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Comparison between the effectiveness of code-mixing and providing L2 definitions in EFL vocabulary acquisition

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1 Abstract

This study compares the effectiveness of two vocabulary teaching techniques: code-mixing (inserting an L1 word into an L2 utterance) and providing L2 definitions of target words. It also tests the effect of English level in vocabulary acquisition when learning through these methods. 75 12-13-year-old EFL students from a Spanish high-school participated in the research, divided into two experimental groups and one control group. They listened to a text with 5 target words presented with the different techniques. A pre-test and two immediate post-tests for word recognition and production were administered. The group who received the L2 definitions outperformed the other two groups in both tests, and students with a higher English competence level scored significantly better than their lower level counterparts. Therefore, two main conclusions were drawn: first, that providing L2 definitions was the most effective technique, and second, that English competence level had an important impact on students' vocabulary gains. The findings of this study may have important implications for foreign language teachers.

Key words: EFL, vocabulary, code-mixing, L2 definitions, comparison, direct method

2 Introduction

Vocabulary plays a central role in foreign language acquisition. For this reason, vocabulary learning and teaching have been the focus of countless research studies, theories and debate. One of the central topics of those debates is whether L1 can help or hinder L2 vocabulary acquisition. To this day, it remains an unresolved issue.

After the decline of the language-translation method, L1 use in the L2 classroom has been frowned upon by language teachers and researches alike (Baleghizadeh & Mirzaei, 2011). Vocabulary teaching in the direct method, which avoids L1 at all costs, has been promoted and applied in most of the world (Celik, 2003). This method uses many resources to make input comprehensible, such as mimicry, pictorical help or realia, but one of the most used resources is providing explanations or simplified definitions of new words in L2.

However, some linguists like Al Hashim (2015), Baleghizadeh and Mirzaei (2011), Celik (2003), and De Majia (1988) suggest that limited L1 use in the L2 classroom could have a beneficial effect on student's vocabulary gains. There are many ways of using the L1 in the classroom, the most common of which being code-mixing and code-switching (alternating between L1 and L2 sentences). As Celik (2003) notes, if such an approach is as effective as the techniques promoted by the direct method, it has the added benefits of not needing any extra material and saving a lot of time. Such a strategy could help teachers avoid, quoting Cole (1998), "being a contortionist trying to explain the meaning of a language item, where a simple translation would save time and anguish" (p. 2).

As the question of whether code-mixing is indeed as effective as providing L2 definitions and explanations remains unresolved, the present study compares the effectiveness of the two techniques: code-mixing and L2 definitions.

To do so, the study looks at the vocabulary production and recognition rates of two EFL student groups after a listening exercise where each of the groups received the target words in one of the aforementioned techniques. A control group was also tested for comparison.

Each of the groups listened to the same short story, where 5 target words —unknown for all students— were included: the code-mixing group received the L1 equivalent of these words, the definitions group received the L2 definitions of those words, and the control group just listened to the story without any special aid. Immediately after the treatment, students completed two post-tests to assess target word recognition and production.

Thus, this research aims to evaluate the effectiveness of code-mixing and L2 definitions in vocabulary teaching, and to test whether code-mixing could be used in class as a time-saving method instead of L2 definitions without compromising students' learning. Together with the previous research on the matter —summarized in the Literature review section below—, it contributes to answer the question of whether L1 use in L2 class is positive or not.

3 Literature review

This section presents a summary of the main research studies that have been conducted to date about the effects of limited L1 use and L2 definitions on students' vocabulary acquisition. The first part focuses on studies that have tested L1 uses such as code-mixing, code-switching and L1 definitions; whereas the second part summarizes some studies that have measured L2 vocabulary gains through L2 definitions, particularly studies that have tested the effect of inserting L2 explanations of target words in storytelling activities.

3.1 Code mixing

According to Celik (2003), code-mixing is a phenomenon that occurs when a word from a language is inserted into the syntax of another language, resulting in a sentence or expression where most of the words come from one language and a single word from another language. Zarei and Zarnani (2014) distinguish between *standard* code mixing, where an L1 lexical item is inserted within an L2 context, and *reversed* code mixing, where an L2 lexical item is included within an L1 context. Code-switching is closely related to code-mixing, and it happens when a whole sentence in one language follows a sentence in another language (Celik, 2003).

Celik (2003) further indicates that both code-mixing and code-switching are widespread practices in bilingual communities, and very present in the everyday lives of the population, but, apart from their use in the everyday lives of bilingual communities, it has been found that many teachers have also used code-mixing or code-switching in their L2 classes, using their students' L1 to enhance comprehension (Malik, 2014). The benefits of such practices for vocabulary learning have been studied by different authors who, in broad terms, advocate for its advantages as a tool to boost vocabulary learning.

Celik (2003), for instance, tested the use of code-mixing to present vocabulary. In his study, he told students a story, presenting 5 unknown words. The first occurrence of each word was in L1, and in the next occurrence, the L2 item was used in the same syntactic function. The

correspondence was highlighted with expressions such as *that is, which means,* etc. Later, the L2 item was used repeatedly to ensure learning. Celik (2003) reported that students successfully used the target L2 vocabulary, with minor spelling problems as a drawback. He also reported that students did not attempt to use the L1 words, and that a short story was sufficient input for students of all levels to produce new sentences with the target words.

Zarei and Arasteh (2011) also tested code-mixing, and compared it to the effect of thematic clustering (presenting words related to a specific topic) and contextualization (presenting the words in an L2 context). They didn't find any significant difference between the three methods in word recognition, but they found that thematic clustering led to better results than code-mixing in word production.

With the aim of investigating the effects of code-mixing in depth, Zarei and Zarnani (2014) tested the effectiveness of standard versus reverse code-mixing, as well as a comparison group without any code-mixing. The authors concluded that there weren't any relevant differences between both code-mixing types in vocabulary recognition, and that not receiving any code-mixing at all led to better vocabulary production than receiving it.

According to these last two studies, it would seem that code-mixing is not effective compared to the direct method. However, other studies have tested other related types of L1 use in class, and had found L1 use to be positive. For instance, Malik (2014) found that code-switching was a widespread practice in Pakistan and students' attitudes were positive towards code-switching, stating that it helped them learn English. De Majia (1988), cited by Celik (2003), researched code-switching by telling a story first in L1 and then in L2, and obtained satisfactory results in students' L2 acquisition. Al Hashim (2015) analysed the effects of L1 translations versus L2 definitions in two groups of English learners whose native language was Arabic, and found that providing L1 translations to students promoted immediate recall of L2 vocabulary. Also in the field of definitions, Baleghizadeh and Mirzaei (2011) compared the effects of learning words through L1 definitions and L2 definitions, and found that the group provided with definitions in their mother tongue outperformed the group who had received the same definitions in L2.

In summary, many researchers have tried to assess whether the use of L1 in the L2 class can be helpful to attain successful vocabulary learning. For that, many ways of introducing L1 in the class have been tested, both on their own and in comparison to L2-only methods, obtaining various and sometimes contradictory results. Although some research studies (Zarei & Arasteh, 2011, Zarei & Zarnani 2014) suggest that code-mixing might not be very useful, there is clear evidence that L1 use in class can be beneficial for students (Al Hashim, 2015; Baleghizadeh & Mirzaei, 2011; Celik 2003; De Majia, 1988; Malik, 2014). Comparing this method to providing L2 definitions can show the extent of its beneficial effects.

3.2 L2 definitions

When teachers want students to understand a new word, and they do not want to use an L1 equivalent, they often resort to explaining its meaning, with different types of explanations,

such as examples, paraphrases or definitions. This extra information is usually intended to make input comprehensible (Krashen, 1982; 1985) so that students can learn and use words properly.

The effect of explanations or definitions on the short and long-term recall of target vocabulary when listening to stories have been tested by Collins (2010), who compared the effects of reading aloud to a group of preschoolers and providing them with rich explanations of target vocabulary, and just reading aloud to them. She found that rich explanations improved significantly the children's vocabulary learning. Elley (1989) conducted a similar experiment with 7-8 year olds, and found that the students who didn't receive any explanation had vocabulary gains of 15%, in comparison to gains of 40% of the ones who did receive the explanations. Penno, Wilkinson, and Moore (2002), in another similar experiment with children, found out that explanations, along with frequency of exposure, had a positive effect on vocabulary acquisition. In addition, they also reported that children with higher language ability had greater gains than those with lower ability.

Amirian, Zareian, and Nour (2015) compared the effect of providing different types of target word definitions with four groups of 17-18-year-old Iranian EFL students. They used a storytelling activity in all four groups, using definitions in the three experimental groups (one of them received L1-only definitions, another one L2-only and another one L1 and L2) and no definitions in the control group. All experimental groups had greater vocabulary gains than the control group, and the L2-only definition group had the greatest gains of all.

Given these results, it can be concluded that providing extra explanations about vocabulary is an effective way to promote retention of those words. It has been tested both with children and students in their late teens, and it has been proven that it effectively boosts vocabulary acquisition, even if —according to Penno et al. (2002)—, the language ability[1] of students also plays a significant role.

Therefore, according to previous research, providing L2 definitions is an effective way of teaching vocabulary, whereas the benefits of code-mixing remain disputed. However, code-mixing has some important practical advantages, such as saving time and resources. As there is very little research about the effects of code-mixing —code-mixing as described in Celik's study (2003)—, it is not known if it is significantly less effective than providing L2 definitions.

