Assessing the Efficacy of Content and Language Integrated Learning (CLIL) On Vocabulary Acquisition

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Abstract

The purpose of this study was to evaluate the effectiveness of a 'Content and Language Integrated Learning' (CLIL) approach to teaching vocabulary in a college-level photography course taught in English. In the first year of the course, many students reported difficulty with the specialized vocabulary used in photography, most of which falls outside the most common 2,000 words in the New General Services List. In response, the second year of the course used a CLIL approach to teaching vocabulary. The study included 37 students who were given a vocabulary quiz on the first and last days of the course. The results showed that the CLIL approach was highly effective for teaching vocabulary in this context.

Introduction

At a liberal arts college in rural, southwest Japan, students in their first year English classes are divided into groups based on their proficiency in English. These classes are all taught in English and include oral communication with a focus on grammar, intensive and extensive reading, and academic writing. All classes are taught by a single teacher. In addition to English, first year students must also take classes in subjects like psychology, philosophy, sociology, and economics. These classes are unique in that they are team-taught, with two teachers in the classroom at all times: one who is an expert in the subject matter and another who can assist with language issues that may come up.

In their second year, college students can take content-based courses that are not team-taught. These courses, which include topics like 'Photography in a Japanese Context' and 'Japanese Popular Culture and Media', are the students' first experience in a content-based class without two teachers present. Importantly, these elective courses are not organized according to English proficiency, so there is a mix of skill levels in the classroom. This can provide a range of learning opportunities, but it can also be challenging for both teachers and students, especially when class content and language are difficult for lower-level learners.

In the first year of teaching the photography-related course, it became clear that some of the technical terms were beyond the comprehension of many students. This was understandable, as many of the terms were not part of commonly known vocabulary such as those found in the General Services List and were very specific to the course. However, this posed a problem as a lot of the language used in class was specific to the context and lessons and could not be avoided. In anonymous evaluations at the end of the 16-week semester, students reported that their biggest challenge throughout the course was with the photography-specific terminology and jargon that they were not familiar with and had not encountered before.

In the second year of the course, a Content and Language Integrated Learning (CLIL) approach was adopted to address the students' difficulties with vocabulary. This approach emphasized the importance of both language and content in each class and in all class materials and worksheets. Language tasks were more carefully structured to support the students' learning. This was a departure from the first year of the course, where the focus was primarily on content, with less attention given to language.

The aim of this research is to investigate the effectiveness of a CLIL approach to learning course-specific vocabulary. To test the hypothesis that a CLIL approach has an impact on vocabulary acquisition, a vocabulary quiz on photography terminology was administered to students at the beginning and end of the class. The results of the pre- and post-quizzes will be compared to determine the impact of the CLIL approach on vocabulary acquisition.

Literature Review

CLIL is a teaching approach that integrates language learning with subject-based content, so that both language and the subject being studied are given equal importance (Marsh 2002). This approach often involves using the second or additional language as the medium of instruction in order to facilitate language learning. Different scholars may have slightly different interpretations of CLIL, but the central idea is that it emphasizes the equal connection between language and content in education (Ting, 2010). The idea of a balanced split between language and content instruction in CLIL classrooms is a desirable goal, but research has shown that it is difficult to achieve in

practice (Dalton-Puffer, 2007; Mehisto, Marsh, & Frigols, 2008; Pérez -Vidal, 2009).

Some argue that as long as there is a dual focus on language and content, it can still be considered CLIL, even if the split is disproportionate (Marsh, 2002). However, this view may be problematic because it is difficult to imagine a non-CLIL language class that has less than 10% focus on content. This broad definition of CLIL may be inclusive, but it lacks specificity.

In Coyle's definition, CLIL (Content and Language Integrated Learning) is considered an educational approach that can be understood in various ways. Some scholars view CLIL in relation to the instructional techniques and practices used by educators to facilitate second or foreign language learning (Ball et al., 2010; Hüttner et al., 2010), while others see it as a tool for pedagogy (Coyle, 2002) or an innovative approach to methodology (Eurydice, 2006). Some scholars focus on CLIL's curricular aspects (Langé, 2007; Navés & Victori, 2010), while others see it as flexible in terms of curricular design and timetable organization (Coyle, 2007).

