MASTEROPPGAVE

The effect of learner autonomy and awareness of learning strategies on vocabulary acquisition

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ABSTRACT

Screens dominate school children's everyday life from smart phones at home to computers at school, but are they necessary for vocabulary acquisition, or can low tech strategies such as writing by hand suffice? Instead of ruling out CALL (Computer Assisted Language Learning) OR handwriting, I believe learner awareness of strategies and autonomy is the key for positive learning outcomes. Do the pupils improve their results after becoming more familiar and conscious of working with the strategies Quizlet and writing by hand, and then given the autonomy to choose their preferred strategy? To test my hypothesis, that learner autonomy and awareness of learning strategies are more important than the strategy itself, I conducted an intervention study in three Year 8 English classes with 75 participants, collecting data from vocabulary tests and two surveys. The principal findings indicate support for my hypothesis, with the pupils scoring best in the delayed post-test in which they had autonomy to choose strategy. Likewise, a majority of the pupils reports to have become more conscious about their preferred strategy. However, only a third reports to have changed strategy. Further research could investigate whether there is any long-term effect of working with strategies, or if a continued focus on learning strategies over time is necessary to support pupils' development as life-long learners.

1. INTRODUCTION

1.1 Background

One of the first courses I did during my Master in Foreign Languages in School was Communication and it included how to incorporate digital communication resources into the classroom. This was in the autumn of 2017 when digital literacy had been a part of the core curriculum of the English subject for several years (LK06, Udir, 2006), and the school where I taught was distributing laptops to all the pupils. What interested me then and what interests me still is the dichotomy between perceived usefulness and actual learning outcome of digital tools. Did the pupils learn more with the aid of digital tools? Much as I liked to try out new programs, apps and tools and dive into new digital possibilities, there was always a lingering question as to whether they really served their purpose of learning or whether traditional approaches might be just as efficient. By then I had already been using digital tools such as the language learning app Duolingo and had also started using the digital flashcard program Quizlet[1] for vocabulary practice with my Spanish and English classes. This initial interest led me to focus my 2019 project paper on the use of Quizlet versus the use of handwriting in vocabulary acquisition and investigate which was the most effective strategy. The hypothesis was that a digital approach, Quizlet, would be more effective than a traditional handwriting approach since Quizlet provided a variety of ways of practicing vocabulary and included a gamification aspect thought to motivate pupils (cf. Barr, 2016; Dizon, 2016; Kassem, 2018; Anjaniputra & Salsabila, 2018; Sanosi, 2018). 59 respondents of Year 9 from three different classes participated in the study. The classes were tested using different approaches with one class using handwriting, one Quizlet and in the last class the pupils could choose for themselves what learning strategy they preferred: practicing by hand or using Quizlet. My study had a test-post-test design, and although my results were far from crystal clear in terms of one strategy distinguishing itself over the other, the tentative conclusion was that awareness of vocabulary learning strategies in combination with autonomy to choose strategy provided a better result for the pupils than either a traditional or digital approach (Johannessen, 2019). One lingering issue was the difficulty of drawing statistical evidence from a limited number of participants, as there were only about 20 pupils per group for the post-test and even fewer participated in the delayed post-test (Johannessen, 2019, p. 16, 23).[2]

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[1] Quizlet as a digital tool will be presented in Chapter 2.
[2] For the post-test there were 21 participants in the handwriting group, 20 in the Quizlet group and 18 in the group that could choose. The delayed post-test had a total of 53 participants, with 16 pupils in the Quizlet and

However, the project study still included more participants than several other similar studies and contributed to fill a research gap by including lower-secondary pupils in Norway, a group that has not received much attention by researchers of applied linguistics.

1.2 Hypothesis

The result from my project study inspired me to continue working with vocabulary learning and learning strategies with my classes, and the issue of few participants led me to create an intervention study on larger scale as the subject for the present thesis. Moreover, the interesting, although tentative, finding of the project study, led me into changing my focus on one strategy outweighing the other to investigating what impact the awareness of *different* strategies has on the pupil's learning outcome. This has led me to formulating the following hypothesis: Learner autonomy and awareness of learning strategies are more important than the strategy itself.

It follows from my hypothesis that pupils improve their results in vocabulary acquisition as they become more familiar and conscious of different possible ways of working with vocabulary, and then are given the free choice between different strategies. This also ties in with the new Norwegian curriculum in English where "the ability to use language learning strategies" is a core element in language learning and also a competence aim after Year 10 (LK20, Udir, 2020). For pupils to gain the ability to use language learning strategies, teachers need to introduce different strategies to their pupils, make the pupils conscious of possible strategies, and then allow the pupils the autonomy to choose the best strategy for themselves. As stated in the Core curriculum "Learning to learn": "The teaching and training shall fuel the pupils' motivation, promote good attitudes and learning strategies, and form the basis for lifelong learning" (LK20, Udir, 2017).[3]

To test my hypothesis, I designed an intervention study with a test-post-test design for my three Year 8 English classes. My study includes two surveys, questioning the pupils about their strategies. In addition, the pupils practiced three different vocabulary sets using two different strategies, handwriting and Quizlet, and afterwards I tested the pupils' vocabulary retention, i.e., how many of the words they remembered and could translate into English. In

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the free choice group, and 21 in the handwriting group (Johannessen, 2019). This is below the minimum number of 30 participants for quantitative data analysis suggested by Hatch and Lazarton (1991, cited in Phakiti, 2015, p. 37).

[3] From the English version of the Core curriculum, retrieved from https://www.udir.no/lk20/overordnet-del/prinsipper-for-laring-utvikling-og-danning/2.4-a-lare-a-lare/?kode=eng01-04&lang=eng. Accessed 15.08.21.

Chapter 3 I will describe the preparations and procedures in depth, but I will briefly explain the design of the study here. The results were measured by post-tests and delayed post-tests. Each vocabulary set was tested twice, once in a post-test, and then in a delayed post-test a week later. The surveys were carried out to gain insight into the pupils' vocabulary acquisition strategies prior to their participation in the study and then afterwards to see whether working with different approaches made them change their strategies. To limit the scope of my study, the strategies I chose to focus on were handwriting and Quizlet, a program with digital flashcards and multiple possibilities for revising vocabulary (Section 2.3). The pupils used handwriting for practicing the first vocabulary set, Quizlet for the second, and ultimately, they were free to choose strategy when practicing the last vocabulary set.

The expected conclusion from this study based on my hypothesis is that pupils will show improved results after they have worked on different vocabulary acquisition strategies and then been given the autonomy to choose their preferred strategy for the last vocabulary tests. Furthermore, it is expected that the students show a greater awareness of different vocabulary learning strategies after actively working with different strategies.

1.3 Overview of study

In the next chapter, Chapter 2, I will present relevant previous research and theory regarding vocabulary acquisition. In Chapter 3 I will describe preparations, procedures, and challenges for both surveys and vocabulary tests, before moving on to presenting the results in Chapter 4. Finally, I will discuss my results in light of previous research and my own hypothesis in Chapter 5.

2. THEORETICAL BACKGROUND

In this part, I will review relevant literature and previous research, starting with a brief presentation of some empirical studies on vocabulary acquisition and retention, before moving on to vocabulary acquisition theory and computer technology in language acquisition. The latter is often referred to as Computer Assisted Language Learning, or CALL.

2.1 Literature review

Over the past couple of decades, there has been a rapid development in technology and in the use of new technology in language learning. One central area of language learning is

vocabulary acquisition, therefore many theories, and much research revolve around how learners acquire new vocabulary. This concerns not only their first language, L1, but also when they are learning a second, L2, or a foreign language (Hirsh, 2015, p. 369; Webb & Nation, 2017).[4] In terms of empirical studies, researchers based in Asia have been among the first to explore new technological possibilities in language learning, but other recent studies from for example Europe have also emerged adding to the general knowledge. The following literature review does not intend to give a complete overview, but briefly to mention a few studies relevant for this project, in other words studies that focus on computer based and/or traditional vocabulary learning strategies and their outcomes.

As mentioned, many empirical studies have been carried out in Asia, and one trait these studies have in common is that the participants are older teenagers in high school/secondary school or university students (e.g., Barr, 2018; Dizon, 2016; Hirschel & Fritz, 2013; Kassem, 2018; Nakata, 2008; Sanosi, 2018). Another common trait is that most studies that have been carried out have a limited number of participants (e.g., Barr, 2018; Dizon, 2016), or a skewed population, the latter concerns most notably two studies which included only male participants: one from Saudi Arabia (Sanosi, 2018) and one from Japan (Nakata, 2008). Several of these studies focus on the motivational aspect of the use of technology in language learning, for example Quizlet, and conclude that its use promotes learner autonomy and collaboration between students (Barr, 2016, p. 47; Dizon, 2016, p. 52; Kassem, 2018, p. 256; Anjaniputra & Salsabila, 2018, p. 1, 10). The "gamification" aspect is also supposed to have a positive effect on language learning. Many studies suggest that using Quizlet has a favourable effect on vocabulary learning (e.g., Barr, 2016; Dizon, 2016; Kassem, 2018; Anjaniputra & Salsabila, 2018; Sanosi, 2018). However, other studies have added more diversity to the findings. In addition, one study also included younger informants, including pupils in lower secondary school. These studies offer a less favourable view on the effect of technology on vocabulary acquisition (Kalecky, 2016; Sage & al., 2020; Skattenborg, 2020). Also it has to be added that in a world where computer and mobile technology is highly regarded, researchers in neurosciences, far from being in the field of education and linguistics, have made interesting discoveries which may have an impact on our view on learning. One study found that handwriting optimizes learning compared to writing using a keyboard because there is "less extensive cognitive processing" when taking notes on a laptop compared to writing notes by hand (Mueller & Oppenheimer, 2014, quoted in van

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[4] Note that a second language, L2, can be a foreign language, but it can also refer to another language spoken in the country of the learner (cf. Webb & Nation, 2017).

der Meer & van der Weel, 2017, p. 2). This is interesting because we now have the possibility to observe which brain areas are active doing different activities and thereby gain valuable insight. However, Mueller & Oppenheimer (2014, cited in van der Meer & van der Weel, 2017) constitutes only a limited study so far. Another study of interest is Skattenborg (2020), carried out in Norway among lower secondary pupils, and therefore in a similar context to my intervention study. Skattenborg (2020) investigated the use of Quizlet versus a traditional approach to vocabulary learning, looking at pupils' and teachers' attitudes towards digital versus traditional tools. The results indicate a gain in long-term vocabulary retention, although her conclusion is that Quizlet only marginally contributed to vocabulary acquisition and was not necessarily more efficient than traditional approaches, despite being a popular digital tool among students (Skattenborg, 2020, p. 58).[5] This is corroborated by the results of a European master thesis from the Czech Republic which found that the use of Quizlet did not lead to increased vocabulary learning compared to using a vocabulary notebook among the participating upper secondary pupils (Kalecky, 2016).[6] An American study from 2020, focusing on using Quizlet's digital flashcards versus paper flashcards found that the learning outcome was similar regardless of tool (Sage et al., 2020).[7] However, the results of a large study of 140 Japanese first-year university students, found that in terms of long-term retention, CALL-groups perform slightly better than vocabulary notebook groups (Hirschel & Fritz, 2013). In other words, the findings in empirical studies vary somewhat, but the technology is available, and it seems premature to deem Quizlet or other CALL-programs less useful than other strategies in vocabulary learning. Therefore, this study takes on an approach that focuses on making the students develop their awareness of different available vocabulary learning strategies. A central part of this study is to investigate how pupils respond to working with two different vocabulary acquisition strategies and whether this influences their metacognition and ability to choose the best strategy for themselves.

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[5] Quizlet as a tool was also less popular among the teachers interviewed than the pupils. It should also be mentioned that the Quizlet group included 39 participants for the pre-test and 35 for the delayed post-test, while the control group had 46 and 45 participants respectively (Skattenborg, 2020).

[6] Kalecky's study included 24 Quizlet users and 28 vocabulary notebook users, aged 15–18 (Kalecky, 2016, p. 79).

[7] This study included 150 US undergraduate students, and it also focused on the difference of using Quizlet on a smartphone versus a computer, in addition to paper flashcard (Sage et al., 2020).

2.2 Vocabulary acquisition

Acquiring new vocabulary is a continuous process when learning any language. It is a process of lifelong learning, whether learning a L1, or L2, as all languages develop over time and even L1 users are estimated to have partial knowledge of the full lexicon of their L1 (Goulden et al., 1990, quoted in Hirsh, 2015, p. 372; Schmitt, 2000, p. 3)[8]. However, when learning an L2[9], acquiring new words or "enough words" might be challenging, and therefore vocabulary learning has become the focus of both theories and empirical research over the years (Nation, 2001; Paltridge & Phakiti (eds.), 2015, Webb & Nation, 2017).