Therefore, this research aims to compare if there are significant differences between the effects of both vocabulary presentation methods. More specifically, it attempts to find an answer to the following research questions:

1. Are there any significant differences between the effectiveness of code-mixing and providing L2 definitions on L2 learners' vocabulary recognition and production?

2. Are these methods more effective than just exposing students to input?

[1] Their study tested vocabulary gains of children who had English as their L1. 'Language ability' was measured as the ability to give information about a picture in a grammatically correct way, and the breadth of vocabulary knowledge of the children. Due to this, the concept of general language ability —if transferred to foreign language learning— could be considered an equivalent of foreign language competence.

3. Does English proficiency level have an important effect when teaching vocabulary through these methods?

The study conducted to answer these questions is described in the following section.

4 Study

This section features the investigation conducted to test the effectiveness of code-mixing and providing L2 definitions. It begins with a general description of the participants, as well as their background and their foreign language proficiency level. Afterwards, in the methodology section, there is a detailed description of the instruments, procedure and data analysis methods used in the research.

4.1 Participants

3 intact classes of 12-13 year-old students participated in this research, each class with 25 students. The students were in their first year of compulsory secondary education and they studied in a high-school located in Pamplona, Spain. This particular high school taught all its classes in Basque, the co-official language of the region, so all students were bilingual from a very young age, both Basque and Spanish being considered as their L1. This is important to know because researchers observed that code-switching and code-mixing were common and widespread among them, which might have some sort of effect in their reaction to code-mixing in class.

In order to gather information about their English experience, students were given a questionnaire[2] (see Appendix A – Background questionnaire). 74 students took the questionnaire, all the participants in the test except for one, who was not at school. Students had to answer to questions regarding their English learning background, such as when they had started learning English, whether they received extra English classes outside school, whether they had ever studied any school subject in English, if they had ever been to an English speaking country, and if they had ever been to an English summer camp.

The data retrieved from the questionnaires showed that almost all students had begun their English education when they started school, at age 3-4. Almost half of the students (29 students, 39%) had been to an English summer camp at least once in their lives, most of them two years ago, when they were in 5th of primary school (17 students). Almost all stays (23) were 1 week long. 22 students (29%) received extra English classes outside school at least once in their lives, and roughly half of them (12 students) had started earlier this year. A few of them (3) had received extra English classes for 4-7 years. On average, they spent 2 hours per week in English classes outside school. 21% of students had studied at least one subject in English in the past (students mentioned Science). 17% of students (13) had been to an English speaking country at least once in their lives. Most of them (10) spent less than two weeks there.

[2] This questionnaire was based on the background questionnaire developed by the former Research in English Applied Linguistics research group, currently Laslab (Language and Speech Laboratory group) from the University of the Basque Country. It was obtained from Villarreal, García and Hawkins (2011).

This questionnaire gave the researches an insight on the background and English experience of students, and showed these were heterogeneous groups where some students had been more exposed to English than others.

The groups were not only heterogeneous regarding students' background; they were also heterogeneous regarding the English level of each member. As Penno et al. (2002) reported that children with higher ability had greater vocabulary gains than those with lower ability, it was necessary to assess the effect that English level might have on their performance. Therefore, teachers were asked to classify students according to their English proficiency level[3]. Level was then taken into account as another variable.

The scale used in this study is based on the one commonly used in the diagnostic tests made by the Government of Navarre. Teachers chose this classification because they were familiarized with it and felt it was going to be more objective. The scale is divided into the following levels:

Level 1: The student has obtained a low mark and has not achieved the basic goals and competences corresponding to 1st of ESO.

Level 2: The student has not achieved the basic goals and competences of 1st of ESO but has almost achieved them. The student is close to the required level.

Level 3: The student has achieved the corresponding basic goals and competences corresponding to 1st of ESO.

Level 3+: The student has achieved the corresponding basic goals and competences and has obtained a high score on the subject.

Table 1 shows the number of students in each level and group.

Table 1. Distribution of levels in each group.

	Code-mixing group	**Control group**	**L2 definitions group**	**Total**
Level 1	5 (20%)	1 (4%)	3 (12%)	9 (12%)
Level 2	5 (20%)	3 (12%)	7 (28%)	15 (20%)
Level 3	8 (32%)	13 (52%)	13 (52%)	34 (45.3%)
Level 3+	7 (28%)	8 (32%)	2 (8%)	17 (22.6%)
Total	25	25	25	75

As it is shown in the chart, students of different levels are not evenly distributed among the groups. The control group has fewer students (16%) on the lower levels, whereas both the L2 definitions and the code-mixing group have 40% of the group in levels 1 and 2. Nevertheless, in all three groups, most students are in level 3 and 3+ (control group 84%, L2 definitions group 60%, code-mixing group 60%), level 3 being the most popular level. In general, the two experimental groups are similar, and the control group has a slightly better English level.

[3] Even if students had different English levels, the target words used in the study were unknown to all of them. A pre-test was used to check if the words were unknown.

4.2 Methodology

This section describes the procedure, instruments and data analysis methods used in the research.

4.2.1 Procedure and instruments

First, a text was written, the story. Then, three instruments were designed to collect the desired data: (i) a pre-test; (ii) a comprehension test; (iii) a production test. Right after the pre-test, the final three versions of the text were written and read to the students. The steps followed for the design and execution of the experiment are sketched below.

Original text

In the beginning, the researchers wrote a text suitable for the English level of the participants. It was a description of the everyday life, family and hobbies of a thirteen-year-old British girl. This topic was chosen because it was familiar to students: earlier that year, they had done some presentations about themselves in front of the class, talking about their family and hobbies. Moreover, the text itself was loosely based on another text that appeared in the Students' Book they are currently using for their English classes, *Mosaic 1* (Pelteret, 2014).

After the text was written, possible target words were chosen. Previous vocabulary acquisition studies vary on the amount of target words included. The choice depended on the length of the texts used, the participants involved, and the final goal. Although there is not a general agreement about how many target words one should include, Finocchiaro and Bonomo's (1973) defend that no more than about eight new words should be presented in the same session because other ways it would be too much for students. In addition, as found by Van Zeeland and Schmitt (2012), a listened text is considered fully comprehensible if 95% of words are already known. Tavakoli and Gerami (2013) included 5-6 word per session, and Celik (2003), when talking about code-mixing, advises to use a maximum of 5 target words. As this study was based on Celik's study about code-mixing, and the text used by him in his research was similar in length to the text in this research, it was decided to include 5 target words. The final text can be seen in Appendix B - Texts.

Pre-test

To ensure that the text was comprehensible and that participants didn't know the target words, a 30 item pre-test was administered to students one week before the treatment. It followed the procedure described by Van Zeeland and Schmitt (2013): students were given the target words and they had to write anything they knew about their meaning. They could write a translation into Basque or Spanish, a synonym, an explanation, or any other thing that demonstrated their knowledge. 30 words were included in the pre-test. These words were:

1) 15 candidates for target words. 5 of them would be the final target words. Depending on the results of the pre-test, one word would be chosen from each of the following groups of three: *parrot-crow-bird, rehearse-practice-play, walk-trek-hike, keyboard-drums-French*

horn, hill-mountain-ridge. The words in these groups were interchangeable in the text and belonged to the same semantic field. Based on the results of the pre-test, the unknown words chosen were *crow, rehearse, hike, French horn,* and *ridge,* because no student reported to have any knowledge about this words.

2) 6 words that appeared in the text and might be new for students, but were not target words. This was tested to assess the general difficulty of the text. In case many of these words were unknown for most students, other alternatives could be used to make the text easier. These were the words: *together, outdoor, enjoy, cold, far, home.* After the pre-test, the words *enjoy* and *outdoor* were removed because they were unknown for many students, (*enjoy* was unknown for 45/74 of them and *outdoor* for 60/74) so they were replaced by *like* and *in the nature*.

3) 9 distracters, which were not going to appear in the final text: *come, big, small, boy, school, study, make, run, several.* These words were chosen because most of them were known to students. As many of the previous words were presumed to be unknown, it was decided to include some easy words to help reduce the anxiety of students taking the test.

Final three texts

After choosing the final target words, two more versions of the text were written, one with L2 definitions and another one with code-mixing. In order to assess the effectiveness of the different vocabulary-teaching techniques, each group listened to one of the texts (see Appendix B - Texts).

In the text read to the control group, the words were introduced with no explanation at all, as shown in the following example (the target word is in bold):

*They also have two **crows**. These crows are very intelligent: they can say "hello" and "goodbye".*

The text read to the L2 definitions group used those same words but included a brief definition of each target word, in English, right after the first occurrence of the word. All the definitions were independent sentences that started with the term that was being defined, as in this example:

*They also have two **crows**. A crow is a type of bird, a black bird. These crows are very intelligent: they can say "hello" and "goodbye".*

The text for the code-mixing group followed Celik's (2003) procedure, so it introduced the Basque equivalent of the word first, and then the English one, connected with the expression *that is*:

*They also have two beleak, that is, **crows**. These crows are very intelligent: they can say "hello" and "goodbye".*

Immediately after listening to the texts, students were given two post-tests, one for production (answering short questions) and another one for recognition (multiple-choice).

Post-tests

1. Recognition post-test

Most authors have tested word recognition with multiple choice tests: either an exercise to complete sentences with the correct word (Zarei, 2009; Zarei & Arasteh, 2011; Zarei & Zarnani, 2014) or an exercise providing possible translations in L1 of the target words, as in Brown, Waring and Donkaewbua (2008). However, these approaches were discarded for the following reasons:

On the one hand, due to the low English proficiency level of students, a 'complete the sentences' exercise had the added difficulty of understanding the sentences, so it was decided to minimize that risk. On the other hand, the translation approach could be biased in favour of the code-mixing group, because they had already received the L1 equivalents beforehand.