In short, there are different ways of understanding CLIL, including as a whole program of instruction, as isolated classes, or as activities in a second or foreign language. It is generally accepted that CLIL involves using an additional language as a medium of instruction, but there is no one single approach or theory for CLIL pedagogy (Wolff & Marsh, 2007; Coyle, 2007). The key difference between CLIL and traditional language teaching is its focus on content, which is often considered unique and innovative (Marsh & Frigols, 2008).

Nation (2013) suggests that educators and learners can use a variety of techniques to develop their word knowledge. These techniques include saying new words out loud, writing them down, providing definitions, and using dictionaries and word lists. These methods help learners develop different aspects of word knowledge, such as spelling, pronunciation, and grammar (Nation, 2013). Nation (2011) also emphasizes the importance of explicit vocabulary learning but advises against spending too much time teaching words that are not commonly used in English. Instead, students should be encouraged to learn these words on their own using effective vocabulary learning strategies and through natural encounters with the language in class materials.

According to Schmitt (2008), learners need to encounter a new word eight to ten

times in order to sufficiently learn its meaning, while Webb (2007) suggests that learners need more than ten exposures to a new word in order to gain meaningful knowledge. However, the exact number of repetitions needed can vary depending on factors such as motivation, attention, and the quality of teaching. Additionally, the spacing of repetitions can also impact language acquisition, as noted by Nation (2013) and others (Ebbinghaus, 1913; Weltens & Grendel, 1993). With the development of learning technology, learners now have access to a wider range of resources to help with vocabulary acquisition (Nurmukhamedov, 2012).

Method

Participants

In this study, a group of 37 second-year students from a liberal arts college in southwestern Japan participated. They were all informed about the research and assured that their anonymity would be preserved. Each student gave their consent to participate.

Instruments

On the first day of the course, students were given an online vocabulary quiz on Moodle, the college's Learning Management System (LMS). All second-year students had accounts on the college's Moodle site and were required to join the course with a password in order to take the quiz.

The quiz consisted of 20 multiple choice questions and 10 true/false questions, each worth the same amount. Students were not allowed to use dictionaries or phones and were given a time limit of 30 minutes. Once the quiz was completed, the results were automatically calculated by Moodle and exported to Excel. The quiz included vocabulary related to photography, such as "composition" and "leading lines", which may have been new to some students.

On the final day of the course, students retook the same quiz they took on the first day of class to see how much they had improved over the 16 weeks of instruction. The results from both quizzes were analyzed using a paired samples t-test in Microsoft Excel.

Results

Quiz Results

First Day Quiz Results chart showing Score /10 on the y-axis (0 to 10) versus Number of students on the x-axis (1 to 37).
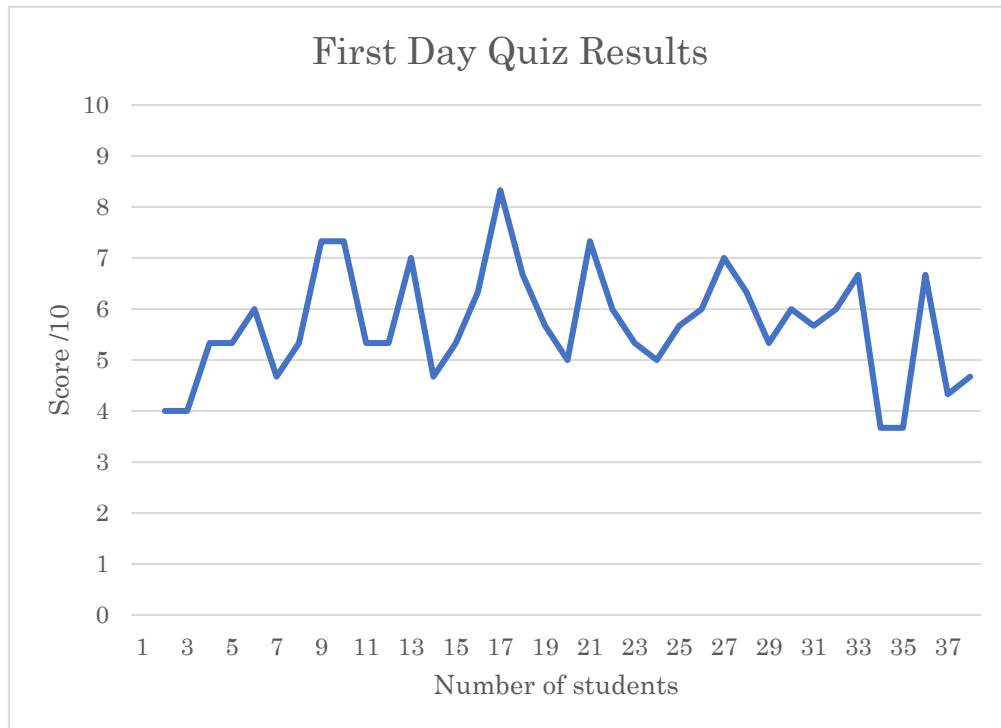
Figure 1: First day vocabulary quiz results

