was not significant. This result is consistent with previous research that has provided evidence that the availability of full captions fostered learners' ability to acquire more new words than learners who had no access to captions (Aldera & Mohsen, 2013; Baltova, 1999; Mohsen, 2016; Montero Perez et al., 2014; Sydorenko, 2010; Winke et al., 2010).

However, this dataset contradicts the predictions of cognitive load theory, which states that presentation of the same information in multiple modalities (text, audio, and picture, for example) increases cognitive load, which can negatively impact comprehension (Sweller, 2005). Learners split their attention between modalities. Consequently, their capacity to process information will be undermined (Chandler & Sweller, 1991). The presence of many stimuli is more demanding of one's attention for L2 learners (Robinson, 2003).



Finally, the current study does not lend support to the usefulness of keyword captions in vocabulary acquisition. This partially confirms Bensalem's (2016b) findings, which suggest that keyword captions did not help participants achieve higher vocabulary scores than participants who had no access to captions. Obviously, more research is needed to reveal whether keyword captions have an impact on vocabulary acquisition.

7. PEDAGOGICAL IMPLICATIONS

The study offers evidence that full captions facilitate vocabulary learning as demonstrated by previous research. Keyword captions are not as effective as full captions. Therefore, instructors who plan on using videos to teach listening should consider selecting video clips with full captions because they may help students' recognition of new words. Learning new vocabulary has been proven to be one of the major obstacles for language learners especially at the beginning levels. Captioned videos allow beginning learners to overcome the difficulty of understanding authentic materials through the input provided by visual images (Sydorenko, 2010).

Instructors who teach native speakers of Arabic should be aware of the fact that such students need more time to process captions as reported by Vanderplank (1988) who found that Arabic students complained that captions were too fast for them to read. Therefore, it is recommended to give students the option of pausing videos in order to be able to read all captions (Winke et al., 2013).

Finally, some students may not be familiar with captions. Instructors are encouraged to train their students on how to effectively use captions (Danan, 2004; Taylor, 2005; Winke et al., 2013) in order to help them maximize their learning.

8. CONCLUSION AND LIMITATIONS

This study has addressed the need to assess the impact of two different types of captioning on incidental vocabulary learning. However, it has several limitations. First of all, this study used a short video with a limited number of new words. That is why the number of newly learned words was somewhat small. Even though such a short video helped the FC group to learn new words, longer videos may have allowed participants especially from the KC group to learn more new words. Second, only a documentary video was used. Future research should explore the relationship between different genres of audiovisual input such as comedy, cartoon, etc. and the amount of vocabulary learnt as suggested by Peters et al. (2016). Third, all participants were low-proficiency EFL learners. Therefore, it would be useful to examine the impact of captions with learners who have different levels of proficiency.

Another limitation is that the experiment was a single intervention. Conducting multiple interventions over a longer period of time may have yielded different results considering that acquiring vocabulary is "an incremental process in which words should be encountered and retrieved repeatedly before they can be firmly entrenched in the mental lexicon" (Peters et al., 2016, p.146). Exploring the long-term effects of captions can be beneficial since substantial learning may be detected in the long run (Peters et al., 2016). This line of research will help increase our understanding of under what conditions captions can boost incidental vocabulary acquisition.

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REFERENCES

- Aldera, A., & Mohsen, M. (2013). Annotations in captioned animation: Effects on vocabulary learning and listening skills. *Computers and Education*, 68, 60-75.
- Baltova, I. (1999). Multisensory language teaching in a multidimensional curriculum: The use of authentic bimodal video in core French. *The Canadian Modern Language Review*, 56(1), 32-48.
- Bensalem, E. (2016a). The impact of keyword and full video captioning on listening comprehension. *Journal of Teaching English for Specific and Academic Purposes*, 4(3), 453-463.
- Bensalem, E. (2016b). Effects of captioning video clips on vocabulary learning among ESL learners. *International Journal of Humanities and Cultural Studies*, 3(2), 381-395.
- Bird, S. A., & Williams, J. N. (2002). The effect of bimodal input on implicit and explicit memory: An investigation into the benefits of within-language subtitling. *Applied Psycholinguistics*, 23(4), 509-533.
- Chandler, P. & Sweller, J. (1991). Cognitive load theory and the format of instruction. *Cognition and instruction*, 8, 293-332.
- Danan, M. (1992). Reversed subtitling and dual coding theory: New directions for foreign language instruction. *Language Learning*, 42, 497-527.
- Danan, M. (2004). Captioning and subtitling: undervalued language learning strategies. *Meta*, 49(1), 67-77.
- Danan, M. (2006). Reversed subtitling and Dual Coding Theory: New directions for foreign language instruction. *Language Learning*, 42(4), 497-527.
- Garza, T. J. (1991). Evaluating the use of captioned video materials in advanced foreign language learning. *Foreign Language Annals*, 24(3), 239-258.