Therefore, the procedure followed in the Peabody Picture Vocabulary Test (PPVT, hereafter) (Dunn & Dunn, 1997) for children was considered the most suitable one. In this test, a set of 4 images is given for each word, and children have to select the image that matches the meaning of the word. It was possible to apply this method to the study because the meanings of all the target words could be easily conveyed by images. The recognition post-test had 8 questions, from which 3 were distracters. It can be seen in Appendix E – Recognition post-test.

2. Production post-test

Even if most previous studies had made 'fill in the gaps' exercises for word production (Zarei & Arasteh, 2011; Zarei & Zarnani, 2014), this option was abandoned because it wouldn't reflect students' abilities to provide the target word in the suitable context, as the context would be already given. For this reason, short questions were used, which asked for specific information ensuring they had to use the target vocabulary. In order to ensure they tried to include the target words, Zarei and Arasteh (2011) were followed. In their study they gave students the initial letter of the word as a hint. Instead of that, it was decided to use an image as a hint to help students remember the content they had to include. The production post-test can be seen in Appendix D – Production post-test. Right after this test was answered, students received the recognition post-test, so that they couldn't use the recognition post-test as a hint for the production post-test. The production post-test, like the recognition one, had 8 questions, from which 3 were distracters.

All 75 students did both the recognition and the production test. The explanation of the task, the listening activity and both post-test took between 20 and 30 minutes. After gathering all the post-test, the answers were scored, sorted and analysed.

4.2.2 Data analysis and answer scoring

The recognition post-test was a multiple-choice test with 8 questions: 5 of them were target words and 3 were distracters, which were not taken into account. Each correct answer was assigned a score of 1 point, and wrong answers or not answered questions scored 0 points. Therefore, a student could get a maximum of 5 points.

The production post-test had 8 short questions, and again, 3 of them were distracters. Therefore, they were not considered for the experiment. The answers were classified according to a 7-point scale, based on the different usages recorded by Celik (2003):

Table 2. Target word usage and accuracy scale.

Score	Category
No attempted use of target vocabulary (score 0)	
0	**0 — Not used** The student hasn't answered the question or the sentence does not answer the question: the student hasn't used the target concept (no target word, no L1 equivalent, and no related use).
0	**1 — L1 used** The student has used an L1 equivalent of the target word. *Example: She plays the "trompa" (instead of French horn).*
0	**2 — Related use** The student has used an expression which is somewhat related to the target word, but not the target word (a near- synonym, a word of a related lexical field, a paraphrase…). *Example: She plays a big trumpet (instead of French horn).*
Attempted use of target vocabulary (score 1)	
1	**3 — Misheard** The student has attempted to use the target word but the form is very different, the student does not remember the pronunciation. *Example: She plays the French tromp (instead of French horn).*
1	**4 — Misspelled** The student has attempted to use the target word and remembers the pronunciation, but it is misspelled. *Example: She plays the French huorn (instead of French horn).*
1	**5 — Correct word, incorrect use** The student has used the correct word, but it is not correctly used in context or it has no context at all. *Example: French horn (instead of a full sentence like "she plays the French horn).*
1	**6 — Correct use** The student has correctly used the word in a sentence. *Example: She plays the French horn.*

The reason for using such a scale is to assess not only if target words are used, but also how they are used: to see if there are any significant differences on the accuracy of the language learning that takes place with each method.

For this reason, two different scoring systems were used for the language production post-test:

On the one hand, attempted usage of target items was counted. Answers within the first three levels of the scale (1-Not used, 2-L1 used, and 3-Related use), show that no attempt was made to use the new words. Due to this, the answers that fall into these three categories scored 0 points. Categories 3 to 6 show that the student attempted to use the target word. For this reason, these categories received a score of 1 point.

Celik (2003) cites Schmidt's (1990) claim, in order to learn, an L2 learner, among other things, must:

a. be aware of learning something,
b. notice the rule, word, etc., to be learnt,
c. have an understanding,
d. have the ability to use the learnt word, rule, etc., and
e. have the learnt item in the short-term memory.

The fact that a student attempted to use a word means that he or she noticed it, understood it and remembers it to some extent.

On the other hand, it is useful to have the 7 different categories to assess the accuracy of the learning that has taken place. By counting the amount of uses in each category, groups can be compared to see if one of the methods leads to more effective learning than the other, or if it discourages students from trying to use the target word.

Apart from the post-test scores, the English language levels defined by the teachers (level 1, 2, 3, and 3+) were also taken into account. As Penno et al. (2002) discovered that vocabulary acquisition rates were affected by the language ability of students, the results of the three groups were compared taking into account the language competence level. Language level was considered a factor that may affect the results and as such, the data was analysed for its purported effects. This comparison was also done to control the effect of English proficiency level and really compare the differences between the two vocabulary teaching methods.

5 Results

This section features the results obtained when comparing the two vocabulary teaching strategies (code-mixing, CMG hereafter, and L2 definitions, L2G from now on) and the control group (from now on CG).This section is divided into three subsections: first, the individual results for each group presented, then the results of the three groups are compared (both in general and by competence level), and finally, the results for the different categories of the target word usage and accuracy scale are reported.

5.1 Individual results

Table 3 features individual results for each group. The results in the recognition post-test range from 0 to 5, depending on how many target words were recognized. In the production post test, attempted uses of target words (answers within categories 3 to 6 of the target word accuracy scale, Table 2) are counted with 1 point each. 5 is the highest score.

Table 3. Participants' level, recognition and production (attempted usage) scores.

	English	Pro.			English	Pro.			English	Pro.	
Partic.	level	Recog.	Att. Use	Partic.	level	Recog.	Att. Use	Partic.	level	Recog.	Att. Use
CMG1	3+	3	1	L2G1	2	1	1	CG1	2	1	0
CMG2	3+	3	3	L2G2	2	2	1	CG2	3	3	2
CMG3	3+	4	0	L2G3	3	4	1	CG3	3	2	2
CMG4	1	0	0	L2G4	2	3	0	CG4	3	0	0
CMG5	3	5	2	L2G5	3	3	3	CG5	3	0	0
CMG6	3+	5	2	L2G6	3	4	2	CG6	1	0	0
CMG7	3+	4	1	L2G7	3	3	2	CG7	3+	3	1
CMG8	1	1	0	L2G8	3	1	0	CG8	3	4	1
CMG9	1	0	0	L2G9	3+	5	4	CG9	3	1	0
CMG10	3	1	0	L2G10	3	2	0	CG10	3	4	0
CMG11	2	2	0	L2G11	2	3	1	CG11	3+	5	1
CMG12	3	4	2	L2G12	1	4	0	CG12	3+	4	3
CMG13	3	1	0	L2G13	3	3	0	CG13	3	1	0
CMG14	3	3	0	L2G14	2	2	0	CG14	3+	3	2
CMG15	3+	5	3	L2G15	3	4	1	CG15	3+	1	0
CMG16	3	4	2	L2G16	2	2	2	CG16	3	1	0
CMG17	3	4	0	L2G17	3	4	2	CG17	3	1	1
CMG18	1	3	0	L2G18	1	2	0	CG18	3	0	0
CMG19	2	0	0	L2G19	3+	4	3	CG19	3+	5	4
CMG20	2	3	0	L2G20	3	2	0	CG20	3	1	0
CMG21	2	2	0	L2G21	1	3	0	CG21	2	2	0
CMG22	2	1	0	L2G22	2	3	1	CG22	3	1	0
CMG23	1	1	0	L2G23	3	3	2	CG23	3+	3	3
CMG24	3+	5	1	L2G24	3	3	0	CG24	2	1	0
CMG25	3	2	0	L2G25	3	3	1	CG25	3+	3	0
		66	**17**			**73**	**27**			**50**	**20**

A more detailed version of the individual results can be found in Appendix F – Post-test scores, where all answers by each student are detailed and categorized.

Results show that recognition scores are higher than production scores for the three groups. No student obtained higher results in production than in recognition. Some students, however, recognized and produced the same amount of words: CMG2 (3 and 3), L2G5 (3 and 3), L2G16 (2 and 2), CG3 (2 and 2), CG17 (1 and 1) and CG23 (3 and 3). Furthermore, there are a few students who had 0 points in both post-tests: CMG4, CMG9, and CMG19, and CG4, CG5, CG6,

and CG18. None of them is in the L2G, where the lowest score is 1-0 (L2G8). No student obtained the highest score (5-5). The highest scores were 5-4 (L2G9, CG19) and 5-3 (CMG15).

These results highlight differences in vocabulary gains even within each group, despite the fact that all participants had a similar knowledge of the vocabulary of the text (all target words were unknown and almost all the remaining words were known) and received the same treatment.

5.2 Comparison between the three groups: overall results

All individual results above were added, thus, the maximum score that could be obtained in each of the categories (recognition and attempted production) was 125 (5 points each student, multiplied by 25 students). The comparison is shown in Table 4. In recognition, L2G had the highest score (73) followed by CMG (66) and CG (55). In production, the results were much lower for all three groups, ranging from 27 to 17: L2G, again, had the highest score (27), and was followed by CG and CMG, who had very similar scores (20 and 17, respectively).