Figure 1 illustrates the results of a vocabulary quiz taken on the first day of class by 37 participants. The scores were calculated and converted into a score out of 10 by Moodle, then the data was further analyzed in Microsoft Excel. The results showed that almost all scores fell between 4/10 and 7/10. The mean score among students was 5.68/10, or just under 60%. The most common score was in the range of 6-6.5/10, with only one student scoring above 8/10.
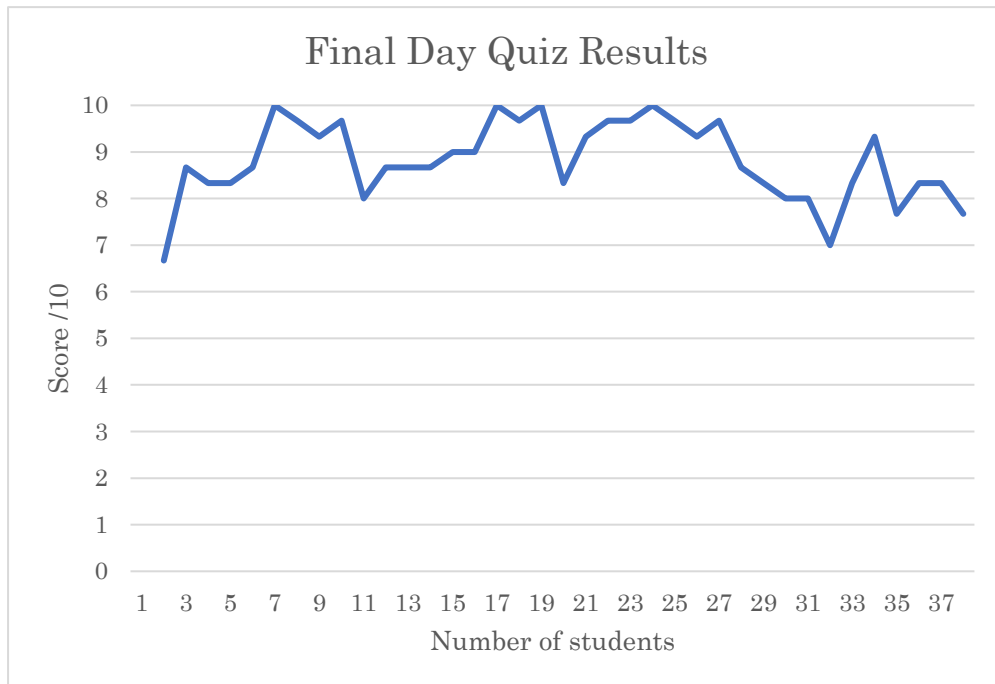
Figure 2, Final day vocabulary quiz results