First, what does "enough words" mean? It can mean to be able to have a conversation, to watch a children's movie, to listen to a podcast, to read a novel or a newspaper article in English. In other words, that depends on the learner and the goal. Moreover, it is possible to estimate a threshold of vocabulary knowledge for each of the above listed examples (Nation & Chung, 2011, p. 544; Nation & Beglar, 2007, p. 9). However, to estimate a number for vocabulary knowledge is complicated because it is necessary to define how to count vocabulary first, and words can be counted in different ways. It might seem straightforward, but even to define what a word is can be challenging, particularly in English with its tendency to convey meaning through multiword units (Schmitt, 2000, p.p 1–2). As the term "word" is ambiguous other terms have been coined such as *lexeme* which is "an item that functions as a single meaning unit, regardless of the number of words it contains" (Schmitt, 2000, p. 2). In addition, grammar and morphology complicate matters further because it may be difficult to decide what to count e.g., all the inflections of a verb as one or several words. The latter, counting every word form as a separate item, is termed to count with *word types*, the former is to count with *lemmas*, in which headwords and inflections are counted as one item together with the base word (Schmitt, 2000, p. 2)[10]. Researchers have used both word types and lemmas to estimate vocabulary size (Webb & Nation, 2017, p. 44). However, neither word types nor lemmas consider the way vocabulary items seem to be interconnected in the mind, grouped together as members a of *word family* consisting of a base word with its inflections and derivatives (Schmitt, 2000, p. 2). Learning a new word family indicates increased lexical knowledge. Therefore, when being interested in vocabulary acquisition and growth of

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[8] Lexicon here refers to the entire vocabulary of a language (Schmitt, 2000, p. 3).

[9] A second language, or L2, can refer to learning a second or foreign language in different settings (Webb & Nation, 2017). In this study it is used to refer to learning English as a foreign language (EFL), even if English is the L3 or even L4 of some pupils.

[10] In addition, the term *token* is used when counting every running word in a text, which is useful for estimating the number of words in a document or how many words the average person speak, but less useful to estimate vocabulary size (Nation, 2001, p. 7).

vocabulary knowledge, it is fruitful to look at word families and frequency (Webb & Nation, 2017, pp. 6–9, 44).

Frequency is a way of counting how often words occur in speech or writing[11]. Today large databases, for example Corpus of Contemporary American English (COCA) and British National Corpus (BNC) help us determine word frequency[12]. A common distinction is made between high frequency and low frequency words, in addition to academic and technical words, with a knowledge of the 2,000 most frequently used words regarded as a critical threshold for communication, i.e., to be able to have a simple conversation (Hirsh, 2015, p. 372). As already mentioned, when assessing both the number of words in a language and the vocabulary size of a language speaker, it is common to group words into word families (Nation, 2001, p. 8)[13]. The word families are counted by thousands, for example belonging to the 1,000 most common word families, which are the word families with the highest frequency. The grouping by thousands is referred to as K-levels. K1 constitutes the 1,000 most common words, K2 the 2,000 most common words and so on (Laufer & Nation, 1999, p. 35).[14] In fact, it is estimated that K1-vocabulary accounts for about 75% of the words used in written texts and an even higher percentage of informal speech (Laufer & Nation, 1999, p. 35). Keeping this in mind, building a vocabulary for easy conversation should be well within reach for most Norwegian lower secondary students, and secure them "enough words" for this task. However, analyzing different types of texts, it is estimated that the vocabulary size in for example children's movies is about 6,000 words, a running conversation 7,000 words, furthermore 8,000 in newspapers and about 9,000 words in novels (Nation & Chung, 2011, p. 544; Nation & Beglar, 2007, p. 9)[15]. Thus, the consequence of vocabulary size for a L2 learner is that in order to understand and communicate meaningfully a level of at least 7,000–8,000-word families is necessary, and for reading one needs close to 9,000.

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[11] In the following the term "word" will be used but keeping in mind the challenges connected to the definition and referring to other terms when a clarification is necessary.

[12] British National Corpus: https://www.english-corpora.org/bnc/, and Corpus of Contemporary American English: https://www.english-corpora.org/coca/. Accessed 04.05.21.

[13] It should be mentioned that even though Nation states that: "A word family consists of a headword, its inflected forms, and its closely related derived forms," he also admits that it can be difficult to decide what should be included in a word family or not (2001, p. 8).

[14] See also: https://vocabulary.one/en/frequency/intro. Accessed 23.08.21.

[15] Nation & Beglar (2007) do not specify if this number covers novels for adults but as they start by listing children's movies at 6,000-word families and end up with novels at 9,000-word families, it is natural to assume that they are referring to novels for adults (p. 9). In comparison, in *Three Little Pigs*, a children's book for young native speakers, close to 90% of the words come from the 2,000 most frequent words (Nation, 2001, p. 152–153).

When reading, a common strategy for pupils is to infer meaning from context, or guessing, but still it is estimated at least 98% coverage of the vocabulary is necessary to be able to read for example a novel in English independently, making guessing an inadequate strategy if the pupil understands for example 80% of the words (Hu & Nation, 2000, cited in Nation & Chung: 2011, p. 543; Laufer, 2003, p. 569). Furthermore, students tend to overestimate their own success rate at creating meaning from context, often because they mistake homonyms or false cognates for words in their L1 (Laufer, 2003, p. 570). This means that students do not necessarily recognize a word as unfamiliar because they misinterpret it because it resembles a word in the L1 or a word in a L2 they already know. One way of solving the issue of finding accessible texts for young L2 learners is to use graded readers since texts for native teenage readers might be too difficult (Nation, 2001, p. 154).

Even if the vocabulary level of texts aimed at native readers is too high for some L2 learners, it is my experience as an English teacher in lower secondary school that Norwegian pupils show great variation of vocabulary size in their L2, English. It is interesting to assess how many word families an average Norwegian lower secondary pupil knows, in other words estimate the average pupil's vocabulary size. In my forementioned project study 42 Year 9 students from lower secondary completed Paul Nation's Vocabulary Size Test and their results showed an average vocabulary size of 6,600-word families, with a median score of 6,250 (Johannessen, 2019, p. 15). It follows that expanding students' vocabulary will enable their continued learning and help them with activities that are not only related to school like reading and writing texts in English, but also to understand a movie in English without reading subtitles in Norwegian. It should be added that learning new words also reinforces learning even more words in the target language due to "the incremental nature of vocabulary acquisition" (Schmitt, 2000, pp. 116–117). The question is, how can teachers support this incremental growth, furthermore, how do we ensure that our pupils learn new vocabulary? Nation (2007) argues that activities in language learning should consist of four strands: meaning-focused input, meaning-focused output, language-focused learning, and fluency development (p. 1). Furthermore, he makes a distinction between incidental and intentional learning in vocabulary acquisition (Nation, 2001, p. 232). Language-focused learning is intentional and involves deliberately learning various language features i.e., spelling, grammar, pronunciation, and vocabulary (Nation, 2007, p. 5). Intentional learning activities conducted for vocabulary development include deliberate techniques such as learning from vocabulary notebooks, word lists, word cards and which currently include various digital tools (see e.g. Barr, 2016, p. 37; Hung: 2015, p. 107; Kassem, 2018, p. 250; Nakata: 2008, p. 4).

Incidental learning, on the other hand, does not primarily focus on deliberate vocabulary practice. It is also worth noting that for example incidental strategies like extensive reading and other language learning activities not directly aimed at vocabulary learning echoes the assumption that most vocabulary learning happens in a natural context (Kraschen, 1989; Nakata, 2008, p. 5).

For a L2 student to learn a new vocabulary item, a new word must be "noticed" before it can be learnt. This is the so-called noticing hypothesis formulated by Schmidt (Gass & al., 2013, p. 265). The problem is that for a learner to come across words in a natural setting, i.e., learn words from extensive reading, the reading material must ensure that the student comes across the vocabulary item 10 times or more according to cognitive theories (Webb & Nation, 2017, pp. 65–66). This might not sound as much, but research has shown that the student must read an enormous number of words, 200 000 to be specific, or the equivalent of nine books, to learn about 100 words (Nation and Wang, 1999, cited in Laufer, 2003, p. 573, Webb & Nation, 2017, p. 51). The criticism is therefore that incidental learning strategies are "slow and haphazard" and specifically reading does not result in much vocabulary acquisition on its own (Nakata, 2008, p. 4; Laufer, 2003. p. 583). This has led to a renewed interest in intentional strategies, for example vocabulary list learning and various forms of CALL programs because they provide a more efficient way of expanding students' vocabulary (Hirschel & Fritz, 2013, p. 640; Nakata, 2008, p. 5).

2.3 Language acquisition using technology

CALL and the similar concepts of Mobile Assisted Language Learning (MALL) and Bring Your Own Device (BYOD) have become increasingly integrated parts of education around the world and thus created much interest and triggered new research from scholars (Dudeney et al., 2013; Kassem, 2018; Stockwell, 2007). The accessibility to computers and other digital devices and tools varies. However, access to mobile devices such as mobile phones is increasingly common worldwide. In Norwegian schools today, a majority of the pupils are provided with a digital device in form a laptop or a tablet by the school, which is the case for the pupils at my school. In fact, for the school year 2020–2021 it is estimated that 8 in 10 pupils in Norwegian schools have been provided with their own digital device, usually a

tablet or a portable computer.[16] This, in many ways, facilitates CALL and presents numerous possibilities for working with Nation's four strands, including both incidental and intentional strategies. Although technology represents many possibilities for learning, it also brings with it many challenges, including pedagogical, practical and technological (Dudeney & al., 2013; Kassem, 2018; Stockwell, 2007). A major pedagogical challenge is to make sure the students understand what they are supposed to do and furthermore to stay on task, instead of for example joining a chatroom or live streaming from the classroom without the teacher's knowledge. Some tools are difficult for the teacher to explore before trying them out with pupils, and this means that sometimes one just has to try them out in class without really mastering the tools oneself first, in my experience this includes for example ReadTheory, BookCreator, various recording apps and Quill.[17] Other practical and technological challenges include technical problems like an unstable internet connection or network problems, programs or apps that do not work as anticipated or malfunction, and of course pupils and teachers lacking technological knowledge making it harder to benefit and learn from the technology available (Dudeney & al., 2013; Kassem, 2018; Stockwell, 2007). An important aspect of the technological development is to help the students assess which learning strategies they should pursue and whether digital devices work for them, or whether more traditional strategies might work just as efficiently. The focus of this study is traditional versus digital vocabulary learning strategies, and in the next section, the digital tool used in this study, Quizlet, will be presented more in-depth.

Quizlet, originally created in 2005 by Andrew Sutherland to enable students to study French, has transformed into a digital platform with an estimated 50 million monthly users in 2020.[18] As with many digital tools today, there is a free and a paid version available.[19] It should be noted that the free version of Quizlet works well, although the paid one has more

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[16] Information retrieved from UiO, FIKS – Forskning, innovasjon og kompetanseutvikling i skolen: *Digital dekning i Norges 100 største kommuner:*
https://www.uv.uio.no/forskning/satsinger/fiks/kunnskapsbase/digitalisering-i-skolen/digital-dekning-i-norges-100-storste-kommuner/ Accessed 31.07.21.

[17] These are all programs or apps that I have tried out with my classes to a certain degree, ReadTheory is for building reading comprehension, BookCreator is an online publishing tool, and Quill is a program for working with grammar. Among the recording apps I have been using with my pupils are Screencastify, Screencast-O-Matic and Wevideo.

[18] Numbers according to the Quizlet homepage and their impact report. Retrieved from https://quizlet.com/mission. Accessed 31.07.21.

[19] This represents some issues regarding the principle in Norway of free education and whether teachers should pay out of their own pocket for digital tools they use at work, but those are questions for another type of paper.

functionality, i.e., no limitations to the number of classes a teacher can create, and the possibility to track pupils' progress.[20]

A possible reason for Quizlet's success compared to competing digital tools might be that it is easy and intuitive to use, and that it combines different possibilities for practicing vocabulary. The digital flashcards include the possibility to listen to the pronunciation of a word, and has the additional option of adding illustrations and practice in different ways with the options Learn, Write, Spell, Test, Match and Gravity (see Appendix 8 for screenshots of some of the options). Another possible key to Quizlet's popularity is that it is easy to share your vocabulary sets with others. Furthermore, your pupils are free to create their own vocabulary sets. Yet another factor is gamification, Quizlet has two gamified self-study options: Match and Gravity, and a third in-class option called Live, in which students can compete against each other individually or in groups in vocabulary knowledge. All in all, this makes Quizlet an effective vocabulary learning digital tool.

On the other hand, whether Quizlet promotes vocabulary acquisition more effectively than a pen and paper approach is debatable as not all studies applaud digitalization unanimously. When it comes to acquiring new vocabulary, some studies suggest that the traditional approach of having a vocabulary list or keeping a vocabulary notebook written by hand is just as or equally effective for the learning outcome (cf. Kalecky, 2016; Skattenborg, 2020; Sage et al., 2020). My claim is that an approach focused on creating awareness of different learning strategies and promoting learner autonomy will have a greater effect on outcome than either a digital or pen and paper approach.

2 METHOD AND MATERIAL

In this chapter, I will first describe the preparation, process, and challenges of collecting data for this master thesis project, before I present the data (Chapter 4), which was collected through six different vocabulary tests and two surveys. The data was collected in accordance with existing guidelines created by The Norwegian National Research Ethics Committees,

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[20] Quizlet Teacher subscription. Retrieved from: https://quizlet.com/upgrade?source=tabs. Accessed 31.07.21.

NESH.[22] Through including this chapter where I accurately provide details of method, materials, and procedures, I seek to increase the reliability and validity of my study, making it possible to replicate it if desirable (cf. McKay, 2006, pp.12–13; Gass, 2016, pp. 107–111).