Table 4. General comparison of the three groups

	CMG	L2G	CG
Recognition	66/125	73/125	50/125
Production (attempted)	17/125	27/125	20/125

These results suggest that providing L2 definitions is the most effective technique, as the L2G outperformed the other groups in both recognition and production. CMG and CG have very similar effects on production, although CMG rates a little higher than CG in recognition. As the previous analysis of individual results showed differences within the groups, and, as stated in the literature review, some authors have noted that English competence level could have an effect on vocabulary through listening to stories; further comparisons were made taking level into account. The results are shown in the next section.

5.3 Comparison between the three groups: competence levels

As the scores for the groups suggested that competence level could be affecting the results, the groups and their scores were compared again taking the English competence level into account. Two comparisons were made: first, CMG, L2G and CG were divided into four groups each (Level 1, Level 2, Level 3 and Level 4) and the results of each sub-group were compared to the others. These results are shown in Section 5.3.1. Then, a comparison was made between the people who had obtained the same scores, to see, for example, if high scores were obtained only by students who had a high competence level. This comparison is shown in Section 5.3.2.

5.3.1 Competence levels: overall group results

Here, the results of each level sub-group were added and compared to the rest of the level sub-groups who received the same vocabulary teaching technique, to see the effect of level. In

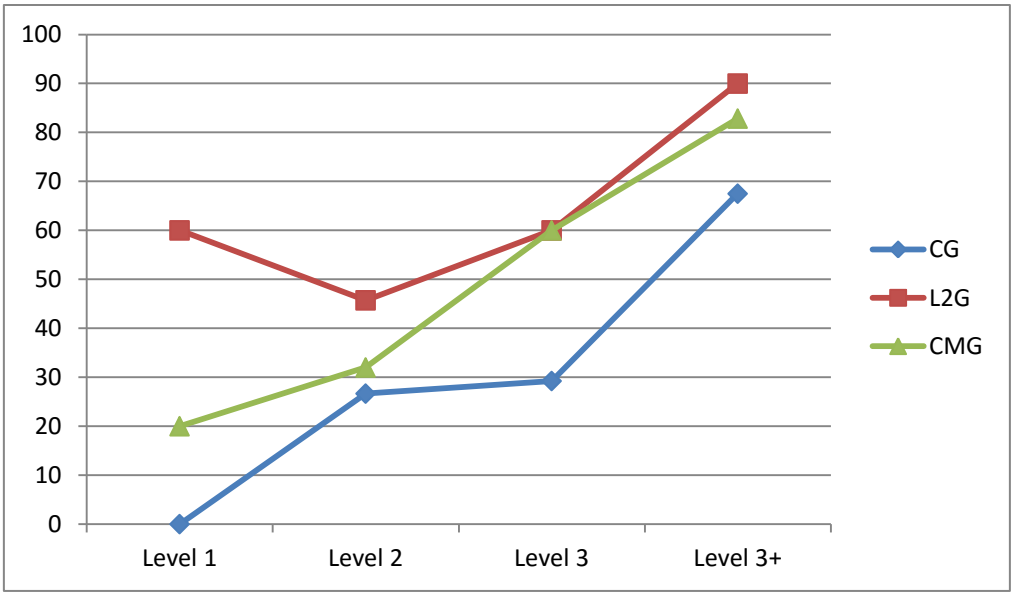
addition, the results of those sub-groups were compared to the results of the other sub-groups in the same level, to see the effect of method.

Table 5 shows the recognition and production results after grouping students by competence level. In each group, the number of students in each level is different, and it is shown as '*n* st.'. The number between brackets is: (number of correct answers or attempted uses / total possible correct answers or attempted uses). The number in bold is the percentage of correct answers or attempted uses. In addition, Graph 1 and Graph 2 show the same results in a more visual way.

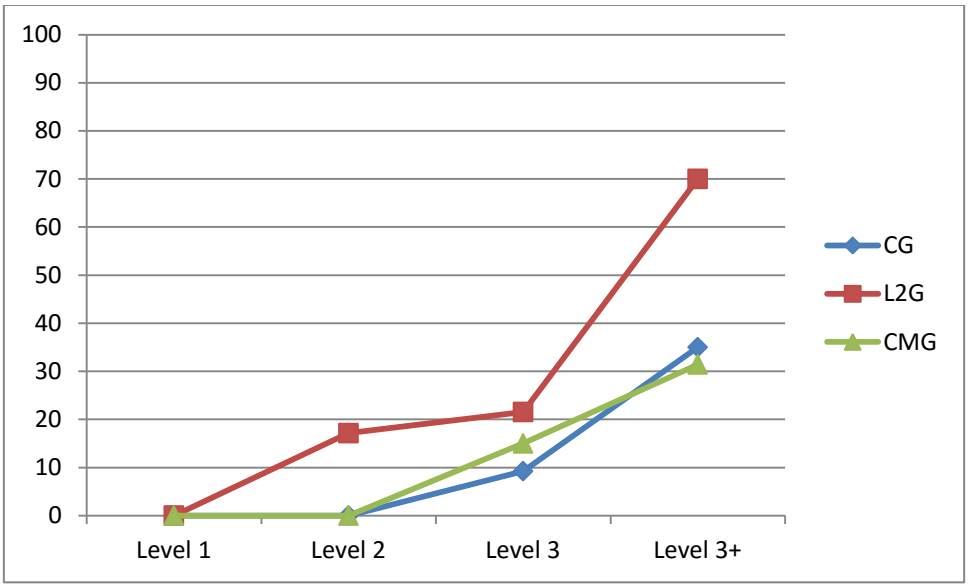
Table 5. Comparison of the three groups divided into competence levels.

	Recognition: correct answers			*Production: attempted uses of target words*		
	CMG	L2G	CG	CMG	L2G	CG
Level 1	**20%** (5/25) 5 st.	**60%** (9/15) 3 st.	**0%** (0/5) 1 st.	**0%** (5/25) 5 st.	**0%** (0/15) 3 st.	**0%** (0/5) 1 st.
Level 2	**32%** (8/25) 5 st.	**45.71%** (16/35) 7 st.	**26.66%** (4/15) 3 st.	**0%** (0/25) 5 st.	**17.14%** (6/35) 7 st.	**0%** (0/15) 3 st.
Level 3	**60%** (24/40) 8 st.	**60%** (39/65) 13 st.	**29.23%** (19/65) 13 st.	**15%** (6/40) 8 st.	**21.53%** (14/65) 13 st.	**9.23%** (6/65) 13 st.
Level 3+	**82.85%** (29/35) 7 st.	**90%** (9/10) 2 st.	**67.5%** (27/40) 8 st.	**31.43%** (11/35) 7 st.	**70%** (7/10) 2 st.	**35%** (14/40) 8 st.

Graph 1. Recognition post-test



Graph 2. Production post-test (attempted uses)



The results suggest that English competence level has a notable effect on vocabulary gain scores: students with a higher English competence level perform better in all groups and all levels, the only exception being level 1 students of L2G, who got better scores in recognition than their level 2 counterparts. However, the rest of the groups follow the higher competence-higher scores trend.

Secondly, regarding the teaching methods, the table and graphs show that the highest results for both recognition and production are obtained by the L2G, in all competence levels. Even lower-level students seem to benefit from such strategy: attempted productions are obtained from the second level onwards while in the other two groups, it is only level three and three

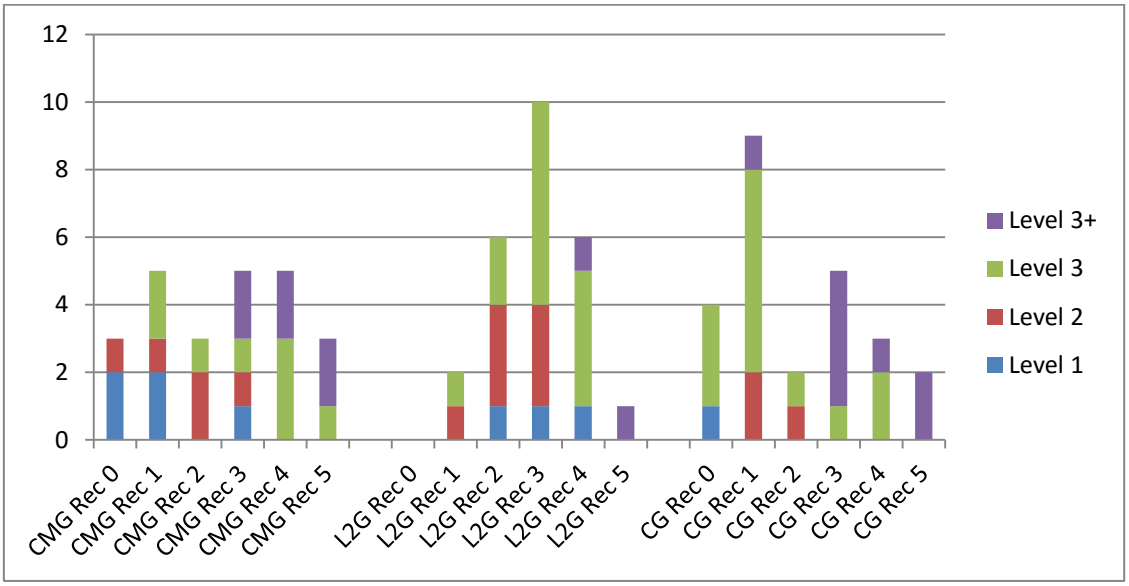
plus students who produce some forms (in lower number, indeed). What is more, level 2 students in L2G obtain higher results than CMG and CG level 3 students.