Figure 2 presents the results of the vocabulary quiz taken on the last day of class. The scores of all the students range between 7/10 and 10/10, with an average score of 8.82/10, or just over 80%. Four students scored a perfect 10/10 and only one student scored below 7/10.
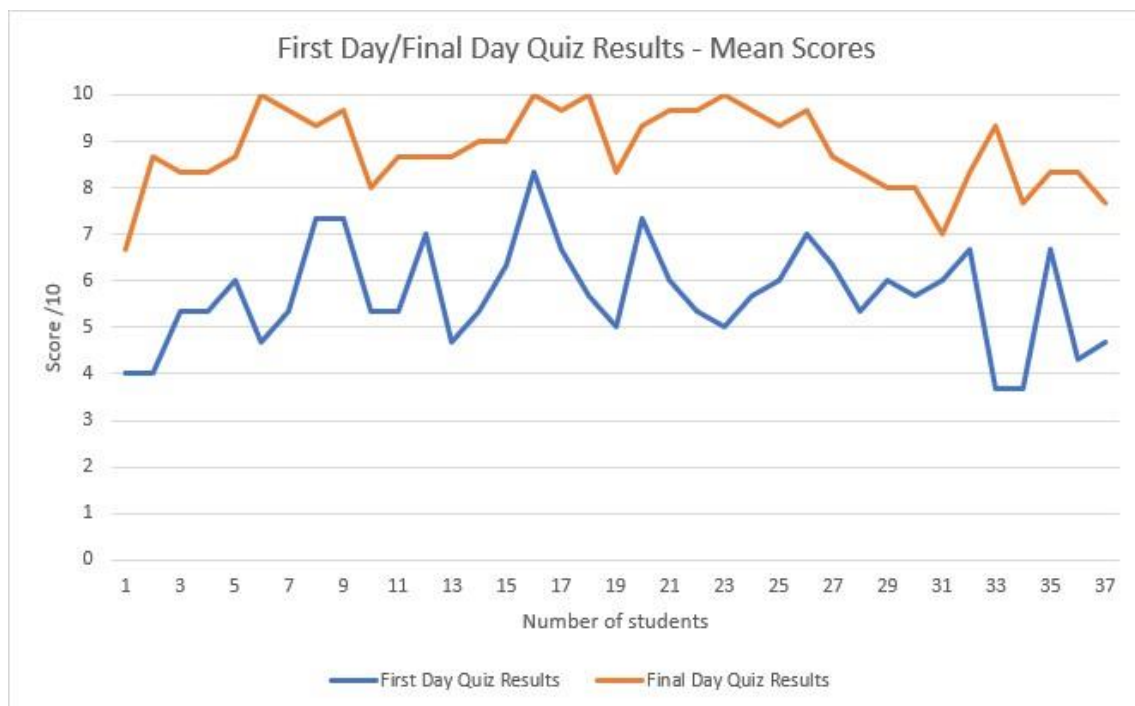
Figure 3, Comparison of first day and final day quiz results

Figure 3 shows the pre/post mean score of students together. From this side-by-side comparison it's clear that there were significant gains made by students in vocabulary acquisition between the test they took in the first week of class and the same test they took in the last week of class. Indeed, the results show a 20% mean gain in scores across the 37 students.

Further, a paired-samples t-test was conducted to compare the mean vocabulary scores of students before and after a semester-long course using a dedicated Content and Language Integrated Learning (CLIL) approach. The results in Table 1 showed a significant difference in the pre and post quiz scores, with the post-CLIL course score (M=8.82) significantly higher than the pre-CLIL course score (M=5.68).

Table 1

t-Test: Paired Two Sample for Means		
	Variable 1	Variable 2
Mean	5.684324324	8.82027027
Variance	1.207897447	0.726252703
Observations	37	37
Pearson Correlation	0.362342601	
Hypothesized Mean Diff	0	
df	36	
t Stat	-17.02463958	
P(T<=t) one-tail	4.19917E-19	
t Critical one-tail	1.688297714	
P(T<=t) two-tail	8.39833E-19	
t Critical two-tail	2.028094001	

In a two-tailed t-test, the P(T<=t) value is the probability that the difference between the means of the two samples being compared is less than or equal to the observed difference in the data. In this case, the value of 8.39833E-19 means that the probability of this happening is very small, indicating that the observed difference is statistically significant. This suggests that there is a significant difference between the means of the two samples being compared and that the CLIL approach was effective in improving the students' vocabulary acquisition.

The results also indicate that when content and language are taught together and given equal emphasis over the course of a semester, students can effectively acquire and retain the required vocabulary, regardless of their language proficiency level.

Discussion

The data shows that the CLIL approach was effective in improving students' vocabulary skills. In just 16 weeks of class time, students' mean score on the vocabulary quiz increased from 5.9/10 to 8.5/10. This improvement can be attributed to the incorporation of vocabulary-focused activities and materials, such as handouts and

group discussions, into the course. Prior to implementing the CLIL approach, the course did not prioritize vocabulary development.

The college promotes a learning environment that focuses on active, student-centered learning. This often takes the form of small group work, with groups of three to four students varying language proficiency. This is in line with Vygotsky's ideas (1978) about the Zone of Proximal Development (ZPD), where lower-level students are placed together with more advanced learners in order to facilitate learning.

The ZPD is a concept in education that suggests that students can benefit from being guided by more knowledgeable peers or teachers in tasks or skills that are slightly beyond their current proficiency level. This approach, based on the theories of psychologist Lev Vygotsky, involves gradually drawing back support as the student becomes more competent and confident. In the context of this research, students were placed in mixed-ability groups in the hopes that higher-level students would help lower-level students with concepts like vocabulary. However, the student evaluations at the end of the first year showed that this did not happen as much as hoped, leading to a shift towards a more CLIL-focused approach.