3.1 Preparations

The data for this study was collected from my three English classes in Year 8 with 79 potential participants. Originally the study was planned to be conducted with my pupils in Year 10, the same classes which took part in the forementioned project in spring 2019. However, when the pandemic forced a lockdown in Norway in March 2020, this caused practical problems for collecting data without compromising the validity and reliability of the research (cf. Phakiti , 2015, pp. 30–31; Gass, 2015, pp.107–111). Therefore, in the autumn of 2020, when the collection of data could be resumed, it was with participants from my three new English classes in Year 8.

The present study formed an integrated part of the classroom instruction, both by making the pupils use different strategies when practicing new vocabulary and that the vocabulary was taken from different texts and videos the pupils worked with later in class. In other words, working with the vocabulary was not only to prepare for vocabulary tests, but also to provide opportunities for retrieval of new words in context (Nation & Webb, 2017, p.70). According to Nation and Webb (2017) retrieval is a powerful learning condition (p. 70). Choosing vocabulary that the pupils would work with in class was also a deliberate choice meant to serve as a motivation for the pupils, as many pupils often focus on whether activities will be useful for them (Nation & Webb, 2017, p.133). Most of my new pupils seemed to be interested and happy to be my respondents as I introduced and explained my project to them. Introducing the pupils to my project was also intentional in order to make them become more aware of their own preferred strategies and take ownership of the project (cf. Pinter, 2015, p. 445). As stated by Webb & Nation (2017): if pupils "understand the value of what they are doing to learn vocabulary, then they are likely to be more engaged" (p. 133).

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[22] Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology, 2019, np. Retrieved from https://www.forskningsetikk.no/en/guidelines/social-sciences-humanities-law-and-theology/guidelines-for-research-ethics-in-the-social-sciences-humanities-law-and-theology/. Accessed 11.08.21.

Restarting the project with new respondents who were in Year 8 and thus 12 to 13 years old, meant that I had to seek permission from their parents to be able to collect and use data (NESH, 2019; Appendix 1). In the end this meant that a few respondents were excluded from the material even though they had participated in vocabulary practices and tests because this would not comply with the existing regulations as they had not handed in a consent form. In total, 75 respondents handed in the consent form and could thereby be included in the study. However, not all the pupils were present during all the practices and tests (see section 3.2.2), so the number of respondents vary from 72 to 66 respectively for the results of the different tests (Table 7). This is another challenge when working and doing research in school, especially during a pandemic, that occasionally not all pupils are present due to illness, doctor's appointments or similar, making a laboratory-like environment for testing impossible in the sense that the number of respondents may vary from one day to another. Still it is quite a high number to include around 70 respondents when looking at similar studies mentioned in the literature review section (see for example Barr, 2018; Dizon, 2016; Kalecky, 2016; Skattenborg, 2020) and it is well above the minimum of 30 participants suggested by Hatch and Lazarton (1991, cited in Phakiti, 2015, p. 37). A total of 50 pupils completed all six vocabulary tests (Appendix 11). As for the two surveys, 69 pupils responded to the first survey, and 71 to the second (Tables 1–3 and 8–13; Appendices 12–13). A high number of participants adds to the external validity of this study, increasing the likelihood of generalizability to a wider population of pupils (cf. Gass, 2016, p.110; McKay, 2006, p. 12). To be more specific, this high number of participants may broaden the knowledge of how different vocabulary strategies work for pupils in lower secondary school in Norway even if in terms of statistical research an even higher number of participants would be desirable.

3.2 Empirical and statistical methods

As already mentioned, this study is an empirical interventional study using the statistical data from two surveys and the results of three post-tests and three delayed post-tests. The data from the post-tests and the delayed post-tests come from three different vocabulary sets. As this study was carried out in an educational setting, it qualifies as a quasi-experimental study, because I relied on data from my own three classes, i.e., a sample of convenience, instead of a random selection of respondents (see Hellevik, 1993, p. 371; Gass, 2015, p. 105; McKay, 2006, p. 37). In empirical research, randomization is used for the researcher to be able to generalize about a larger population and the goal is to eliminate the effect of extraneous

variables, e.g., avoid that the results are an effect of a different variable than the one being tested (Gass, 2015, p. 105). This is of course always a challenge in research. Nevertheless, in Norway class placement in lower secondary school is not based on academic merit, in addition, the pupils in my classes come from different geographical parts of the local community, and therefore it could be argued that they are likely to be representative for their age group even if they were not randomly chosen but picked because they were in one of my classes. Describing the population and giving details about the materials, methods, and the procedures, as well as having a large sample size, all add to the external validity of this study (Gass, 2015, p. 110). However, results should always be treated with some caution. In the following parts I will first present the surveys, then the vocabulary tests, before moving on a discussion of the methods and finally presenting the results of surveys and tests.

3.2.1 Surveys on vocabulary learning strategies

Notions such as language learning strategies and awareness are abstract psychological constructs that are difficult to observe directly, and "therefore, survey research instruments allow researchers to operationalize (and consequently measure) these constructs" (Brown, 2001, cited in Wagner, 2015, p. 83). When pupils practice and teachers test vocabulary, the results can tell us something about the effect of different strategies, but the results cannot inform about how using different vocabulary learning strategies is perceived by our pupils. Test results do not give any information to changes in behaviour or attitudes, i.e., as to whether the pupils' perception of the different strategies has changed and whether they have become more aware of what strategy works best for them (McKay, 2006, p. 35). Therefore, the respondents were given two surveys to answer: one survey was conducted before starting with the vocabulary practice and tests in the autumn of 2020 (Appendix 12) and the second survey was carried out after completing the intervention in the spring of 2021 (Appendix 13). The surveys were created using SurveyMonkey and distributed to the pupils via links on their computers. Both surveys were answered anonymously in class, with questions in Norwegian to avoid confusion caused by language (McKay, 2006, p. 39; Wagner, 2015, p. 95). In addition, I was present in class to prevent misunderstandings. The reason for including these surveys was to gain insight in what strategies the pupils preferred prior to participating in the intervention study, and furthermore, to investigate if their participation led to an increased level of awareness in the use of different learning strategies.

For the first survey, I formulated questions enquiring the pupils about both what vocabulary learning strategies they had used in the past, and what strategies they usually preferred to use. Furthermore, the pupils were asked to rate different strategies. For the two questions about strategies, the pupils were able to tick off all the strategies that were relevant for them (Tables 1–2). For the rating question, the pupils could rate all the seven vocabulary learning strategies on a scale from 1-7 or "Not relevant" (Table 3). This caused some confusion as the pupils were unsure about how to rate strategies, and there were some questions regarding how to answer. However, 68 out of 69 pupils answered the question, although all the pupils did not rate all the strategies and therefore the numbers vary from 66 – 58 pupils rating a given strategy (Table 3). The first survey also functioned as way of introducing the pupils to the project (cf. Pinter, 2015, p. 445). The results of the three questions will be presented in more detail in Tables 1–3 in the results chapter section 4.1 (Appendix 12).

The second survey was distributed to the pupils once all the vocabulary post-tests and delayed post-test were completed in the spring 2021. This survey was similar to the first but included questions which focused on the experience the pupils had had with different vocabulary learning strategies (Appendix 13). The pupils had to answer a total of five questions and take a stand to a statement. Generally, there were less questions from the pupils during this survey than the first, probably because they had been answering a similar survey before. Furthermore, the intervention had been completed. The second survey included the three questions from the first survey, furthermore, I enquired about whether they had changed their learning strategy, if they had become more aware of their use of learning strategies and whether they preferred to write by hand, a traditional strategy, or to use Quizlet, a digital strategy. Again, for the two questions about strategies (Tables 8 and 11), the pupils were able to tick off all the strategies that were relevant for them. The rating question also had the same answer options of rating strategies from 1-7 or "Not relevant," but for the new questions only one answer option was available. In the result section 4.3 and in Tables 8-13 there is a thorough presentation of the results (Appendix 13).

The reason to include more questions in the second survey was to find out whether the process of participating in this study had resulted in any of the pupils changing their learning strategies or making them more aware of what learning strategies that worked for them, and possibly shed some light on my hypothesis. The pupils had to take a stand to a statement to which they could answer "Yes", "No" or "I don't know": "I have become more conscious about what learning strategy that suits me when I am going to learn new words" (Table 9).

Next the pupils were asked if they had changed their learning strategy, and here they were only given the choice between "Yes" or "No" (Table 10.1). Pupils who answered "Yes" were given an open-ended follow-up question about why they changed their strategy, allowing them to explain (Table 10.2). The last question was about the two different strategies the pupils had used during the project and their perception of which one worked best for them: "Which strategy do you think is best if you must choose between practicing by hand or use Quizlet?" For answering this question, they were only given two options: writing by hand or Quizlet (Table 13). Obviously, it would have been possible to give the pupils a neutral option for answering all the new questions. However, giving them only two options was a conscious choice in order to make them think about the question at hand. Having worked with the two different strategies over time, and talked about strategies in class, I expected the pupils to be able to reflect on whether they had changed their strategies. Furthermore, I expected them to have one strategy they preferred over the other. I also pointed out in one class, that it was OK to prefer neither, but they should think about which one they would prefer given the choice of only these two. A total of 70 pupils answered the second survey and this time, everyone answered questions 1-4 and 6, with two pupils this time skipping the fifth question about rating the different strategies. Fatigue when facing a more complex question could be the reason why two pupils chose to skip this, but again this is only an assumption (Wagner, 2015, pp. 95–96).

The first survey had 69 respondents and the second had 70, a number that comes close to the total number of respondents in the data from the vocabulary tests. This provides valuable additional insights to what strategies pupils prefer, and whether working with different strategies affects them and makes them more aware.

3.2.2 Procedures for vocabulary practice, post-test and delayed post-test

In the following the procedures for vocabulary practice, post-tests and delayed post-tests will be presented. In addition, I will explain what considerations went into selecting the words for the vocabulary sets (Appendices 2, 5 and 9).

The pupils practiced three different vocabulary sets of 15 words each with K-levels ranging from 1–9 (Appendices 2, 5 and 9). The first vocabulary set all the pupils practiced the words writing by hand, the second set they practiced using Quizlet and for the last set the pupils could choose their preferred strategy of practice. The vocabulary sets were given as homework the week before the post-test and then again for the delayed post-test the following

week. In other words, all pupils had the opportunity to practice at home. However, as it can be difficult to control whether pupils do their homework or the amount of time they invest in practicing, they were also allowed time to practice at school before both the post-test and the delayed post-test. This ensured that all students had had some practice, and that they had practiced for a minimum of about 20 minutes before the post-test and about 10 minutes before the delayed post-test. We know that repetition is the key to acquiring new vocabulary, and this would ensure that all pupils at least had the possibility of a repeated practice within a reasonably short time frame (cf. Nation & Weber, 2017, pp. 64–66; Schmitt, 2000, p. 130) All the vocabulary practices and post-tests took place the same weekday, except one delayed-post test for one class which had to be carried out one day in advance.

Several considerations were taken into account as to how to put together the three vocabulary lists. First of all, due to the somewhat young age of the pupils, a conscious choice was made to choose more common words, and this entailed choosing words ranging from K-levels 1–9. Another was to limit the number of words to 15 for each vocabulary list. In my project paper study, the pupils practiced 22 words with a relatively high level of difficulty, specifically chosen because they were unknown to the majority of the pupils prior to the project (Johannessen, 2019). With younger pupils, the idea of picking difficult and/or unknown words and the number of words had to be weighed against keeping them motivated to participate and do their best. The fact that the vocabulary was picked from texts and videos we were working on over the course of the school year also made it difficult to come up with challenging vocabulary, since for example course book texts aimed at lower secondary school children tend to use high-frequent words, and few words that are from K-levels higher than K-6 or K-7 to my knowledge. The pupils did not do a pre-test for the vocabulary of these three sets for two reasons, the first and most obvious, being that it is almost impossible to do a pre-test without interfering with the results of the post-tests (Hirsh, 2015, pp. 380-381). The other reason was time limitations, as this progressed as an intervention study integrated into the classroom practice over almost a year. The goal was to pick vocabulary that had a similar degree of difficulty for each set. I will now present the procedures for the individual vocabulary set practices and post-tests in more detail.

The first vocabulary set contained 15 words taken from different texts about Halloween that the pupils were going to read, and the K-levels varied from K2–K7 (Appendix 2).[23] As already stated, the pupils had been given the vocabulary list as homework and they

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[23] K-levels according to https://www.lextutor.ca/vp/comp/. Accessed 19.10.20.

also knew that they would be given about 20 minutes in class to practice before being tested. The vocabulary list was not handed out to them physically in advance but made available by posting a link on their weekly schedule and on Google Classroom (Appendix 3). When the pupils practiced for the post-test of the first vocabulary set, I started the practice by handing out an empty wordlist for writing and a list of the vocabulary in Norwegian and English (Appendix 2). I then read the words out loud to support pupils who have reading and writing difficulties. Most pupils worked well, and everyone tried to copy the vocabulary list at least once (for examples of what their handwritten practice-copies look like, see Appendix 4). However, one observation was that not all the pupils managed to stay on task and practice for 20 minutes straight. Some pupils practiced writing only once, and then preferred to practice by reading through the vocabulary list or checking themselves. It should be noted that most of the pupils seemed motivated and focused throughout the practice. After practicing the pupils completed a post-test. It was carried out using Google forms put in locked mode so that the pupils could not enter other websites or documents when the test was open. This ensured that the possibility to cheat was slim. The pupils knew beforehand that they would be given the words in Norwegian, and that they had to translate into English.[24] The test procedure was followed for all the vocabulary tests. The pupils were informed that for each correctly spelled word they would get one point, and that words with minor spelling errors would receive half a point. The maximum score was 15 points, which would be the same for all vocabulary sets to make a comparison possible. A concern for many pupils was whether their performance would affect their English grade, and I spent time reassuring pupils that their points did not affect their grades. At the same time, I wanted to inspire effort and motivation, and pointed out that by doing this they were helping themselves learn more about their own preferred strategy (cf. Pinter, 2015, p. 445). Most of the pupils completed the post-test quite quickly, in about 5–10 minutes, but all were given the time they needed to complete the test.