The results were further analyzed using an ANOVA test, and it confirmed what can be seen in the graphs and tables above. The analysis showed that when results are compared by group (CG, L2G or CMG) there aren't any statistical differences and groups seem to behave alike (F= 2.641, Sig.= 0.078); however, when results are grouped by competence level and compared, statistical differences arise (F= 8.787, Sig.= 0.000). Competence level seems to be a determining factor, but L2G level 2 scores (higher than CG and CMG level 3 scores) suggest that providing L2 definitions could mitigate the effect of proficiency.

5.3.2 Competence levels: individual results

The following graphs show the relationship between the level of students and the score they obtained, but, instead of focusing on the levels and the average score that each level obtained, they show the scores and the level of the people who obtained each score. The horizontal axis shows the possible scores obtained, for instance, the column above *CMG Rec 0* shows the amount of CMG students who obtained 0 points in the recognition post-test —3 students, 2 of them from level 1 and 1 from level 2—.

Graph 3. Recognition post-test: number and levels of students who obtained each score

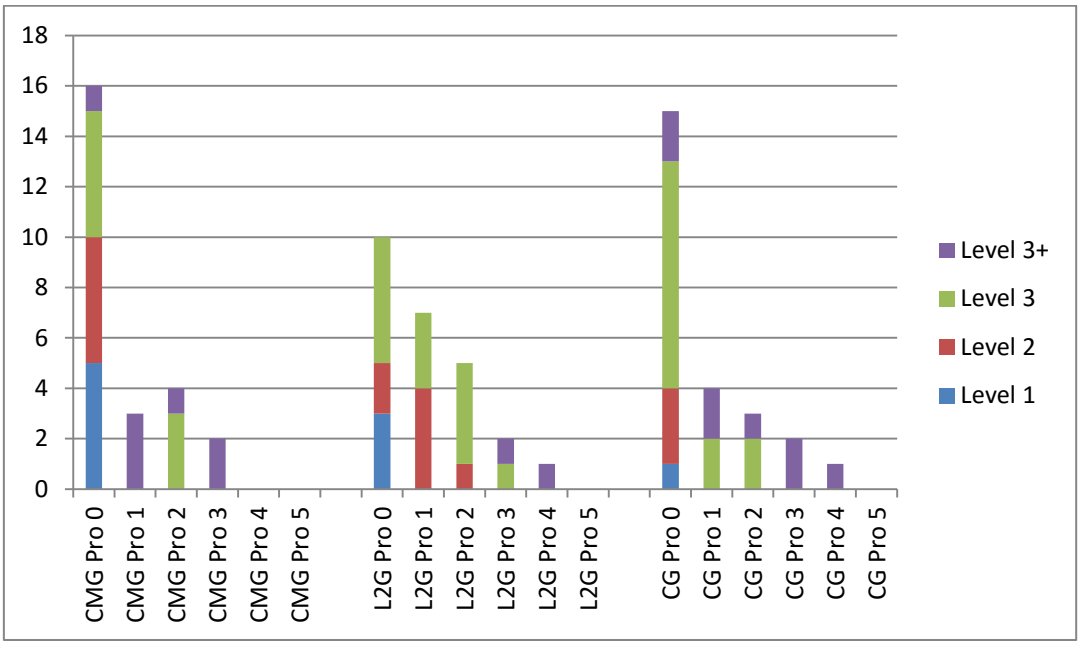


In CMG, all scores were obtained by 3 - 5 people. Students in levels 1 and 2 obtained scores ranging from 0 to 3; students in level 3 obtained scores between 1 and 5 —4 being the most common score among them—, and level 3+ students are evenly distributed between scores 3 and 4. A relationship between scores and levels can be seen: the higher scores (4 and 5) were only obtained by students with higher competence level (3 and 3+), whereas most level 1 and level 2 students obtained scores between 0 and 3. Score 3 is evenly distributed among the four levels. In general, it seems that a lower English competence level prevents students from obtaining a high score.

In L2G, the amount of people in each recognition score is not evenly distributed. The most common score is 3 (10 people), and then 2 and 4 (6 people each). Nobody scored 0, only 2 people scored 1, and 1 person scored 5. Therefore, almost the whole group (22 people out of 25) scored between 2 and 4. Regarding the level, level 1 students obtained notably better scores than their CMG counterparts, and even better results than level 2 students: they obtained scores 2, 3 and 4. Level 2 students obtained mostly scores 2 and 3. Level 3 students had mostly scores 2 and 4, and the two 3+ students obtained scores 4 and 5. The trend higher level - higher scores is not so marked here as in the CMG group, because both level 1 and level 2 students obtained better results.

In CG, 15 students scored between 0 and 2, and 10 students scored between 3 and 5. The most common score is 1 (9 people). Students with low English competence levels are only present in scores 0-1-2, whereas only 3 or 3+ levels scored 3 or higher. Therefore, the trend is similar to the one in CMG: higher level, higher scores.

Graph 4. Production post-test: number and levels of students who obtained each score



In production, CMG and CG have similar patterns: the most common score is 0 (16 people in CMG and 14 in CG, more than half of the class). Only 3 and 3+ people tried to produce target words, especially level 3+, and scores are slightly better in CG, as one student reached score 4.

The scores in L2G are different: even though the most common score is still 0, it was obtained by less than a half of the class (10 people). The highest scores, 3 and 4, were obtained by level 3 and 3+ students, however, level 2 students (most of them, 5 out of 7) also tried to produce target words. This contrasts deeply with the CMG and CG groups, where only the higher level students attempted to produce target words.

Both graphs show a clear trend: lower level students, represented in blue and in red, tend to obtain lower scores, whereas higher proficiency level students tend to monopolize the highest scores. In L2G, however, students with lower levels seem to obtain better scores, particularly in the case of level 1 students in recognition, and level 2 students in production.

Both overall and individual results by competence level, then, point out that students with higher competence level obtain higher scores both in recognition and production. Yet, it is the L2G which reports higher results in the two post-tests, and what is more, its effect seems to benefit lower level students.

The following section deals with the results of the production post-test more in detail.

5.4 Target word usage and accuracy categories

The previous sections have counted and analyzed the production scores as attempted/not attempted. This section presents all production answers sorted according to the different accuracy categories —the scale described in Table 2—. The results are shown in Table 6 below.

Table 6. Target word usage and accuracy scores.

	CMG	**L2G**	**CG**
0-Not used	33 (26.4%)	35 (28%)	44 (35.2%)
1-L1 used	15 (12%)	1 (0.8%)	0 (0%)
2-Related use	60 (48%)	62 (49.6%)	61 (48.8%)
3-Misheard	4 (3.2%)	6 (4.8%)	3 (2.4%)
4-Misspelled	1 (0.8%)	8 (6.4%)	2 (1.6%)
5-Incorrect use	5 (4%)	4 (3.2%)	1 (0.8%)
6-Correct	7 (5.6%)	9 (7.2%)	14 (11.2%)
Total	125	125	125

The first thing worth noting is that all three groups follow a very similar pattern:

First, related uses (synonyms, related words, paraphrases, etc. but not the target word) make up for almost half of all the answers (CMG 48%, L2G 49.6%, CG 48.8%). There is almost the same amount of related uses in all three groups. It is not surprising such a high amount of related uses because students had a picture that gave them a hint on what to write, which may also explain why the three groups obtained so similar results.

Second, the category 2-not used is the second most common option, taking around a third of the answers. CG is the group that fails to provide any target word more frequently. L2G and CMG closely follow the CG and have a very similar number, 35 and 33 (28% and 26.4% respectively).

Third, categories of attempted uses (categories 3 to 6) have very low scores.

The only notable difference between the general patterns of the three groups is the amount of L1 answers given, which are found almost exclusively in the CMG (15 instances, 12%), and it is the third most frequent category in that group. The CG never used an L1 expression, the L2G

used just one. Of these 15 instances attested in the CMG data, there are three particular cases in which not only the L1 was used, but the concept was different from the one mentioned in the text: 2 people wrote *loro* for *crow*, and one of them wrote *trombón* for *French horn*. This behaviour difference of the CMG related to the other groups could be explained by the teacher's use of L1, which could have led students to use this resource.

Regarding the accuracy level of the attempted uses (categories 3 to 6 in the scale), the CG has 20 uses (20%), from which 14 (11.2%) are correct; the L2G has 27 uses (21.6%), from which 9 (7.2%) are correct; and the CMG has 17 uses (13.6%), from which 7 (5.6%) are correct. It is surprising that, even if the CG was not the group where people most tried to use the target words, the ones who did answered better than the other groups. On the contrary, the L2G, being the one with most attempts to produce target vocabulary, is the one with the lowest percentage of completely correct uses. As the table in general shows that all three methods produce similar usage patterns, this difference could be explained by other reasons, for example, the differences in English competence level of students.

The results of all these analysis point in two directions. First, English competence level seems to have an effect on vocabulary acquisition through the three techniques, and second, the L2G performs better in the post-test than the rest of the groups, in all competence levels and both for production and recognition. There are differences between the groups, as well as differences within each group, due to several factors. These differences will be analysed and explained in the following section, the discussion.

6 Discussion

This section tries to answer the research questions featured in this study in the light of the investigations detailed in the Literature Review, that is, to assess the effectiveness of code-mixing and providing L2 definitions for vocabulary learning, as well as to see how English competence level can affect the vocabulary gains of students.