Secondly, focusing on vocabulary that falls outside of the first 2,000 words of the General Services List (GSL) (West, 1953) can be disadvantageous. Nation (2008) states that activities focused on less common English words can be time-consuming, and ideally should be done by students outside of class time. Additionally, many second-year students at the college have reported feeling frustrated in team-taught classes where they have had to spend (in their belief) a significant amount of time learning obscure English words related to their courses.

Also, the Japanese language incorporates a significant number of borrowed words, which are written in a separate alphabet called "katakana." This is especially true in the realm of photography, where English words like "camera," "lens," "zoom," and "digital" are commonly used by people who are interested in the subject. As a result, one may have assumed that the students in the class had some degree of familiarity with these terms.

For these reasons, in the first year that the class was taught, the focus was not on

vocabulary. Instead, worksheets with photography vocabulary were given as homework and students were encouraged to create their own photography glossaries. However, it was difficult to monitor all the students' progress with this approach and the results and evaluations showed that students had the most difficulty with, and expressed the most concern about, vocabulary learning.

The shift to a CLIL-focused approach in the class yielded highly positive results, as seen in the improved performance on the vocabulary quiz. This success is in line with Nation's (2008) findings that explicit, repetitive teaching of vocabulary is the most effective method. The biggest challenge in implementing this approach was finding a balance between explicitly teaching vocabulary and covering the subject matter of the class.

Another aspect of the course that was particularly satisfying was that the students not only did well on the vocabulary quiz, but also consistently demonstrated a strong understanding of the new photography-specific vocabulary throughout the course. This was particularly evident in their final projects, in which they were asked to create presentations explaining the photographic images they had taken during the course, using the targeted vocabulary. This showed that they had not only learned the vocabulary but were also able to apply it in a meaningful way. Examples of these presentations can be seen in the accompanying figures.
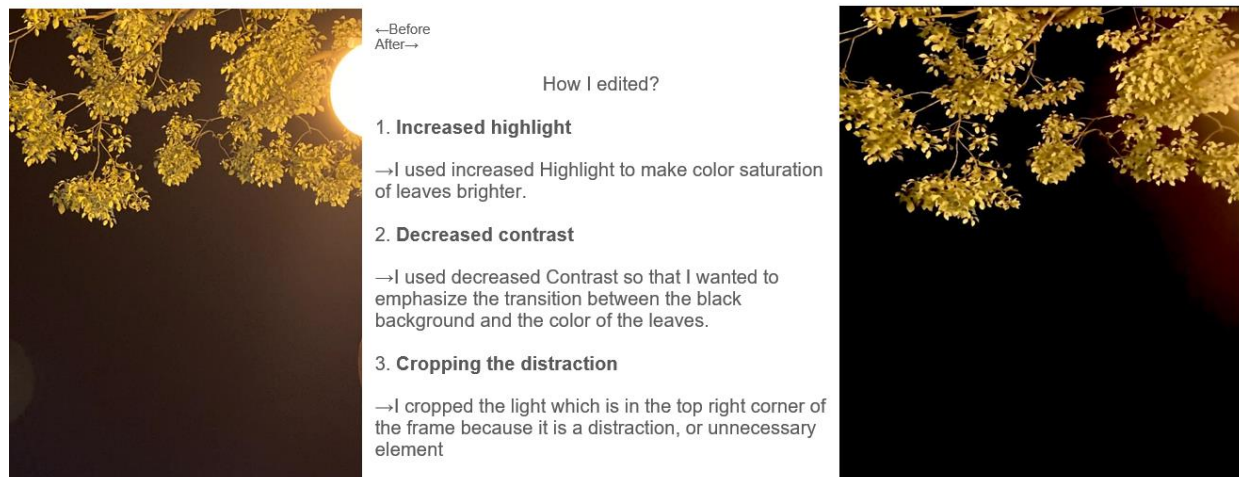
Photo1 Before/After

Figure 4, A student demonstrating vocabulary knowledge in a Powerpoint slide

In Figure 4, we can see that the student has learned and is using new vocabulary words such as "highlight," "saturation," "contrast," "transition," and "distraction." These terms were previously unfamiliar to the students, as indicated by their difficulty with the vocabulary quiz at the beginning of the course. The second graphic in Figure 5 provides further evidence of the students' use of these new terms.