A week later, the pupils did a delayed post-test of the first vocabulary set. The interval between the post-test and the delayed post-test should perhaps have been a little longer comparing with some other studies following a post- and delayed post-test design (cf. Laufer, 2003, p. 580; Hirschel & Fritz, 2013, p. 644), but because of the special circumstances this

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[24] In my project study, the pupils translated into Norwegian, and I thought this would be easier, but the reaction from my then pupils made me realize that doing the translation from Norwegian to English seemed to be what they expected to do (Johannessen, 2019). Also, it seemed more logical to demand the answer to be in the target language.

school year due to Covid, a decision was made to cut the time delay to one week. However, maybe this was a good idea, given their young age.

In other studies, pupils have not been given the possibility to revise for the delayed post-test, but to motivate them, my pupils were given about 10 minutes to revise before the delayed test.[25] Also keeping in mind that they were to do more similar tests, it seemed like a good way of changing the procedure compared to my project study when the pupils were not allowed to revise for the delayed test.[26] Again, most pupils were concentrated and worked well during the 10 minutes they were allowed to practice writing by hand, but perhaps a few more pupils were less eager to practice this time around. Apart from the time limitation, the delayed post-test was carried out in the same way as the post-test. A couple of pupils had forgotten their computers and were provided with a printout of the test and answered the test writing by hand.

Evidently, many pupils forgetting their computers would create problems using Quizlet as a strategy for the second round of vocabulary tests. Luckily, all the pupils had remembered their computers, so this was not an issue. However, as Quizlet works both on computer and smart phones, it would have been possible to ask pupils to download the app on their mobiles and practice on their own device (as in BYOD – Bring Your Own Device, see for example Dudeney et al., 2013). As mentioned earlier, technology can present challenges when it is not working, but it is equally problematic when pupils forget their equipment at home, and there is no extra device available. Few pupils seem to forget their mobile phones though, so this is possible a backup, at least when using Quizlet.

I created the second vocabulary set by picking 15 words from a video about deep sea exploration that the pupils were going to watch.[27] The K-levels for this second vocabulary set varied from K2 to K9 thus having at least one word that was somewhat more challenging to learn (Appendix 5).[28] In this set, one compound word was also included, otherwise all other words in this and the other vocabulary sets were single words only. The pupils were not presented with a vocabulary list, instead the link for the vocabulary set on Quizlet was shared

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[25] This way of carrying out the procedure was also a result of pupils' reactions in my 2019 project study. When doing the delayed post-test, many pupils were extremely stressed by not remembering many words and receiving few points on the delayed post-test. It seemed a very negative experience to repeat with even younger pupils.

[26] See Nakata (2008) for an example of a more typical pre-, post- and (unannounced) delayed post-test design (p. 10). Note that the unannounced delayed post-test in this study was carried out after four days.

[27] *What's hiding at the most solitary place on Earth? The Deep Sea* Retrieved from: https://www.youtube.com/watch?v=PaErPyEnDvk&t=320s. Accessed 01.08.21.

[28] K-levels according to https://www.lextutor.ca/vp/comp/. Accessed 29.11.20.

with the pupils on their weekly schedule and on Google classroom.[29] Apart from this, everything was carried out in the same manner as the first vocabulary set for the practice and post-test. Again, the pupils were allowed a 20-minute practice for the post-test, the only difference was that I did not read the word out loud in Norwegian and English, as the pupils had the option of listening to the pronunciation of the words on Quizlet. The Quizlet activity that proved the most popular among the pupils was practicing using the digital flashcards, followed by the gamified activity "Match."[30] One unexpected challenge was to have the pupils change the language settings so that they practiced translating from Norwegian into English. The pupils were quite keen to practice for the most part, but just like for the first vocabulary set, there were a few who were not very focused. 20 minutes was perhaps a long time for some although most worked well. At the beginning, they practiced using the flashcards and the more traditional options for learning vocabulary, but after a while many turned to the game-like options, mainly "Match." A handful of students showed a systematical approach completing almost all the different ways of working with the vocabulary using Learn, Write, Spell, Test, Match and Gravity. The tests followed the same procedure as the for the first vocabulary set. Again the delayed post-test took place a week later. The pupils spent a little over 10 minutes practicing the second vocabulary set on Quizlet before being tested and were eager to practice, although this time many chose the gamified option "Match" quite quickly. I had mentioned that it was a good idea to spend time working with "Write" but only in one class did the pupils really pick up on my suggestion. The test itself was carried out without any issues or problems.

The third and last vocabulary set consisted of 15 words picked from the poem *The British* by Benjamin Zephaniah[31] that pupils were going to work on and had K-levels varying from K1-K9 (Appendix 9).[32] For this final vocabulary set, the pupils could choose for themselves what strategy they preferred: to practice writing by hand or to use Quizlet. The majority chose to use Quizlet to practice, and only 17 practiced writing by hand out of 67 participants. Some pupils experienced a problem with the option "Learn" using Quizlet, but this happened only in one class and did not concern all the pupils in that class, so it did not

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[29] The vocabulary set on Quizlet, retrieved from: https://quizlet.com/_949525?x=1jqt&i=1at1mz. Accessed 02.07.21. See also Appendix 6 for a screenshot.

[30] A full statistical overview of their use of the different options in Quizlet is not possible because not all pupils had joined the class on Quizlet for the first round of practice, but this serves as good indication of what activities they preferred using Quizlet as strategy. To be able to follow your pupils progress you need to have a paid teacher's account. For an overview of what this looked like for one of my classes see Appendix 7.

[31] Retrieved from: https://www.poemhunter.com/poem/the-british/. Accessed 02.08.21.

[32] K-levels according to https://www.lextutor.ca/vp/comp/. Accessed 26.01.21.

affect the practice for the majority who chose Quizlet.[33] Also, it was possible to use the other options for practice, even so one pupil opted for changing strategy from using Quizlet to writing by hand. The pupils were concentrated during both the practice and the post-test, again spending about 20 minutes practicing first. In fact, they seemed almost more focused this time, given that it was the last vocabulary set and they were free to choose their strategy. Everyone who wished to practice using Quizlet had remembered their Chromebooks, and the ones who practiced writing by hand were provided with a vocabulary list, an empty word list and if necessary, a pencil. The test itself went without any problems.

　　　The last vocabulary test, the delayed post-test of vocabulary set 3, was carried out without any major issues. For one class, the delayed post-test had to be advanced by one day, but the other two carried out the last practice and test with the one-week interval as for the other delayed-tests. A one-day difference is only a minor change and should represent no major consequences for the results. My impression was that the pupils wanted a good result on the last test and worked well. There was in fact one change between that post-test and the delayed post-test, and that was that a few pupils wanted to switch their strategy and write by hand. Interestingly, only one changed strategy the other way around starting to write by hand, but then asked to change to Quizlet. I did not foresee this, and since I had told them that they were free to choose strategy, I allowed them to do so. This time around about 23 pupils practiced writing by hand out of the 69 pupils present. However, a couple of pupils used both strategies, and I picked up on this a too little late to do anything about it. The pupils practiced for a little over 10 minutes and then the test itself was carried out on Google forms, except for one pupil writing by hand since he had forgotten his computer. The results for this and the other tests are presented in Chapter 4 and can be found summarized in Table 7 (see also Appendix 11).

3.3 Methods discussion

The first obstacle regarding the collection of data and testing was as mentioned the decision to carry out my planned project half a year later with Year 8 pupils. A result of this was that I had to exclude a few respondents from the material.[34] Even so, the total number of

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[33] Initially I thought this was an issue of paid versus unpaid version, but it is also possible that the issue was related as to how the pupils opened the vocabulary set on Quizlet and whether they used the link provided by me on Classroom or through the classes I had created on Quizlet. The pupils had no problems with the other options for practicing though, such as Flashcards, Write, Match, etc.

[34] Four pupils never returned their consent forms and their data were consequently removed from the study in compliance with existing regulations (NESH, 2019).

respondents was relatively high compared to many other studies, including my earlier project study (Johannessen, 2019). Still, empirical statistical numbers should always be treated with some caution (cf. McKay, 2006, pp. 11–12).

Another challenge was the timing of the delayed post-tests. Normally the interval between post-tests and delayed post-tests would be several weeks, even months, especially when testing for retention (Nation, 2001, p. 68; Hirschel & Fritz, 2013, p. 644). However, due to the uncertainties of the still on-going pandemic, a choice was made to hasten the delayed post-test somewhat and therefore the delayed post-tests were carried out only a week after the post-test. It does mean that the results of the tests in regard of looking at vocabulary retention must be treated with some caution as there was a short time between the two tests. However, these were pupils in Year 8, a year with the challenge of starting lower secondary school. A week should constitute enough time to test retention to some degree. One study I have found has an even shorter interval of four days between post- and delayed post-test (Nakata, 2008, p. 10). The choice of hastening the delayed post-tests did allow for the tests to be completed. Another factor that probably influenced the results of the delayed post-tests was that the pupils were allowed to practice first, although for a shorter period of only about 10 minutes. This is not how delayed post-test are usually carried out but was a conscious choice to help the pupils stay motivated and confident. When doing the research for my project paper in 2019, as already mentioned, many pupils would despair over not being able to revise for the delayed post-test because they worried even though they knew the results did not affect their grades. Working with even younger pupils, these concerns resulted in allowing for revision also for the delayed post-test and limiting the number of words for vocabulary sets to 15, allowing for more pupils to gain a sense of achievement and to lower the level of stress.

A third challenge was the fact that the data was collected from three different classes. I thought consciously about what directions to give the pupils and my goal was to recreate the procedure of practice and the testing as similar as possible in all classes. However, all classes have their cultures and as a teacher you develop different relationships with different classes. In addition, it should be apparent that the third time you repeat instructions, you have adjusted and done small changes over the course of the day that might affect how the pupils react and whether they are motivated (or not) to practice and willing to remain motivated. One class was always slightly more unruly than the two others, although not necessarily less focused once the pupils had settled down for the test. Nevertheless, as the practice and the testing in general went without any major issues, and as the pupils were treated in the same way

regarding strategy and time limit, minor differences in how the directions were given are not likely to affect the results presented in the next chapter.

A further challenge was that as I had not had the time to pilot the survey, I did not foresee that the question about rating different strategies would be difficult for some pupils to understand. This led to me having to spend time during the first survey to explain this question to the pupils. However, as I had foreseen that there might be questions, I chose to do the surveys during class so that I was present and able to help my pupils with any questions.

4. RESULTS

In this chapter the results from the two surveys, the post-tests and the delayed post-tests will be presented in a chronological manner, I will start with the survey that preceded the tests, before presenting the results of the tests and lastly the survey that followed the tests.

4.1 Results of survey number 1 – before starting practicing and testing

In this section the results from the first survey will be presented. I will start with the results from the three-question survey that the students answered before the intervention. The result was as follows for the first question (Table 1 below):

Table 1
Question 1: What strategies do you usually use to learn new words in English?[35]

Answer choices:	Percentage	N
I read through the vocabulary in Norwegian and English	69.6%	48
I write the words by hand.	60.9%	42
I have someone check my vocabulary/I check myself.	50.7%	35
I use Quizlet to practice.	26.1%	18
I write the words on a computer.	21.7%	15
I make sentences using the words.	13.0%	9
Other (please specify)	10,1%	7
Total number of respondents:		69

Close to 70% of the pupils usually used to read through the vocabulary in Norwegian and English, about 60% used to practice by hand – and 50% would have someone check them or

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[35] Note that the percentages have been rounded off to make Tables 1–3 easier to read, for original percentages see Appendix 12.

check themselves. Only 26% used Quizlet to practice prior to the project, and just over 20% would use a computer to write the vocabulary.

Seven pupils had answered "Other" and specified their answers, but not all proved relevant. One had simply written "idk," abbreviation for "I don't know," another that s/he read the vocabulary, which was in fact already an option. The other five gave the following explanations to what other strategies they used: "PC games; Watch YouTube; I repeat them many times; I write the words in English after my mother has said them to me in Norwegian," and lastly: "I try to remember and memorize the words" (my translations, see Appendix 12 for original answers in Norwegian). In other words, few pupils usually used CALL-based learning strategies for acquiring new vocabulary before starting on this project with between 20–26% percent of the pupils using either a computer or Quizlet to practice.

Table 2
Question 2: What strategies have you used in the past to learn new words in English?