6.1 The effect of method

The results of the research showed that the learners that received the vocabulary with L2 definitions, L2G, outperformed the students in CMG and CG both in target word recognition and production —the difference being more pronounced in production—, and CMG outperformed CG in recognition but had very similar results in production. Therefore, L2 definitions seem the most effective vocabulary teaching method. This goes in line with Amirian et al. (2015), who compared the effect of different types of definitions —L1 definitions, L2 definitions, definitions in both languages, and a control group with no definitions, just as the control group in the present research— and found that L2-only definitions were the method that prompted the greatest gains of all, whereas the control group had the lowest scores. In addition, the results also agree with the findings of Collins (2010); Elley (1989); and Penno et al. (2002), who studied the effect of providing target word explanations in storytelling activities and found that the groups who received the explanations gained more vocabulary than the

groups who didn't. Therefore, it seems that all available data points out that providing L2 definitions helps vocabulary acquisition.

Regarding the results of the CMG in relation to the CG, previous research has found different evidence:

Zarei and Arasteh's (2011) found no significant difference between contextualization and code-mixing, whereas Zarei and Zarnani (2014) found that not receiving any code-mixing at all led to better vocabulary production than receiving it. This assertions, even if they seem contradictory, are partly confirmed in the present research, as the CMG group and the CG group had a very similar amount of attempted usages in production (20 for CG and 17 for CMG) —so there aren't any significant differences there—, but when analysing the level of accuracy of the answers, the CMG had 7 completely correct uses, whereas the CG had 14, twice as much, so it could be said that CG outperformed CMG. That is to say, both groups had a similar amount of attempts but the CG students were more successful when they tried to use the target words.

A possible explanation for these results is the fact that the CMG felt it was allowed to use the L1 in the test, whereas the others did not. This might have prevented some people from the CMG from attempting to use the target words as in English classes use of the FL is encouraged while L1 use is usually avoided.

In fact, one important difference between the effects of code-mixing and providing L2 definitions might be the use of L1 by students, which was found to be a lot higher in the CMG than in L2G and CG. The findings in this study contradict Celik's (2003) finding that his students did not attempt to use any L1 words when exposed to code-mixing. Celik argued that this lack of L1 use was probably due to the fact that his students were aware of the learning process and of the fact that they were supposed to learn the L2 words, and not play with them as he had done. The difference between the behaviour of the participants in his study and the participants in the present study might be due to different factors:

First, there is the important factor of the age difference. Celik's participants were in the first year of university (young adults), whereas the participants of this study were in their first year of high school (12-13 years old). Moreover, Celik's participants were EFL teacher trainees, of intermediate and upper-intermediate English level, so they were indeed very aware of the English learning process. In contrast, the participants in this study might not have been so aware, as they were much younger and had a basic English level. Besides, English was compulsory for them, whereas Celik's students chose it for their professional career.

Second, there is the fact that the participants of this study were all bilingual and it was observed that they were very used to code-mixing and code-switching in their everyday lives, as they lived in a bilingual community. The CMG might have interpreted the teacher's code mixing as a permission to do what was most natural to them, to mix both languages. It probably didn't feel so natural to Celik's students, so they refrained from it.

All in all, the main conclusion of the present study is that the L2G was the one who obtained the best results, both in production and recognition. Apart from this, the results also showed

that the CMG was better than the CG in recognition and both had similar scores in production. Besides, the CMG had a tendency to use the L1, which none of the other groups had.

6.2 The effect of level

The results of this study clearly match Penno et al.'s (2002) assertion that higher language ability led to greater vocabulary gains. A relationship was found between higher level and higher scores, both in recognition and production and in all three groups, with the only exception of the recognition score of the L2G, where level 1 achieved higher scores than level 2.

In production, particularly, it was found that the participants who had high production scores were almost all from levels 3 and 3+. The L2G was the only group where people with lower levels also tried to produce target words, as there were 5 people from level 2 among the 15 who tried to produce target words. This was not attested in the other two groups. Thus, it would seem that the L2 definitions strategy helped to neutralize the effect of competence level and encouraged learners to take risks and attempt to produce the target words.

On the other hand, the results of this research do not coincide with Celik's (2003) statement that a short story is sufficient input for students of all levels to produce new sentences with the target words, as the production scores were very low in all the groups and no level 1 student attempted to produce target words. It might be the case that Celik's (2003) students had a higher proficiency level than the participants in this study and thus, differences were not observed in Celik's study.

There was also another result that might have been influenced by the English level: even if the CG was not the one where most people tried to use the target words, the ones who did answered better than the other groups. In contrast, the L2G, being the one with most attempts to produce target vocabulary, is the one with the lowest percentage of correct uses. This might be also due to the level difference, because the CG had 8 students in level 3+ and the L2G just 2.

In general, this research has found that English competence level has a very important effect on vocabulary acquisition, and that providing L2 definitions seems the most effective technique to present new vocabulary items, more than code-mixing or just exposure to the target words. In addition, it especially helps students with lower English proficiency level, who respond much better to this technique than to the others, particularly in production.

7 Conclusions

Vocabulary learning and teaching techniques, and whether L1 can help or hinder L2 vocabulary acquisition are topics that are being discussed and researched nowadays. This research, in an attempt to shed more light on this topic, has compared the effects of code-mixing, providing L2 definitions and just exposing students to input in L2.

The results of the research show, first, that English proficiency level is a major factor in L2 vocabulary acquisition: students with high English level showed significantly more vocabulary gains than their lower level counterparts, regardless of the vocabulary teaching technique.

The second main conclusion of this research is that providing L2 definitions it the most effective method, as the L2G outperformed the other two groups in both recognition and production, in all levels. In addition, in the L2G, even if the effect of English proficiency level was still present, students with lower English proficiency level had a better performance, so providing L2 definitions reduced the effect of competence level. Hence, it could be a suitable method to use in schools, where large groups with students with very different competence levels are commonly found.

It can also be concluded that, even if short stories can activate vocabulary recognition to some extent, they are not an effective method by themselves to promote vocabulary production (against Celik, 2003), as the vocabulary production rates were very low, in general. Therefore, these storytelling methods could be used to present or introduce vocabulary for the first time, but should then be complemented with more exercises or input to make that learning effective.

This study had constraints and limitations that may be overcome with further studies. One of them was the impossibility to homogenize the participants, so that method effects could be seen more clearly. However, it was also interesting to see how the different methods worked in a real class, where all levels are usually mixed. It is also important to note that these results were collected after a single session of treatment, and, therefore, further research with delayed post-tests could be done to see if there are changes when using these techniques for a longer period, and to see whether the effects of the treatments hold with time.

Even if there have been limitations, the present study has served to contribute to the debate of whether L1 use in L2 class is positive or not by providing evidence of the effects of code-mixing and L2 definitions in an authentic environment and with younger learners. In addition, it opens up new research trends on how language proficiency level affects vocabulary learning and can serve as a base or reference for further research.

8 Acknowledgements

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9.1 Content

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9.2 Pictures in post-tests

9.2.1 Production post-test

Question 1

Crow [Online image]. Retrieved June 4, 2016 from http://pngimg.com/download/3103

Question 2

Bla, Bla [Online image]. Retrieved June 4, 2016 from http://eldiariodechaucer.blogspot.com.es/2015/03/bla-bla-bla.html

Question 3

Jones, T. Amati 345H Full Double French Horn. [Online image]. Retrieved June 4, 2016 from http://www.trevorjonesltd.co.uk/Amati_French_Horn_Full_Double.htm

Question 4

Reilly, S. (2016). Freshman Trevor Zavac practices the French Horn choir's music selection during an AL practice. Zavac organized the French horn choir's rehearsal schedule, helping to keep them on track for the state competition. [Online image]. Retrieved June 4, 2016 from http://millermedianow.org/2753/features/working-from-the-ground-to-gold/

Question 5

[Online image showing a girl studying]. Retrieved June 4, 2016 from http://www.sri.com/sites/default/files/styles/slide_home_main/public/project/slides/istock_000017315776_490x356.jpg%3Fitok%3DsNsY7kIP

Question 6

Dekel, D. (2015). Hiking. [Online image]. Retrieved June 4, 2016 from http://6iee.com/434587.html

Question 7

Brauer, J. (2011). Snowmass Ridge. [Online image]. Retrieved June 4, 2016 from http://www.mountainphotography.com/photo/snowmass-ridge/

Question 8

Cold [Online image]. (2012). Retrieved June 4, 2016 from http://comoahorrardinero.com/cinco-trucos-para-ahorrar-en-calefaccion/cold

9.2.2 Recognition post-test

Question 1

A) Escalar [Online image]. Retrieved June 4, 2016 from http://www.definicionabc.com/wp-content/uploads/escalar.jpg

B) Herbst, S. (2013). Half day hike [Online image]. Retrieved June 4, 2016 from URL

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C) Verma, S. (2015). How to study for the LSAT while fully employed [Online image]. Retrieved June 4, 2016 from https://blogs.unionsouthampton.org/officers/files/2015/12/How-to-study-for-the-LSAT-while-fully-employed.jpg

D) Hobbs, E. Rehearsing [Online image]. Retrieved June 4, 2016 from http://www.flutesinspired.co.uk/#!rehearsing/zoom/mainPage/image_1mmx

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A) Yamaha YFL 777 H Flauta travesera en Do [Online image]. Retrieved June 4, 2016 from http://www.abrinesmusica.com/articulos/imagenes/20090508114330.jpg

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D) Dinieri, J. (2016). Shanti Handpan. [Online image]. Retrieved June 4, 2016 from http://aoxoa.co/rpgea2/

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A) Crow PNG Clipart. [Online image]. Retrieved June 4, 2016 from http://www.clipartpanda.com/clipart_images/crow-png-clipart-70614850

B) Periquitos – higiene y cuidados. [Online image]. Retrieved June 4, 2016 from http://www.wikipets.es/wp-content/uploads/sites/default/files/library/periquitos_-_higiene_y_cuidados.jpg

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10 Appendices

10.1 Appendix A – Background questionnaire

Questionnaire[4]

Name:..... Surname:…….. Group:…….