Figure 5, A student demonstrating vocabulary knowledge in a Powerpoint slide

The language used in Figure 5 suggests that the student has demonstrated a thorough understanding of photography and photographic techniques, as evidenced by their ability to use technical terms such as composition, contrast, saturation, and gradation in a meaningful way. This indicates that the student has learned and retained a significant amount of information during the course.

Conclusion

In this research, a CLIL-focused approach to language classes, especially in relation to vocabulary acquisition, was found to be highly effective. Despite varying opinions on the balance between language and content in CLIL classes, the study showed that explicitly incorporating vocabulary work and emphasis into class materials over the course of 16 weeks had a positive impact.

In summary, the research showed that when a CLIL approach was adopted in a content-based course for non-native English speakers, the students performed better and were able to better meet the language and vocabulary expectations. This suggests that CLIL can be an effective method for teaching language in content-based classes.

References

Ball, P., Lindsay, D., Lasagabaster, D., & Ruiz de Zarobe, Y. (2010). Teacher training for CLIL in the Basque country: The case of the Ikastolas - in search of parameters. *CLIL in Spain. Implementation, Results and Teacher Training* (pp. 162-187). Cambridge Scholars Publishing.

Coyle, D. (2007). Content and Language Integrated Learning: Towards a Connected Research Agenda for CLIL Pedagogies. *International Journal of Bilingual Education and Bilingualism*, *10,* 543–562.

Coyle, D., Hood, P., & Marsh, D. (2010). *Content and Language Integrated Learning*. Cambridge University Press.

Dalton-Puffer, C. (2007). *Discourse In Content and Language Integrated Learning (CLIL) classrooms*. John Benjamins.

Ebbinghaus, H. (1913). *Memory: A Contribution To Experimental Psychology* (Translated by Ruger, H. A., & Bussenius, C.) (Originally published in 1885). Retrieved from http://www.psychclassics.yorku.ca/ Ebbinghaus

Eurydice. (2006). *Content and Language Integrated Learning (CLIL) At School in Europe*. Brussels, Belgium: European Commission

Hüttner, J., Rieder-Bünemann, A., Dalton -Puffer, C., Nikula, T., & Smit, U. (2010). A cross-sectional analysis of oral narratives by children with CLIL and non-CLIL instruction. *Language Use and Language Learning in CLIL Classrooms* (pp. 61-80). John Benjamins.

Marsh, D., & Wolff, D. (2007). *Diverse Contexts-Converging Goals*. Peter Lang GmbH

Marsh, D. (Ed.). (2002). *CLIL/EMILE the European Dimension*. University of Jyväskylä.

Mehisto, P., Marsh, D., & Frígols, M. J. (2008). *Uncovering CLIL: Content and Language Integrated Learning in Bilingual and Multilingual Education*. Macmillan.

Nation, I. S. P. (2008). *Teaching Vocabulary: Strategies and Techniques*. Heinle Cengage

Learning. Nation, I. S. P. (2011). Research into practice: Vocabulary. *Language Teaching*, *44*(4), 529-539. https://doi.org/10.1017/S0261444811000267

Nation, I. S. P. (2013). *Learning Vocabulary in Another Language* (2nd ed.). Cambridge, UK: Cambridge University Press.

Navés , T., & Victori, M. (2010). *CLIL in Catalonia: An Overview of Research Studies*, 30-54 Nurmukhamedov, U. (2012). Online English-English learner dictionaries boost word learning. *English Teaching Forum*, *4*, 10-15.

Pérez Vidal, C. (2009). The integration of content and language in the classroom: A European approach to education (the second time around). In E. Dafouz, & M. Guerrini (Eds.), *CLIL Across Educational Levels* (pp. 3-16). Richmond.

Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, *12*(3), 329-363. https://doi.org/10.1177/1362168808089921

Ting, Y. L. T. (2010). CLIL appeals to how the brain likes its information: examples from CLIL-(Neuro) Science. *International CLIL Research Journal*, *1*, 1-18.

Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied Linguistics*, *28*(1), 46-65. https://doi.org/10.1093/applin/aml048

Weltens, B., & Grendel, M. (1993). Attrition of vocabulary knowledge. In R. Schreuder, & B. Weltens (Eds.), *The bilingual lexicon* (pp. 135-156). John Benjamins.

West, M. (1953). *A General Service List of English Words*. Longman.