Answer choices:	Percentage:	N:
I write the words by hand, e.g., in a glossary notebook.	62.3%	43
I read through the vocabulary in Norwegian and English.	59.4%	41
I have someone check the vocabulary/I check myself.	59.4%	41
I use Quizlet to practice.	30.4%	21
I make sentences using the words.	18.8%	13
I write the words on a computer.	14.5%	10
Other (please specify).	15.9%	11
Total number of respondents: 69		

The second question had the same answering options, but was worded slightly differently, asking about which strategies the pupils *had* used in the past. It was perhaps not that surprising that the same options scored the highest, although this time to write by hand scored only slightly higher than the two next options, which were to read through the vocabulary list or to check the words. These two options had the same score. In fact, these three options all scored close to 60%. It was also interesting to notice that over 30% of the pupils (21 out of 69) were familiar with using Quizlet as a strategy.

On this question, a few more pupils ticked "Other" and specified their answer, 11 in total. In addition to "idk; I read the vocabulary; PC games; watch YouTube; and "I repeat them many times," they had also specified the following strategies: "Practice on a website called Glosetyggeren; Search the internet for a translation; Play a game called Roblox; Search a dictionary; Usually learn new vocabulary by watching an English film or reading an English book." One offered a longer explanation: "I say them exactly how they sound like. For

example: families. Then I pronounce them letter by letter in that way so that I remember them, like this: "fam e lies" so that I can remember how to write it in English."

It is interesting to note that several of the other strategies mentioned by the pupils include using online resources, media, or games, although a more traditional approach such as extensive reading is also mentioned. It is surprising that few pupils mention online resources, gaming, or social media platforms where the usage of English is dominant, but this could simply be because they do not think of this as a way of learning new vocabulary in English.

Table 3
Question 3: Rate: What strategy do you think works best to learn new words in English?

Rating	1	2	3	4	5	6	7	Not relevant	Total	Score
I read through the vocabulary in Norwegian and English.	22% 14	30% 19	30% 19	6% 4	5% 3	2% 1	0% 0	5% 3	63	5.57
I write the words by hand, e.g., in a vocabulary notebook.	25% 16	30% 19	11% 7	11% 7	5% 3	0% 0	3% 2	14% 9	63	5.56
I use Quizlet to practice.	22% 14	6% 4	8% 5	14% 9	2% 1	5% 3	5% 3	40% 26	65	5.00
I make someone check the vocabulary/I check myself.	20% 13	12% 8	26% 17	17% 11	9% 6	6% 4	2% 1	9% 6	66	4.92
I write the words on a computer.	5% 3	8% 5	10% 6	10% 6	12% 7	7% 4	2% 1	47% 28	60	4,22
Other.	7% 4	5% 3	0% 0	2% 1	5% 3	5% 3	5% 3	71% 41	58	4.00
I make sentences using the words.	2% 1	5% 3	9% 6	14% 9	14% 9	8% 5	0% 0	48% 31	64	3.88
Number of respondents: 68										

The third question asked the pupils to rate vocabulary learning strategies from 1–7 or "Not relevant." 68 of the 69 participants answered the question. The pupils could rate all the strategies or just some of the alternatives, which is the reason why not all alternatives add up to 68 respondents. Table 3 should be read in the following way: the numbers at the top, 1–7 and "Not relevant," represent the rating given by the respondents. For each strategy the percentage of respondents rating this strategy as 1, 2, 3, etc. is listed together with the number of respondents, for example 22% or 14 pupils, rate to read through vocabulary in Norwegian and English as the number 1 strategy to learn new words in English. The score shows the average rating given by all pupils to that strategy.

Interestingly, there was not one strategy that stood out, which may indicate that the pupils were not completely sure about what strategy works best for them. It is also possible

that they thought they had to rate all the options. Again, both reading and writing by hand were perceived as the most useful strategies, with Quizlet following closely behind. In fact, it was surprising that more pupils rated Quizlet as the most efficient strategy than the strategy of having someone check them or check themselves since Quizlet was reported less commonly used as a strategy by the pupils in Table 1. This could of course be because they found the question hard to handle (cf. Wagner, 2015, pp. 94–96). Overall, there seems to be little difference between the perceived effectiveness of the different strategies at the outset of this project, but it is noteworthy that 40% rate Quizlet as "Not relevant." This high percentage reflects the results in questions 1-2 where few pupils reported to have used or to usually use Quizlet before the intervention study and adds to the reliability of the survey and the validity of the results (cf. McKay, 2006, p. 41).

4.2 Results of vocabulary tests

The results of the post-tests and the delayed post-tests will be presented here, first one by one, and then the results will be presented in a table to compare the results. As previously mentioned, for the first vocabulary set, the pupils used handwriting as a strategy before the tests, for the second set the pupils used Quizlet and for the third set the pupils were free to choose between handwriting and Quizlet.

4.2.1 Results for vocabulary set number one: handwriting

The pupils practiced the first 15-word vocabulary set by writing by hand, and as mentioned in Chapter 3, the pupils were allowed to practice for 20 minutes before the post-test, and then also about 10 minutes before the delayed post-test a week later. The results are presented in Table 4:

Table 4
Results for post-test and delayed post-test of vocabulary set 1:

	Post-test 1 Handwriting	Delayed post-test 1 Handwriting
N	72	68
Mean	12.19	12.44
Median	14	14
Range	12.5	14
Standard deviation	3.59	3.55

For the post-test there were 72 respondents, and the mean score was 12.19 of maximum 15. The mean might hide the fact that so-called outliers, in this case a few respondents with low scores drag the mean score down, and that most pupils are in fact well above the mean score (cf. Hellevik, 1993, p. 197).This is shown here when looking at the median, which was in fact almost two points higher than the mean, and only one point from the maximum score: 14 out of 15 points. The range and standard deviation help explain the discrepancy between the average and median score and show us that the lowest score was in fact down to 2.5 points with 12.5 points differentiating the lowest and highest score, 2.5 and 15 points respectively. The standard deviation indicates how many points the scores vary from the mean, and is similar for both tests, at 3.59 and 3.55 (Phakiti, 2015, p. 37). The delayed post-test a week later had four fewer respondents with 68 participating pupils, and in this test, there is a slight improvement for the mean, while there are no changes for the median score. When taking the range and standard deviation into consideration one notices that most pupils have improved or kept their score, but the fact that one pupil scores only 1 point together with a few other outliers with a low score results in a continued relatively low mean at 12.44 points with an unchanged median at 14. The numbers suggest that there has been a small overall improvement in results, and that revising before the delayed post-test has had a positive effect on the results for most pupils. The most noticeable effect is on pupils who scored well below average in the first post-test, given that 15 out of 18 pupils who scored below the average score of 12.19 in the post-test improved their scores in the delayed post-test (see Appendix 11 for an overview over all the scores). The pupil that improved the most, improved by 8.5 points, and on average the pupils with scores below the mean in the post-test improved their scores by 2.5 points in the delayed post-test. In other words, practicing writing by hand seems to work reasonably well for most pupils, and the improvement in scores may indicate that writing by hand is a good strategy for weaker students.

4.2.2 Results for vocabulary set number 2: Quizlet

The pupils practiced the second 15-word vocabulary set by using Quizlet as a learning strategy and as already mentioned, the pupils were allowed to practice for 20 minutes before the post-test, and then also about 10 minutes before the delayed post-test a week later. The results are presented in Table 5:

Table 5

Results for post-test and delayed post-test of vocabulary set 2:

	Post-test 2 Quizlet	Delayed post-test 2 Quizlet
N	71	66
Mean	10.35	11.76
Median	11	14.5
Range	14	13
Standard deviation	4.63	4.31

The number of respondents in these two post-tests is quite similar to the number of respondents in the first set of tests, with 71 respondents in the first post-test and 66 in the delayed post-test. The mean scores on the post-tests, 10.35 and 11.76, are lower than the first vocabulary set. Both are below 12 points, while for the first set the mean was above 12. The median score of the post-test for vocabulary set 2 using Quizlet as a strategy is down to 11 out of 15 points, 3 points below the median score of vocabulary set 1. This indicates that there are fewer pupils with a maximum or close to a maximum score compared to the first set. In addition, the range reveals that there are outliers here as well, with the largest possible range, 14 points, separating the highest and lowest score. The trend for the delayed post-test was similar to the development in the results for the first vocabulary set, as there was an overall improvement for both the average and the median score: the average score improved with over a point to 11.76 and the median score was improved by 3.5 points to 14.5 points. The median score is higher than the mean score by almost 3 points and this shows that the overall improvement for a large number of pupils was high, but again as the range shows, some pupils still scored quite low; Actually, one pupil scored as low as 2 points and this impacts on the mean score and accounts for the difference between mean and median score. Thus, the standard deviation is also quite high, underlining the discrepancy in scores.

4.2.3 Results for vocabulary set number 3: handwriting or Quizlet

The number of participants were 67 and 69 respectively for the post-test and the delayed post-test for the third vocabulary set. When practicing for the post-test and the delayed post-test of the third vocabulary set the pupils were free to choose between the two strategies, writing by hand or use Quizlet. The majority chose to use Quizlet as their strategy, but between the post-test and the delayed post-test, some pupils opted for changing their strategy, mainly from Quizlet to handwriting. The number of pupils was 50 choosing Quizlet versus 17 choosing to

write by hand for the post-test and 46 Quizlet versus 23 writing by hand for the delayed post-test. The results are found in Table 6:

Table 6
Results for post-test and delayed post-test of vocabulary set 3:

	Post-test 3	**Delayed post-test 3**
N	67	69
Mean	11.63	13.15
Median	13	14.5
Range	13	13
Standard deviation	3.87	3.05

The mean score for the post-test was 11.63 points, but the median and the range reveal that outliers may account for a low mean score, with 13 points separating the highest and lowest score. The standard deviation at 3.87 shows how much the scores deviate from the mean. There is an improvement in the results for the delayed post-test with about 1.5 points for the mean score at 13.15 and for the median at 14.5. Both are high numbers considering that the maximum score was 15. Even though the range stays at 13 points for both tests, the standard deviation is almost a point lower for the last test, indicating that fewer scores deviate from the mean. Furthermore, this and a high median indicate that there are far more pupils with results close to or above the mean than there are pupils with results below the mean.

4.2.4 A summary of the results from the vocabulary tests

In Table 7 below, all the results of the six post-tests are presented side by side to facilitate comparison. The number of respondents vary from 72 in the very first post-test to 66 in the delayed post-test for Quizlet as strategy.

Table 7
Summary of results

	Post-test 1 Handwriting	**Delayed post-test 1 Handwriting**	**Post-test 2 Quizlet**	**Delayed post-test 2 Quizlet**	**Post-test 3 Choice between handwriting or Quizlet**	**Delayed post-test 3 Choice between handwriting or Quizlet**
N	72	68	71	66	67	69
Mean	12.19	12.44	10.35	11.76	11.63	13.15
Median	14	14	11	14.5	13	14.5
Range	12.5	14	14	13	13	13
Standard deviation	3.59	3.55	4.63	4.31	3.87	3.05

Starting with the lowest scores, the post-test of vocabulary set 2 when pupils used Quizlet to practice, exhibits the lowest the mean at 10.35, coinciding with the lowest median score at 11. This test also showed the highest standard deviation, indicating how many points the scores vary from the mean. On the other hand, the delayed post-test of vocabulary set 3 when the respondents were free to choose strategy between writing by hand and Quizlet, produced the best results and the highest scores, with a mean at 13.15 and a median at 14.5 of a maximum 15 points. The positive result is further reflected in the delayed post-test 3 having the lowest standard deviation among all the tests, signalling that the scores varied to a lesser degree from the mean than in the other tests comparatively. It is interesting to note that the median was quite high for almost all the tests, indicating that many pupils received a high score, close to the maximum of 15. The range proved also to be quite high for all the tests, with post-test 1 handwriting having the lowest with a difference of 12.5 between the highest and lowest score. For the other tests the range was 14 and 13 respectively. Overall, the tests of vocabulary set 1, post-test 1 and delayed post-test 1 handwriting, showed the least improvement in mean score between the post-test and the delayed post-test. The tests of vocabulary set 2, post-test 2 and delayed post-test 2 Quizlet, showed the most improvement of the median. While the tests of vocabulary set 3, choice between handwriting or Quizlet, showed the most improvement not only in terms of mean score, but also in terms of median score and displaying the lowest standard deviation. In Chapter 5, the results from the tests will be analysed and discussed, but first the survey that completed the project will be presented in the next section.

4.3 Survey number 2 – after completing the project

After having completed the intervention, the pupils answered another follow-up survey. The findings of the survey are presented in Tables 8–13 (Appendix 13):

Table 8
Question 1: What strategies have you used in the past to learn new words in English?[36]

Answer choices:	Percentage	N
I read through the vocabulary in Norwegian and English.	54.3%	38
I write the words by hand, for example in a vocabulary list.	55.7%	39
I use Quizlet to practice.	60%	42
I make sentences using the words.	14.3%	10
I have someone check my vocabulary/I check myself.	40%	28
I write vocabulary lists on a computer.	8.6%	6
Other (please specify).	8.6%	6
Total number of respondents: 70		

The first question shows that over half of the pupils answer traditional strategies, which include reading and writing the vocabulary by hand, as strategies they have used, and 60% have used Quizlet. Of course, strictly speaking the number for both writing by hand and Quizlet should be higher given that the pupils have used these two strategies over the course of the intervention study. This perhaps underlines the problem of doing a survey, that the pupils might perceive questions and alternatives in an unexpected way. Also in my experience pupils seem to remember best what they have just experienced, which for many was to practice using Quizlet. Apart from these three alternatives, there are about 40% that have someone check them or check themselves. Of the six pupils who had specified other strategies, two mentioned "Learning new words through watching English-speaking films; TV-series or documentaries," two listed "YouTube/watching English YouTubers," and one claims not having to practice. One was already covered by an option: "Dad says the words in Norwegian, and then I write them in English and Norwegian."