PLEASE, ANSWER THE FOLLOWING QUESTIONS

1. When did you start learning English? *Zenbat urterekin hasi zinen ingelesa ikasten?*

When I was ..... years old.

2. What subjects have you been taught in English? *Ingelesaz aparte, beste ikasgairen bat ingelesez eman duzu? Zein(tzuk)?*

……..…….....

3. Did you have or do you still have extra English classes outside school? *Ingelesa eskolaz kanpo ere ikasten duzu edo inoiz ikasi duzu?*

Yes □ Never *(inoiz ez)* □

4. When? *Noiz? (Idatzi urteak)*

……..…….....

5. How many hours per week? *Astean zenbat ordu?*

……..…….....

6. Have you ever been to an English speaking country? *Ingelesa hitz egiten den herrialde batean egon al zara?*

Yes □ No □

When? *Noiz?*

……..…….....

7. For how long? *Zenbat denbora pasa zenuen han?*

……..…….....

8. Have you ever participated in an English summer camp? *Ingelesa ikasteko kanpamentu batean egon al zara inoiz?*

Yes □ No □

When? *Noiz?*

……..…….....

9. For how long? *Zenbat denbora pasa zenuen han?*

……..…….....

[4] Adapted from Villarreal, García and Hawkins (2011)

10.2 Appendix B - Texts

Text 1 – Control group

This girl is Jenny, and she is thirteen. She is from Manchester, in England.

She lives with her mum, her dad and her sister. They also have two crows. These crows are very intelligent: they can say “hello” and “goodbye”. One of them is called Gigi, and it is Jenny’s crow. The other one, Tito, is her sister’s crow.

In her free time, Jenny does lots of things. For example, she plays the French horn. She is the French horn player in an orchestra and she rehearses a lot: every day, she rehearses for one hour. After the rehearsal, she does her homework. Her sister also plays the French horn, so sometimes they rehearse together.

Jenny practices a lot of sports, like tennis, basketball or football. She also loves being in the nature, so her favourite sport is hiking.

Jenny hikes every Saturday with her father and her mother. They don’t have to go far away because there are a lot of ridges in the area. They usually hike for many kilometres along those ridges, because Jenny’s mother really likes hiking and the ridges are very long.

However, Jenny’s sister usually stays at home with their crows because she doesn’t really like nature and it is cold in the ridges. She prefers to stay at home and rehearse her French horn for many hours.

Text 2 – Explanations group

This girl is Jenny, and she is thirteen. She is from Manchester, in England.

She lives with her mum, her dad and her sister. They also have two crows. A crow is a type of bird, a black bird. These crows are very intelligent: they can say “hello” and “goodbye”. One of them is called Gigi, and it is Jenny’s crow. The other one, Tito, is her sister’s crow.

In her free time, Jenny does lots of things. For example, she plays the French horn. A French horn is an instrument very similar to the trumpet, but bigger. She is the French horn player in an orchestra and she rehearses a lot. “Rehearsing” is practicing an instrument, or playing the same song a lot of times until you do it perfectly. Every day, Jenny rehearses for one hour. After the rehearsal, she does her homework. Her sister also plays the French horn, so sometimes they rehearse together.

Jenny practices a lot of sports, like tennis, basketball or football. She also loves being in the nature, so her favourite sport is hiking. Hiking is walking in the mountains.

Jenny hikes every Saturday with her father and her mother. They don’t have to go far away because there are a lot of ridges in the area. A ridge is the top part of a mountain. They usually hike for many kilometres in those ridges, because Jenny’s mother really likes hiking and the ridges are very long.

Text 3 – Code-mixing group

This girl is Jenny, and she is thirteen. She is from Manchester, in England.

She lives with her mum, her dad and her sister. They also have two *beleak,* that is, crows. These crows are very intelligent: they can say “hello” and “goodbye”. One of them is called Gigi, and it is Jenny’s crow. The other one, Tito, is her sister’s crow.

In her free time, Jenny does lots of things. For example, she plays the *trompa*, that is, the French horn. She is the French horn player in an orchestra and she *entseiatzen du,* that is, she rehearses a lot: every day, she rehearses for one hour. After the rehearsal, she does her homework. Her sister also plays the French horn, so sometimes they rehearse together.

Jenny practices a lot of sports, like tennis, basketball or football. She also loves being in the nature, so her favourite sport is *mendi ibilaldiak egitea*, that is, hiking.

Jenny hikes every Saturday with her father and her mother. They don’t have to go far away because there are a lot of *tontorrak*, that is, ridges*,* in the area. They usually hike for many kilometres in those ridges, because Jenny’s mother really likes hiking and the ridges are very long.

However, Jenny’s sister usually stays at home with their crows because she doesn’t really like nature and it is cold in the ridges. She prefers to stay at home and rehearse her French horn for many hours.

However, Jenny’s sister usually stays at home with their crows because she doesn’t really like nature and it is cold in the ridges. She prefers to stay at home and rehearse her French horn for many hours.

10.3 Appendix C – Pre-test

Ba al dakizu zer esan nahi duten ondorengo hitz hauek?

Idatzi itzulpena (euskaraz edo gazteleraz), sinonimo bat, azalpen bat, edo bere esanahiari buruz dakizun edo uste duzun beste edozer. Hitz batek esanahi bat baino gehiago duela uste baduzu, idatzi ezagutzen dituzun esanahi guztiak.

big	mountain
bird	outdoor
boy	parrot
cold	play
come	practice
crow	rehearse
drums	ridge
enjoy	run
far	school
French horn	several
hike	small
hill	study
home	together
keyboard	trek
make	walk

10.4 Appendix D – Production post-test

Name:_____

Answer the following questions:

1) What animals does Jenny have at home?

Hint:

2) What is special about them?

Hint:

3) What instrument does Jenny play?

Hint:

4) What does Jenny do with that instrument every day?

Hint:

5) What does she do after that?

Hint:

6) What is Jenny's favourite sport?

Hint:

7) Where do Jenny and her parents go every weekend?

Hint:

8) Why does Jenny's sister stay at home in the weekends?

Hint:

10.5 Appendix E – Recognition post-test

Name:_____

Choose the image that represents the word. If you don't know the meaning of the word, choose E. *Hautatu hitzari dagokion irudia. Ez baduzu hitza ezagutzen, hautatu* ***E) I don't know****.*

1. Hike

A)

B)

C)

D)

E) I don't know

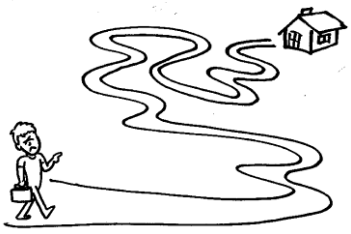
---

2. Far

A)

B)

C)



D)

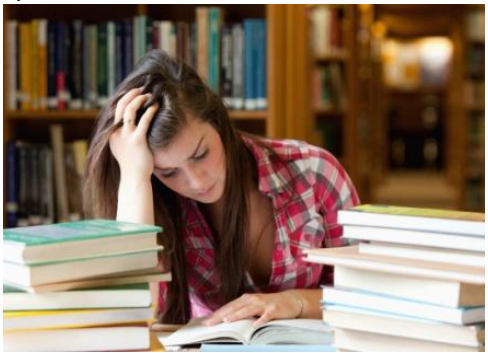
E) I don't know

3. Rehearse

A)

B)

C)



D)

E) I don't know

---

4. Ridge

A)

B)

C)

D)

E) I don't know

5. Cold

A)

B)

C)

D)

E) I don't know

---

6. French horn

A)

B)

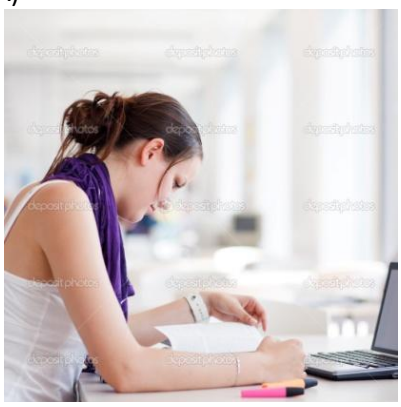
C)

D)

E) I don't know

7. Together

A)



B)

C)

D)

E) I don't know

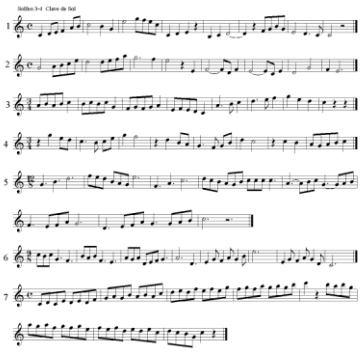
---

8. Crow

A)

B)

C)



D)

E) I don't know

10.6 Appendix F – Post-test scores

Table 7. Individual results of the code-mixing group.