- Guillory, H. G. (1998). The effects of keyword captions to authentic French video on learner comprehension. *CALICO Journal*, 15(1-3), 89-108.
- Liu, N., & Nation, I. S. P. (1985). Factors affecting guessing vocabulary in context. *RELC Journal*, 16(1), 33-42.
- Markham, P. (1993). Captioned television videotapes: Effects of visual support on second language comprehension. *Journal of Educational Technology Systems*, 21(3), 183-191.
- Markham, P. (1999). Captioned videotapes and second-language listening word recognition. *Foreign Language Annals*, 32(3), 321-328.
- Matielo, R., D'Ely, R. C. S. F., & Baretta, L. (2015). The effects of interlingual and intralingual subtitles on second language learning/acquisition: a state-of-the-art review. *Trabalhos em Linguística Aplicada*, 54(1), 161-182.
- Mayer, R. E. (2001). *Multimedia learning*. New York: Cambridge University Press.
- Mohsen, M. (2016). Effects of help options in a multimedia listening environment on L2 vocabulary acquisition. *Computer Assisted Language Learning*. doi: 10.1080/09588221.2016.1210645
- Montero Perez, M., Peters, E., & Desmet, P. (2014). Is less more? Effectiveness and perceived usefulness of keyword and full captioned video for L2 listening comprehension. *ReCALL*, 26(01), 21-43.
- Montero Perez, M., Peters, E., & Desmet, P. (2015). Enhancing Vocabulary Learning Through Captioned Video: An Eye-Tracking Study. *The Modern Language Journal*, 99 (2) 308-328. doi: 10.1111/modl.12215
- Montero Perez, M., Peters, E., Clarebout, G., & Desmet, P. (2014). Effects of captioning on video comprehension and incidental vocabulary learning. *Language Learning & Technology*, 18(1), 118-141. Retrieved from <http://llt.msu.edu/issues/february2014/monteroperezetal.pdf>
- Montero Perez, M., Noortgate, W., & Desmet, P. (2013). Captioned video for L2 listening and vocabulary learning: A meta-analysis. *System*, 41(3), 720-739. doi.org/10.1016/j.system.2013.07.013
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. New York: Cambridge University
- Neuman, S. B., & Koskinen, P. (1992). Captioned television as comprehensible input: Effects of incidental word learning from context for language minority students. *Reading Research Quarterly*, 27(1), 95-106.
- Paivio, A. (2007). *Mind and its evolution: A dual coding theoretical approach*. Mahwah, NJ: Erlbaum
- Peters, E., Heynen, E., & Puimège, E. (2016). Learning vocabulary through audiovisual input. The differential effect of L1 subtitles and captions. *System*, 63, 134-148.
- Pulido, D. (2004). The relationship between text comprehension and second language incidental vocabulary acquisition: A matter of topic familiarity? *Language Learning*, 54(3), 469-523.
- Rastle, K., Harrington, J., & Coltheart, M. (2002). 358,534 Nonwords: The ARC Nonword Database. *The Quarterly Journal of Experimental Psychology*, 55(4), 1339-1362.
- Rayner, K., Rotello, C. M., Stewart, A. J., Keir, J., & Duffy, S. A. (2001). Integrating text and pictorial information: Eye movements when looking at print advertisements. *Journal of Experimental Psychology: Applied*, 7(3), 219-226.
- Reese, S.D. (1984). Visual-verbal redundancy effects on television news learning. *Journal of Broadcasting*, 28(1), 79-87.
- Robinson, P. (2003). Attention and memory during SLA. In C. J. Doughty & M. H. Long (Eds.), *The handbook of Second Language Acquisition*. Malden, MA: Blackwell.
- Rooney, K. (2014). The Impact of Keyword Caption Ratio on Foreign Language Listening Comprehension. *International Journal of Computer-Assisted Language Learning and Teaching* 4(2), 11-28.
- Rost, M. (1994). *Introducing listening*. London: Penguin Group.
- Rost, M. (2002). *Teaching and Researching Listening*. London, UK: Longman.
- Stewart, M.A., & Pertusa, I. (2004). Gains to language learners from viewing target language closed captioned films. *Foreign Language Annals*, 37(1), 438-447.
- Sydorenko, T. (2010). Modality of input and vocabulary acquisition. *Language Learning & Technology*, 14(2), 50-73. Retrieved from <http://llt.msu.edu/vol14num2/sydorenko.pdf>
- Sweller, J. (2005). The redundancy principle in multimedia learning. In R.E. Mayer. (Ed.), *The Cambridge handbook of multimedia learning* (pp.159-168). Cambridge University Press.
- Taylor, G. (2005). Perceived processing strategies of students watching captioned video. *Foreign Language Annals*, 38(3), 422-427.
- Underwood, G., Jebbett, L., & Roberts, K. (2004). Inspecting pictures for information to verify a sentence: Eye movements in general encoding and in focused search. *Quarterly Journal of Experimental Psychology*, 57(1), 165-182.



- Vandergrift, L. (2007). Recent Development in Second Language Listening Comprehension Research. In Graeme Porte (Ed.), *Language Teaching: Surveys and Studies*. (pp. 291-210). Cambridge University Press, Canada. dx.doi.org/10.1017/s0261444807004338
- Vanderplank, R. (1988). The value of teletext sub-titles in language learning. *English Language Teaching Journal*, 42(4), 272-281.
- Vanderplank, R. (2010). Déjà vu? A decade of research on language laboratories, television, and video in language learning. *Language Teaching*, 43(1), 1-37.
- Winke, P., Gass, S., & Sydorenko, T. (2010). The effects of captioning videos used for foreign language listening activities. *Language Learning & Technology*, 14(1), 65-86. Retrieved from <http://ilt.msu.edu/vol14num1/winkegasssydorenko.pdf>
- Winke, P., Gass, S., & Sydorenko, T. (2013). Factors influencing the use of captions by foreign language learners: An eye-tracking study. *The Modern Language Journal*, 97(1), 254-275.