Table 9
Question 2: I have become more conscious about what learning strategy that suits me when I am going to learn new words.

Answer choices:	Percentage	N
Correct.	61.5%	43
Not correct.	7.1%	5
I do not know.	31.4%	22
Total		70

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[36] Note that the percentages have been rounded off to make Table 8–12 easier to read, for original percentages see Appendix 13.

The second question about being more conscious about choosing learning strategies was formulated as a statement to which the pupils could give a positive, negative or neutral answer. 61.5%, which is well over half of the pupils that participated in the study, felt that they had become more conscious about what learning strategy that suited them. Only about 7% felt that they had not become more conscious. However, quite a large number, 31.4% were unsure whether they had become more conscious. Together with the negative answers that is close to 40%.

Table 10.1
Question 3: Have you changed your strategy how you learn new words?

Answer choices:	Percentage	N
Yes	35.7%	25
No	64.3%	45
Total		70

Table 10.1 shows how many pupils report to have changed their strategy for learning new vocabulary. 35.7%, or just over a third of the pupils, report to have made a change, while about 64%, in other words the majority, reports to not having changed strategy. The pupils were not given a neutral alternative for this question. However, the pupils that answered "Yes" were given an open-ended follow-up question as to why they changed their strategy, and 22 of 25 gave an explanation. This was interesting reading, and their answers are included separately in table 10.2 below:

Table 10.2
If "Yes," why did you change your strategy:

1	In primary school I wrote by hand in vocabulary notebook. In secondary school we have started to write the vocabulary on the computer.
2	I like best to use Quizlet.
3	It is easier to use Quizlet because if I spell incorrectly, it says so.
4	Because I did not use to have a strategy.
5	Quizlet.
6	I have started to practice using Quizlet much more than before.
7	I have started to use Quizlet more.
8	I have found better and easier ways.
9	Much easier to learn thing on Quizlet.
10	Because I think the new strategy is easier to practice new words.
11	I watch English movies, play games which have English texts.
12	I notice that I learn how to spell the words more accurately, and I am more aware of what they mean when I practice using Quizlet instead of ordinary vocabulary lists ("gloser").

13	I have not changed much because I still practice on paper and have someone helping me (a person reads them in Norwegian and I spell them in English), but I use Quizlet more often.
14	Much better to remember than before.
15	Because I think Quizlet is better.
16	I practice more on Quizlet.
17	Easier with Quizlet.
18	Because the one I use now is easier.
19	Not a another one, but if the vocabulary test is on paper, I practice on paper, if it is on PC, I practice on Quizlet.
20	Before I used to read them several times, now I use Quizlet because it is more fun, and I learn the words more quickly.
21	I changed strategy because the new was better than the old.
22	Practice on Quizlet.

14 of the 22 pupils in table 10.2 mention Quizlet specifically, and 11 mentions that Quizlet is easier or better. It is likely that a few more mean Quizlet, even though they do not mention it specifically, because some use "new" or "easier" to refer to the strategy they have changed to. It is likely that most pupils would rate Quizlet as "easier" and also "new" compared to writing by hand. Comparing with the first survey where only between 26 and 30% reported that they had or were usually using Quizlet to practice words (Tables 1 and 2), Quizlet would be a new strategy for a majority of the pupils. It is therefore likely that the majority of pupils that reports a change has started to use Quizlet as a vocabulary learning strategy.

Table 11
Question 4: What strategies do you normally use to learn new words in English now?

Answer choices:	Percentage	N
I read through the vocabulary in Norwegian and English.	52.9%	37
I write the words by hand.	40%	28
I use Quizlet to practice.	80%	56
I make sentences using the words.	15.7%	11
I have someone check my vocabulary/I check myself.	31.4%	22
I write vocabulary lists on a computer.	15.7%	11
I combine different strategies.	21.4%	15
Other (please specify).	1.4%	1
Total number of respondents: 70		

Bearing Table 10.2 in mind and knowing that when given the opportunity to choose between handwriting and Quizlet, the majority chose Quizlet, it is not surprising that 80% now say they use Quizlet as a strategy to learn new words. However, there are still over half that use to read through the vocabulary in Norwegian and English, and 40% that report to write by hand to learn new vocabulary. In addition, just over 20% report to combine different strategies.

About almost a third say that they have someone check or check themselves. The least popular strategies are to make sentences and to write vocabulary lists on the computer, with only about 15%. This time only one pupil ticked off for "Other," stating "YouTube" as his/her alternative strategy.

Table 12
Question 5: Rate: What strategy do you think works best now to learn new words in English?

Rating	1	2	3	4	5	6	7	Not relevant	Total	Score
I read through the vocabulary in Norwegian and English.	11% 6	33% 19	19% 11	12% 7	5% 3	2% 1	2% 1	16% 9	57	5.23
I write the words by hand, e.g. in a vocabulary notebook.	24% 14	19% 11	16% 9	9% 5	3% 2	5% 3	3% 2	21% 12	58	5.28
I use Quizlet to practice.	50% 31	21% 13	8% 5	13% 2	6% 4	5% 3	2% 1	5% 3	62	5.88
I make sentences using the words.	5% 3	5% 3	13% 8	8% 5	15% 9	10% 6	3% 2	41% 25	61	3.89
I make someone check the vocabulary/I check myself.	2% 1	11% 7	21% 13	23% 14	12% 7	10% 6	2% 1	23% 14	61	4.21
I write the words on a computer.	5% 3	5% 3	13% 8	16% 10	16% 10	10% 6	3% 2	31% 19	61	3,88
Other.	5% 3	0% 0	0% 0	4% 2	4% 2	5% 3	18% 10	48% 31	55	2.55
Number of respondents: 68										

The results in Table 12 above shows that the most popular strategy by far is Quizlet, with about 50% rating this strategy to be the best strategy, and about 70% having rated it in first or second place. It is the strategy that receives the best rating overall, but still reading and writing the vocabulary are rated quite high. This ties in well the results found in Table 11. Note that two pupils skipped the rating question, so that the total number for respondents on this question is 68 out of 70 (Appendix 13).

Table 13
Question 6: What strategy do you think is best if you must choose between practicing writing by hand or using Quizlet?

Answer choices:	Percentage	N
I learn best when I write by hand.	31.9%	22
I learn best when I use Quizlet to practice.	68.1%	47
Total number of respondents:		69

The pupils were not given a neutral answer option for this question either but had to state which strategy of the two they preferred over the other. The results in Table 13 show that almost 32% think that they learn vocabulary best when writing by hand while about 68% prefer Quizlet and think it is the best strategy for them to learn. One pupil skipped this question, and this could be because there was no neutral answer option. The result fits quite well with my observations of what strategy the pupils chose during the delayed post-test for vocabulary set 3 when 23 pupils chose to write by hand, and 46 used Quizlet (Section 4.2.3).

To sum up the results from the second survey, more pupils report to have become more aware of what strategies they use and some report to have changed their learning strategies. However, this is not the reported behaviour of the majority though, but even so there is a clear tendency towards more pupils preferring Quizlet over writing by hand or other strategies.

5. DISCUSSION AND CONCLUSION

I will start by discussing the results presented in Chapter 4 in light of theory and previous research. Furthermore, I will examine whether the results support the claims of my hypothesis: that learner autonomy and awareness of learning strategies are more important than the strategy itself. Do the results show that pupils improve their results in vocabulary acquisition as they become more familiar and conscious of different possible ways of working with vocabulary, and then given the free choice between different strategies?

As mentioned in the literature review, previous studies reach different conclusions as to which vocabulary acquisition strategy works best, with some studies showing a positive effect of the use of CALL-strategies such as Quizlet (cf. Barr, 2016; Dizon, 2016; Hirschel & Fritz, 2013; Kassem, 2018; Anjaniputra & Salsabila, 2018; Sanosi, 2018), while others show little or no effect of the use of CALL (Kalecky, 2016; Sage & al., 2020; Skattenborg, 2020). The results of my intervention study could be taken to support both to some extent. For example, when examining and comparing the results of vocabulary set 1 and 2 (Tables 4, 5 and 7), the results could be taken to support the view that writing by hand has a more positive effect on learning outcomes than practicing using Quizlet because the mean scores are better. The mean scores for post-test 1 handwriting are almost 2 points better than the mean scores of post-test 2 Quizlet, with 12.19 and 10.35 points respectively. This pattern is repeated when comparing the results for the delayed post-tests, with writing by hand

scoring a mean of 12.44, and Quizlet 11.76. Although both strategies show a slight improvement in results between post-test and delayed post-test, Quizlet, shows a slightly better improvement for the mean score. As pointed out in the results' chapter, the mean alone is not sufficient to analyse the results, and the median indicates that the pupils in general have scores above the mean. There is in fact no improvement of the median for writing by hand between the post-test and the delayed post-test with a median of 14 points, but for Quizlet there is a significant improvement of the median score by 3.5 points from 11 to 14.5 (Table 7). In other words, although writing by hand as a strategy seems to provide consistently good results for both vocabulary tests, Quizlet displays a larger improvement between tests, and I could argue that this suggests Quizlet supports retention better than writing by hand. However, a couple of pupils wanted to combine Quizlet with writing by hand. They were frustrated when they were not allowed to combine strategies. Their argument was that they could not remember the vocabulary if they practiced using only Quizlet, and that they needed to practice writing by hand to remember the words. This could point to some pupils having a greater awareness of which strategies or combination of strategies that work for them. Another factor that could explain the lower scores for vocabulary set 2 practiced using Quizlet is that this vocabulary set was a little more difficult, after all it contained the only multiword item of the three vocabulary sets (Appendix 5). Furthermore, some of the words were easy to confuse, for example: "prey" and "predator." It is challenging to create vocabulary sets of the same difficulty level, and maybe I should have left out the multiword item. Still, the K-levels were similar for all three vocabulary sets ensuring as far as possible comparable difficulty levels (Appendices 2, 5 and 9).

K-levels notwithstanding, both writing by hand and using Quizlet as strategies for acquiring new vocabulary support previous research on vocabulary gains and spaced repetition (Nation & Webb, 2017, pp. 65–67; Nakata, 2008, pp. 5–6). Because when comparing the mean for all the vocabulary tests, there is a general improvement in scores between the post-tests and the delayed post-tests (see Table 7). In other words, repetition with intervals works (Nation & Webb, 2017, pp. 66–67). Therefore, pupils should be made aware of the value of repetition to engage and motivate them in vocabulary learning (cf. Webb & Nation 2017, p. 133).

Following the claim of my hypothesis, pupils improve their results as they become more familiar and conscious of different vocabulary learning strategies and allowed learner autonomy, i.e., the ability to choose their own strategy. For vocabulary set 3 where the pupils could choose for themselves if they wanted to write by hand or use Quizlet (free choice), the

results are mixed. The results of post-test 3 show that the mean score at 11.63 is better compared to the mean for Quizlet in post-test 2 at 10.35 points, but slightly lower than the mean of post-test 1 handwriting at 12.19 (Table 7). The median is higher for free choice than for Quizlet, with 13 points compared to 11, but one point lower than the median for writing by hand at 14. In other words, comparing the three post-tests, when the pupils were free to choose strategy, the results are better than for Quizlet alone, but slightly lower than the results for handwriting. This does not seem to support my claim. However, for the delayed post-test 3 the results for free choice were significantly improved compared to both Quizlet or writing by hand, with the highest mean score of all the tests of 13.15 points and a high median score of 14.5 points (Tables 6 and 7). In addition, it has the lowest the standard deviation of all the tests of 3.05, indicating that fewer scores deviate from the mean. This and a high median indicate that there are far more pupils with results close to or above the mean than there are pupils with results below the mean. The final result of the delayed post-test 3 seems to support the claim of my hypothesis that pupils improve their results as they become more familiar with vocabulary learning strategies and have autonomy to choose their own strategy. It should also be added that as far more pupils chose to practice vocabulary set 3 using Quizlet than writing by hand, the positive result of the delayed post-test 3 could support former studies showing a positive effect of the use of CALL (cf. Barr, 2016; Dizon, 2016; Hirschel & Fritz, 2013).

The surveys provided additional insight into what vocabulary learning strategies the pupils were familiar with before the intervention study and gave some information as to what extent pupils reported to change their strategy and become more conscious of what strategy works for them. Three of the questions were asked in both surveys and are therefore comparable (Tables 1–3, 8, 11 and 12). The results show a clear change in favour of Quizlet in terms of what strategies the pupils use and rate as useful. In the survey before the intervention few pupils used Quizlet and only 30% reported to have used it (Table 2), while as many as 40% rated Quizlet as "Not relevant" (Table 3). After the intervention 80% now report to use Quizlet as a strategy (Table 11) and 50% rate Quizlet as the strategy that works best for learning new words (Table 12). This is significant shift in the reported behaviour of the pupils', and it is supported by my observation that the majority of the pupils chose to use Quizlet when given the choice (Section 4.2.3), and furthermore that over 68% of the pupils chose Quizlet over writing by hand, when having to take a stand to which of these two strategies they preferred (Table 13). However, only about a third, close to 36% report to have actually changed strategy, so even though over 60% claim that they have become more

conscious of what learning strategy suits them, it remains a question whether this shift for my pupils towards CALL-strategies will continue or if it is dependent on a teacher who provides vocabulary sets on Quizlet as a means for vocabulary practice and acquisition.