		RECOGNITION POST-TEST						PRODUCTION POST-TEST					
Partic.	English level	Crow	French horn	Rehearse	Hike	Ridge	TOTAL REC	Crow	French horn	Rehearse	Hike / hiking	Ridge	TOTAL ATT. PRO
CMG1	4	1	1	1	0	0	3	0 (2)	1 (3)	0 (2)	0 (2)	0 (2)	1
CMG2	4	0	1	0	1	1	3	1 (5)	1 (3)	0 (2)	1 (6)	0 (2)	3
CMG3	4	1	0	1	1	1	4	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
CMG4	1	0	0	0	0	0	0	0 (2)	0 (2)	0 (0)	0 (0)	0 (0)	0
CMG5	3	1	1	1	1	1	5	1 (3)	1 (5)	0 (2)	0 (1)	0 (1)	2
CMG6	4	1	1	1	1	1	5	1 (6)	1 (6)	0 (1)	0 (1)	0 (1)	2
CMG7	4	1	1	0	1	1	4	0 (2)	1 (6)	0 (2)	0 (2)	0 (2)	1
CMG8	1	1	0	0	0	0	1	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
CMG9	1	0	0	0	0	0	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
CMG10	3	0	0	1	0	0	1	0 (1)	0 (1)	0 (2)	0 (2)	0 (2)	0
CMG11	2	1	0	1	0	0	2	0 (2)	0 (0)	0 (0)	0 (2)	0 (2)	0
CMG12	3	1	1	0	1	1	4	0 (1)	1 (6)	0 (0)	1 (3)	0 (2)	2
CMG13	3	0	0	1	0	0	1	0 (2)	0 (1)	0 (0)	0 (2)	0 (2)	0
CMG14	3	1	1	1	0	0	3	0 (1)	0 (1)	0 (2)	0 (2)	0 (2)	0
CMG15	4	1	1	1	1	1	5	1 (5)	1 (5)	0 (2)	1 (4)	0 (2)	3
CMG16	3	1	1	1	0	1	4	1 (5)	1 (6)	0 (1)	0 (2)	0 (2)	2
CMG17	3	1	0	1	1	1	4	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
CMG18	1	1	0	1	1	0	3	0 (1)	0 (2)	0 (0)	0 (0)	0 (2)	0
CMG19	2	0	0	0	0	0	0	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)	0
CMG20	2	1	0	1	1	0	3	0 (1)	0 (0)	0 (2)	0 (0)	0 (0)	0
CMG21	2	0	0	0	1	1	2	0 (2)	0 (2)	0 (0)	0 (0)	0 (2)	0
CMG22	2	1	0	0	0	0	1	0 (2)	0 (0)	0 (2)	0 (2)	0 (0)	0
CMG23	1	1	0	0	0	0	1	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0
CMG24	4	1	1	1	1	1	5	1 (6)	0 (1)	0 (2)	0 (2)	0 (2)	1
CMG25	3	1	1	0	0	0	2	0 (2)	0 (2)	0 (2)	0 (0)	0 (2)	0
		18	**11**	**14**	**12**	**11**	**66**	**6**	**8**	**0**	**3**	**0**	**17**

Table 8. Individual results of the L2 definitions group.

		RECOGNITION POST-TEST						PRODUCTION POST-TEST					
Partic.	English level	Crow	French horn	Rehearse	Hike	Ridge	TOTAL REC	Crow	French horn	Rehearse	Hike / hiking	Ridge	TOTAL ATT. PRO
L2G1	2	1	0	0	0	0	1	1 (4)	0 (0)	0 (2)	0 (2)	0 (2)	1
L2G2	2	1	0	0	1	0	2	1 (6)	0 (0)	0 (2)	0 (2)	0 (2)	1
L2G3	3	1	1	0	1	1	4	1 (5)	0 (2)	0 (2)	0 (2)	0 (0)	1
L2G4	2	1	1	0	1	0	3	0 (2)	0 (2)	0 (2)	0 (0)	0 (0)	0
L2G5	3	1	1	0	1	0	3	1 (6)	1 (3)	0 (2)	1 (4)	0 (2)	3
L2G6	3	1	1	1	1	0	4	1 (4)	1 (6)	0 (2)	0 (2)	0 (0)	2
L2G7	3	1	0	0	1	1	3	1 (3)	0 (2)	0 (2)	0 (2)	1 (3)	2
L2G8	3	0	1	0	0	0	1	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)	0
L2G9	4	1	1	1	1	1	5	1 (6)	1 (5)	1 (4)	1 (6)	0 (2)	4
L2G10	3	1	0	0	1	0	2	0 (2)	0 (0)	0 (0)	0 (0)	0 (2)	0
L2G11	2	0	1	0	1	1	3	1 (5)	0 (0)	0 (2)	0 (2)	0 (2)	1
L2G12	1	1	1	1	1	0	4	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
L2G13	3	1	0	0	1	1	3	0 (2)	0 (0)	0 (0)	0 (2)	0 (2)	0
L2G14	2	1	0	0	1	0	2	0 (0)	0 (0)	0 (2)	0 (0)	0 (0)	0
L2G15	3	1	1	1	0	1	4	1 (3)	0 (0)	0 (2)	0 (2)	0 (2)	1
L2G16	2	1	0	0	1	0	2	1 (4)	0 (0)	0 (0)	1 (3)	0 (0)	2
L2G17	3	1	1	0	1	1	4	1 (6)	0 (0)	0 (0)	0 (0)	1 (4)	2
L2G18	1	1	0	0	1	0	2	0 (0)	0 (0)	0 (0)	0 (0)	0 (2)	0
L2G19	4	1	1	0	1	1	4	1 (6)	1 (6)	0 (2)	1 (4)	0 (1)	3
L2G20	3	1	1	0	0	0	2	0 (0)	0 (0)	0 (2)	0 (2)	0 (2)	0
L2G21	1	1	0	0	1	1	3	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
L2G22	2	1	0	0	1	1	3	1 (3)	0 (2)	0 (0)	0 (2)	0 (2)	1
L2G23	3	0	1	0	1	1	3	1 (4)	1 (5)	0 (2)	0 (2)	0 (0)	2
L2G24	3	1	1	0	1	0	3	0 (0)	0 (2)	0 (2)	0 (0)	0 (2)	0
L2G25	3	1	1	0	1	0	3	0 (2)	0 (2)	0 (2)	1 (6)	0 (2)	1
		22	**15**	**4**	**21**	**11**	**73**	**14**	**5**	**1**	**5**	**2**	**27**

Table 9. Individual results of the control group.

		RECOGNITION POST-TEST						PRODUCTION POST-TEST					
Partic.	English level	Crow	French horn	Rehearse	Hike	Ridge	TOTAL REC	Crow	French horn	Rehearse	Hike / hiking	Ridge	TOTAL ATT. PRO
CG1	2	0	0	0	1	0	1	0 (2)	0 (0)	0 (2)	0 (0)	0 (2)	0
CG2	3	1	1	0	1	0	3	1 (6)	1 (6)	0 (0)	0 (0)	0 (2)	2
CG3	3	1	1	0	0	0	2	1 (6)	1 (6)	0 (0)	0 (2)	0 (2)	2
CG4	3	0	0	0	0	0	0	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)	0
CG5	3	0	0	0	0	0	0	0 (0)	0 (2)	0 (2)	0 (2)	0 (2)	0
CG6	1	0	0	0	0	0	0	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
CG7	4	1	1	0	1	0	3	1 (6)	0 (0)	0 (0)	0 (2)	0 (2)	1
CG8	3	1	1	1	1	0	4	0 (2)	1 (5)	0 (2)	0 (0)	0 (2)	1
CG9	3	1	0	0	0	0	1	0 (2)	0 (0)	0 (0)	0 (0)	0 (2)	0
CG10	3	1	1	0	1	1	4	0 (0)	0 (0)	0 (2)	0 (2)	0 (2)	0
CG11	4	1	1	1	1	1	5	1 (3)	0 (0)	0 (2)	0 (0)	0 (2)	1
CG12	4	1	1	1	1	0	4	1 (6)	1 (3)	0 (2)	1 (3)	0 (0)	3
CG13	3	1	0	0	0	0	1	0 (0)	0 (0)	0 (0)	0 (2)	0 (2)	0
CG14	4	1	1	0	1	0	3	1 (4)	1 (6)	0 (0)	0 (0)	0 (0)	2
CG15	4	0	0	0	1	0	1	0 (2)	0 (0)	0 (2)	0 (0)	0 (2)	0
CG16	3	1	0	0	0	0	1	0 (2)	0 (2)	0 (0)	0 (2)	0 (2)	0
CG17	3	0	1	0	0	0	1	0 (2)	1 (4)	0 (0)	0 (0)	0 (2)	1
CG18	3	0	0	0	0	0	0	0 (2)	0 (2)	0 (2)	0 (0)	0 (2)	0
CG19	4	1	1	1	1	1	5	1 (6)	1 (6)	1 (6)	1 (6)	0 (2)	4
CG20	3	1	0	0	0	0	1	0 (0)	0 (0)	0 (0)	0 (0)	0 (2)	0
CG21	2	1	0	0	1	0	2	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
CG22	3	0	0	1	0	0	1	0 (2)	0 (2)	0 (2)	0 (2)	0 (2)	0
CG23	4	1	1	0	1	0	3	1 (6)	1 (6)	0 (2)	1 (6)	0 (2)	3
CG24	2	0	1	0	0	0	1	0 (2)	0 (0)	0 (0)	0 (2)	0 (2)	0
CG25	4	1	1	0	1	0	3	0 (0)	0 (0)	0 (0)	0 (2)	0 (2)	0
		16	**13**	**5**	**13**	**3**	**50**	**8**	**8**	**1**	**3**	**0**	**20**