To conclude, the results of the vocabulary tests, to some extent, and the two surveys show support for my hypothesis that learner autonomy and awareness of learning strategies are more important than the strategy itself. Therefore, it is important to introduce pupils to different strategies including both digital and traditional strategies to vocabulary acquisition. In the future it would be interesting to see whether the pupils stick to new strategies such as Quizlet or whether they go back to more well-known strategies as writing by hand. Is working with strategies something we need to continually work on in school, or are pupils able to become autonomous after just one intervention study such as mine? Bearing in mind the guidelines of the curriculum and based on my results, I believe that the continued work with learning strategies is central to provide the basis for lifelong learning.

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APPENDICES

Appendix 1: Letter asking permission to collect and use data

Til elever og foresatte i 8X, 8X og 8X,   **Sola, 22.10.20**

I forbindelse med at jeg tar master i fremmedspråk, engelsk, ved Høgskolen i Østfold, skriver jeg nå masteroppgave. Jeg vil i masteroppgaven se på ulike måter å lære vokabular, og hvor effektive disse måtene er. Jeg tar i bruk metoder og lærestoff vi uansett skal jobbe med i timene: eleven skal skrive gloser for hånd og/eller bruke læringsappen Quizlet. Glosene vil være hentet fra lærestoff vi jobber med.

Elevene er allerede muntlig informert om hva jeg tenker gjøre: alle klassene vil få gloselister på ca. 15-20 ord på engelsk oversatt til norsk. De vil øve med å skrive for hånd eller bruke Quizlet. Først vil klassene skrive for hånd, deretter bruke Quizlet, og til sist vil elevene få velge metode for å øve selv. Deretter blir de testet. Etter ca. to uker gjennomføres en ny test for å se hvor mange av ordene de fortsatt husker. Dette gjennomfører vi som en del av engelskundervisninga i løpet av høsten.

Resultatene fra disse testene ønsker jeg å bruke som grunnlag for å skrive ferdig masteroppgava mi. Resultatene vil selvsagt være anonymiserte i oppgaven, og bli behandlet i henhold til norsk lov. Se retningslinjer: https://www.etikkom.no/forskningsetiske-retningslinjer/Samfunnsvitenskap-jus-og-humaniora

Jeg håper dette vil bidra til innsikt om hvordan elever tilegner seg vokabular, og i hvilken grad en læringsapp som Quizlet kan være et nyttig verktøy slik at jeg kan tilrettelegge undervisningen bedre. For elevene er målet at de skal bli mer bevisst når de velger seg læringsstrategier.

Siden elevene ikke er fylt 15 år, er jeg pålagt å innhente foresattes samtykkeerklæring, i tillegg til elevens. Jeg håper dere vil godkjenne dette, og signere så raskt som mulig.

mvh
Karen Johannessen
Faglærer i engelsk for klassen

Jeg/vi samtykker herved til at resultatene fra testene kan brukes i masteroppgaven til Karen Johannessen.

_____   _____

Foresattes underskrift   Elevens underskrift

Ved spørsmål, ta kontakt med meg: karen.johannessen@sola.kommune.no, med mine veiledere Marcus Axelsson marcus.axelsson@hiof.no og Victoria Börjesson viktoria.borjesson@hiof.no ved Høgskolen i Østfold, eller rektor Lill W. Thomassen: lill.wegner.thomassen@sola.kommune.no.

Wordlist week 43-44

Practice writing by hand and learn the following words from texts about Halloween:

K-levels	Engelsk	Norsk
K2	exposed to	utsatt for
K3	aimlessly	uten mål og mening
K3	to carve	å skjære ut
K4	to illuminate	å lyse opp
K4	realm	her: område, verden
K4	harvest	avling, innhøsting
K5	cleansing	rensende
K5	swamp	sump, myr
K6	dishonest	uærlig
K6	mischief	ugagn, rampestreker
K6	eternity	evighet
K6	contraction	en sammentrekning
K6	hospitality	gjestfrihet
K7	supernatural	overnaturlig
K7	bonfire	bål

This list was handed out to the pupils.

K-levels according to https://www.lextutor.ca/vp/comp/ (19.10.20).

Screenshot showing how vocabulary set 1 was shared with the pupils as homework:

Note: the pupils were tested in week 44 and did a delayed re-test in week 45.

Screenshot showing how the first vocabulary test on Classroom appeared on the pupils' Chromebooks:

Appendix 4: Pictures with five examples of pupils' handwritten vocabulary lists:

Wordlist week 49-50

Note: this list was for my use before making the Quizlet vocabulary set. The pupils practiced using Quizlet, see next appendices 7-9 for examples. The link for the vocabulary set: https://quizlet.com/_949525?x=1jqt&i=1at1mz

K-levels	Engelsk	Norsk
K2	explore	utforske
K2	surface	overflate
K2	environment	miljø
K3	consume	forbruke
K3	preserve	bevare
K3	encounter	møte
K4	grim	barsk, uhyggelig
K4	predator	rovdyr
K4	prey	byttedyr
K4	thrive	trives, blomstre
K5	chimney	pipe, skorstein
K5	trench	grøft
K5	ascend	stige opp
K7	ferociously	voldsomt, vilt
K9	abyssal plain (plain = K2)	dyphavsslette

K-levels according to https://www.lextutor.ca/vp/comp/ (29.11.20).

Appendix 6: Screenshots of the second vocabulary set from Quizlet:

Appendix 7: Screenshot of class progress for vocabulary set 2:

Screenshots of Quizlet flashcards in L2, English and L1, Norwegian:
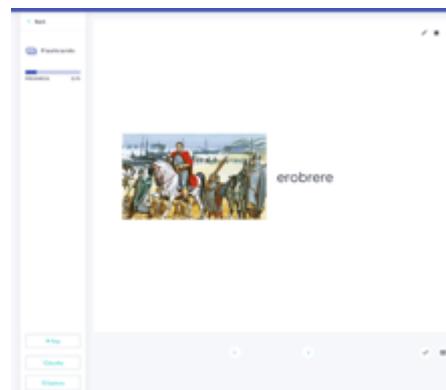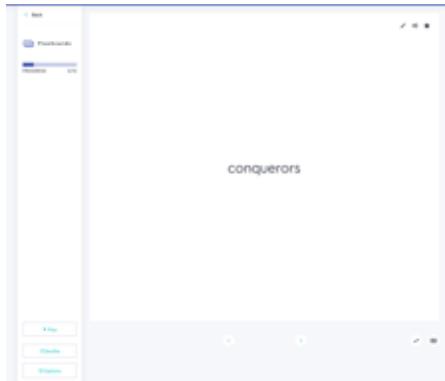
Screenshots of "Learn" in Quizlet with multiple choice and typing exercises:
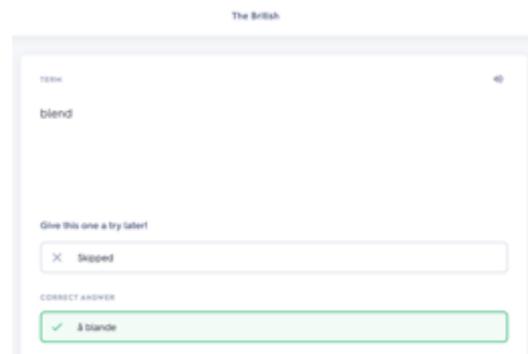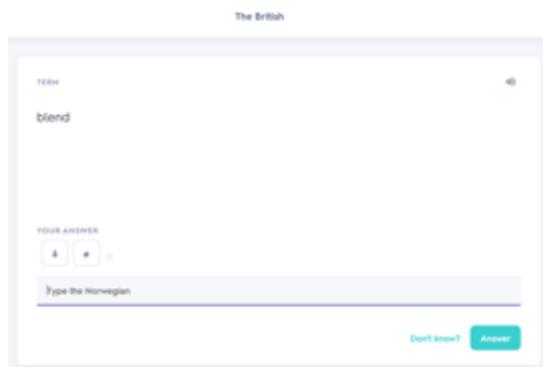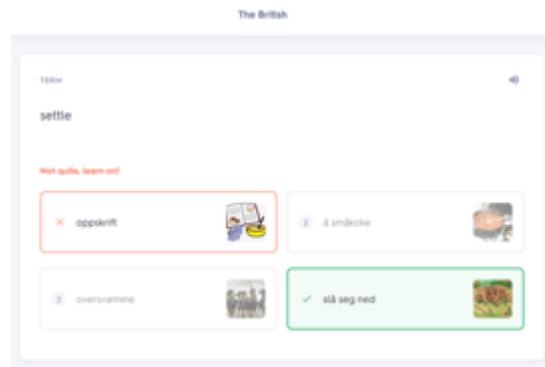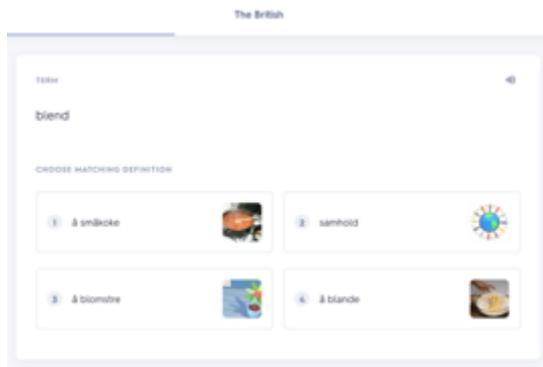
Screenshots from "Write" in Quizlet:
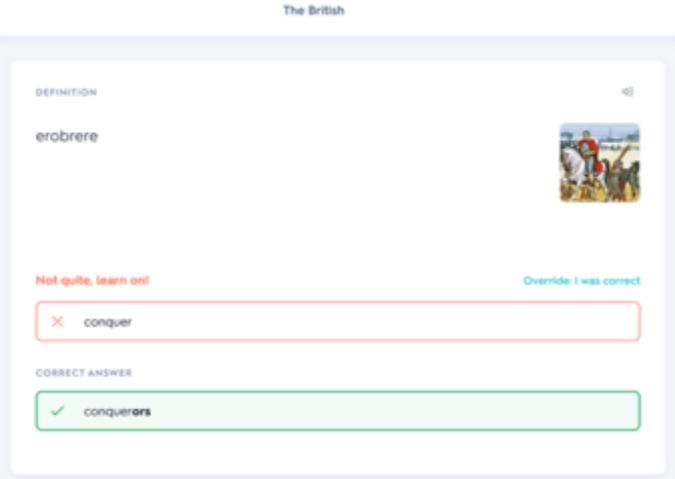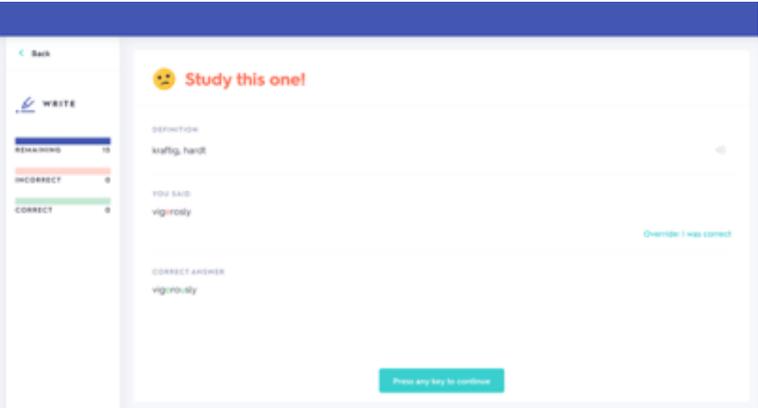
Wordlist week 4-5) including K-levels:

K-levels	Norsk	English
K1	slå seg ned	settle
K2	likhet	equality
K2	oppskrift	recipe
K2	røre	stir
K2	ubehagelig	unpleasant
K3	omtrent	approximately
K3	blande	blend
K3	samhold	unity
K4	blomstre	flourish
K4	kraftig	vigorously
K5	erobrere	conquerors
K5	småkoke	simmer
K5	strø	sprinkle
K7	oversvømme	overrun
K9	kjøkkenredskaper	utensils

K-levels according to https://www.lextutor.ca/vp/comp/ (26.01.21)

Appendix 10: Screenshots of the third vocabulary set from Quizlet:

Terms in this set (15)

settle	slå seg ned
overrun	oversvømme
conquerors	erobrere
approximately	omtrent, cirka
blend	å blande
sprinkle	å strø
simmer	å småkoke
unify	samhold
unpleasant	ubehagelig
equality	likhet
stir	å røre
vigorously	kraftig, hardt
flourish	å blomstre
recipe	oppskrift
utensils	kjøkkenredskaper
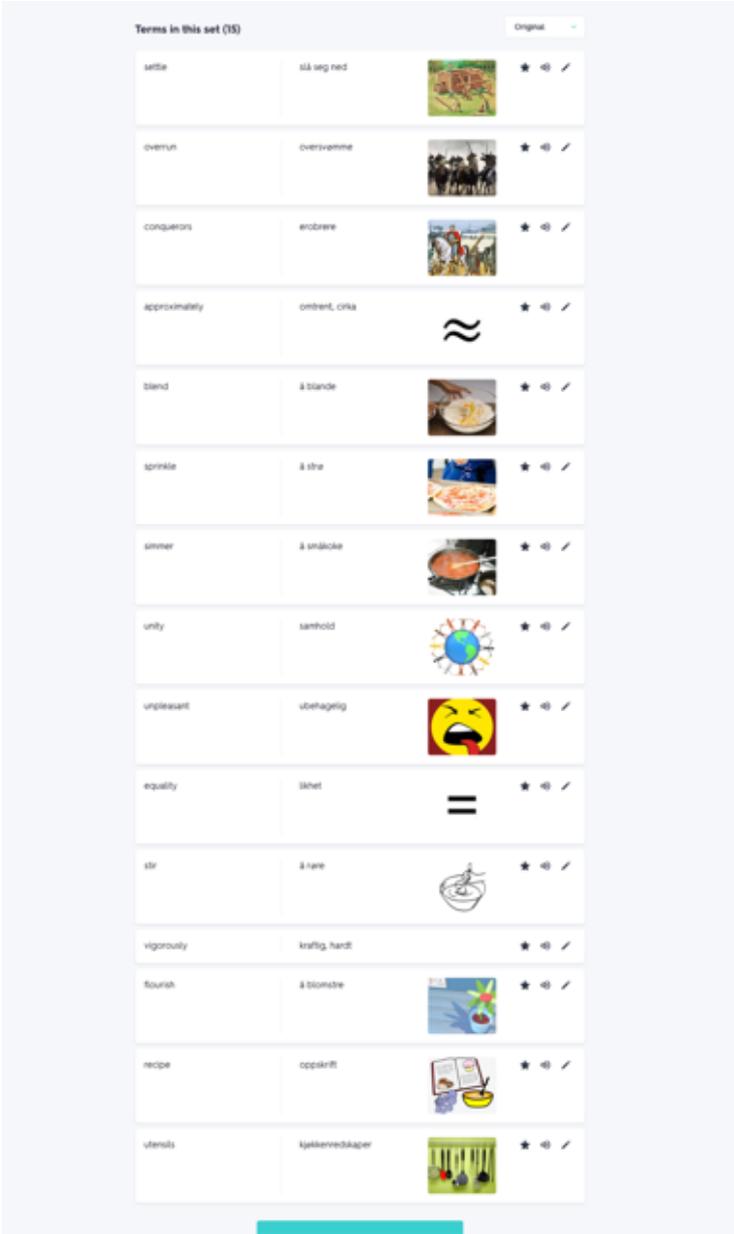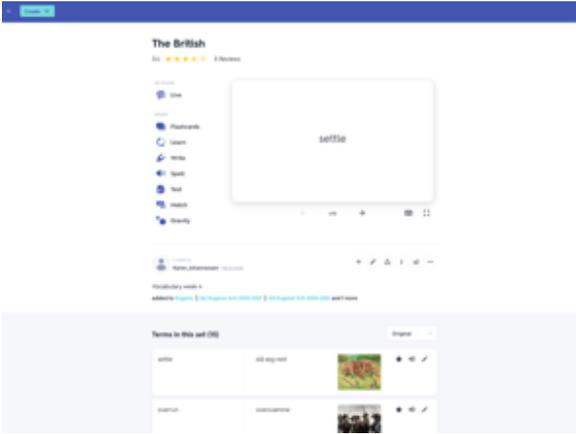
Appendix 11: Complete data from the vocabulary tests:

Respondent	Post-test 1	Delayed post-test 1	Post-test 2	Delayed post-test 2	Post-test 3	Delayed post-test 3
1	14,5	14	15	15	15	15
2	14,5	15	11	14,5	14	14,5
3	6,5	8	1,5	3		6
4	11,5	13,5	12	13,5	8,5	15
5	15	15	11	14,5	12,5	14,5
6	15	15	15	15	15	15
7	15	15	11	15	11	14
8	8,5	9,5	3,5		5	6,5
9	14,5	15	14	15	9	14,5
10	15	14,5		7	15	14,5
11	12,5	14,5	5,5	14	15	15
12	6	6	5	8,5	10,5	15
13	12,5	13	5		10,5	13,5
14	14	14	15	15		14
15	13	13,5	14		12,5	15
16	15	14	15	15	15	15
17	11,5		9,5	15	9,5	
18	2,5	2	2,5	5,5	4	7
19	14,5	14,5	15	15		15
20	13	15	11,5	14,5	13,5	15
21	15	15	15	15	15	15
22	7,5	11	8	7	3,5	9
23	14,5	14,5	13,5		13	15
24	15	14,5	15	15	15	15
25	15	12	14	15	15	15
26	12	13	13,5	14,5	10,5	12,5
27	5,5	1	6,5	3	5,5	6,5
28	13,5	14		7	11,5	13
29	14	12,5	15	15	15	15
30	14	14,5				
31	11,5	14	15	14,5		
32	14	15	10,5	14	13	15
33	8,5	10,5	8	11	12	
34	13,5	13	15	15	15	15
35	14,5	14,5	15		15	15
36	14		13,5	14	15	15
37	13	4,5	2	3,5	11,5	12
38	5,5	6	4,5	7	5,5	9,5
39	14,5	14,5	15	15	15	15

40	15	15	8,5	14,5	15	15
41	5,5	10	10,5	11,5	11,5	14
42	11,5	12	7	11,5	11,5	13,5
43	15	15	15	15	15	15
44	6		10		8,5	14
45	15		14	14,5	15	15
46	13	15	11	15	12,5	15
47	14,5	15	15	15	15	15
48	14,5	15	15	15	14,5	15
49	15	15	15	15	15	15
50	14	8,5	7	5,5	13,5	12,5
51	15	15	15	15	15	15
52	14,5	14,5	14	14,5	15	14,5
53	8	4	12	15	8,5	14
54	13		2	2	2,5	11,5
55	12,5	13	12,5	14,5		
56	12,5	13	8	11	10	14
57	14	12	3	7	9	7
58	14,5	15	14,5	15	15	15
59		5	6	9,5	10,5	9,5
60	2,5	7	2	7	2	8,5
61	14,5	9	11	13	14	15
62		12	4,5	3	12,5	15
63	13,5	15	15	15	15	14,5
64	14,5	14,5	7	2	2	2
65	14,5	14	15	15	14	14,5
66	14	14,5	15	15	13	15
67	13,5	15	14,5	15	14,5	15
68	4,5		6,5	5,5	7	9
69	9,5	12,5	1,5	6		7
70	15	15	15	15	15	15
71	5	13,5	7	13,5	10	14
72	14,5	15	6	7	7,5	13
73	15	15	8		15	15
74	4,5	7	1	7,5	4	9
N	**72**	**68**	**71**	**66**	**67**	**68**
Mean	12,19	12,44	10,35	11,76	11,63	13,15
Median	14	14	11	14,5	13	14,5
Standard deviation	3,59	3,55	4,63	4,31	3,87	3,05
Range	12,5	14	14	13	13	13

The survey had a total of 69 respondents.

SP1: Hvilke strategier bruker du vanligvis for å lære deg nye ord på engelsk?

SVARVALG	SVAR	
Jeg leser gjennom glosene på norsk og engelsk.	69.57%	48
Jeg skriver glosene for hånd.	60.87%	42
Jeg får noen til å høre meg i glosene/jeg sjekker meg selv.	50.72%	35
Jeg bruker Quizlet for å øve.	26.09%	18
Jeg skriver glosene på data.	21.74%	15
Jeg lager setninger med glosene.	13.04%	9
Annet (vennligst spesifiser)	10.14%	7
Totalt antall respondenter: 69		

SP2: Hvilke strategier har du tidligere brukt for å lære deg nye ord på engelsk?

SVARVALG	SVAR	
Skriver glosene for hånd, f.eks. i glosebok.	62.32%	43
Leser gjennom glosene på norsk og engelsk.	59.42%	41
Får noen til å høre meg i glosene/sjekke meg selv.	59.42%	41
Bruker Quizlet for å øve.	30.43%	21
Lager setninger med glosene.	18.84%	13
Annet (vennligst spesifiser)	15.94%	11
Skriver gloselister på data.	14.49%	10
Totalt antall respondenter: 69		

SP3: Ranger: Hvilken strategi synes du fungerer best for å lære deg nye ord på engelsk?

	1	2	3	4	5	6	7	IKKE RELEVANT	TOTALT	POENGSUM
Lese gjennom glosene på norsk og engelsk.	22.22% 14	30.16% 19	30.16% 19	6.35% 4	4.76% 3	1.59% 1	0.00% 0	4.76% 3	63	5.57
Skrive glosene for hånd, f.eks. i glosebok.	25.40% 16	30.16% 19	11.11% 7	11.11% 7	4.76% 3	0.00% 0	3.17% 2	14.29% 9	63	5.56
Bruke Quizlet for å øve.	21.54% 14	6.15% 4	7.69% 5	13.85% 9	1.54% 1	4.62% 3	4.62% 3	40.00% 26	65	5.00
Få noen til å høre meg i glosene/sjekke meg selv.	19.70% 13	12.12% 8	25.76% 17	16.67% 11	9.09% 6	6.06% 4	1.52% 1	9.09% 6	66	4.92
Skrive gloser på data.	5.00% 3	8.33% 5	10.00% 6	10.00% 6	11.67% 7	6.67% 4	1.67% 1	46.67% 28	60	4.22
Annet.	6.90% 4	5.17% 3	0.00% 0	1.72% 1	5.17% 3	5.17% 3	5.17% 3	70.69% 41	58	4.00
Lage setninger med glosene.	1.56% 1	4.69% 3	9.38% 6	14.06% 9	14.06% 9	7.81% 5	0.00% 0	48.44% 31	64	3.88

Totalt antall respondenter: 68. Hoppet over: 1.

The survey had a total of 70 respondents.

SP1: Hvilke strategier har du tidligere brukt for å lære deg nye ord på engelsk?

ANSWER CHOICES	RESPONSES	
Leser gjennom glosene på norsk og engelsk.	54.29%	38
Skriver glosene for hånd, f.eks. i glosebok.	55.71%	39
Bruker Quizlet for å øve.	60.00%	42
Lager setninger med glosene.	14.29%	10
Får noen til å høre meg i glosene/sjekke meg selv.	40.00%	28
Skriver gloselister på data.	8.57%	6
Annet (vennligst spesifiser)	8.57%	6
Total Respondents: 70		

#	ANNET (VENNLIGST SPESIFISER)	DATE
1	Pleide å lære meg nye ord når jeg så på blant annet en film eller serie,	2/19/2021 1:28 PM
2	har ikke trengt å øve	2/19/2021 1:28 PM
3	Jeg ser på mange Engelske youtubers !	2/19/2021 12:39 PM
4	Se engelk dukemetar og filmer eller har eg ikke lært mye på engelsk gjennom disse metoden	2/19/2021 11:45 AM
5	Pappa sier glosene på norsk, så skriver jeg de på engelsk og norsk	2/19/2021 11:43 AM
6	Youtube	2/19/2021 11:43 AM

SP2: Jeg har blitt mer bevisst på hvilken læringsstrategi som passer for meg når jeg skal lære nye ord.

ANSWER CHOICES	RESPONSES	
Det stemmer.	61.43%	43
Det stemmer ikke.	7.14%	5
Jeg vet ikke.	31.43%	22
TOTAL		70

SP3: Har du endret strategi for hvordan du lærer deg nye ord?

ANSWER CHOICES	RESPONSES	
Ja	35.71%	25
Nei	64.29%	45
TOTAL		70

#	HVIS JA, HVORFOR HAR DU ENDRET STRATEGI?	DATE
1	På barneskolen skrev jeg for hånd i en glosebok. På ungdomsskolen har vi begynt å skrive glosene på data.	2/19/2021 1:31 PM
2	Jeg liker mest og bruke quislet	2/19/2021 1:29 PM
3	For det er enklere på quizlet for hvis jeg skriver feil så kommer det opp at det er feil.	2/19/2021 1:29 PM
4	fordi jeg hadde ingen strategi før	2/19/2021 1:28 PM
5	quizlet	2/19/2021 1:28 PM
6	Jeg har startet å øve på quizlet mye mer enn før.	2/19/2021 1:28 PM
7	Jeg har begynt og bruke mer quizlet	2/19/2021 1:28 PM
8	Funnet bedre eller lettere måter.	2/19/2021 1:28 PM
9	Mye enklere og lære ting på quizlet	2/19/2021 1:28 PM
10	Fordi jeg synes den nye strategien er enklere og øve på nye ord på	2/19/2021 12:43 PM
11	Jeg ser på Engelske filmer, spiller spill som har engelske teksteri dem og …	2/19/2021 12:39 PM
12	Jeg merker at jeg lærer meg å skrive ordene mye mer nøyaktig, og jeg er mer klar over hva de betyr når jeg øver på quizlet istedet for vanlige gloser	2/19/2021 12:39 PM
13	Jeg har ikke endret mye på det fordi jeg fortsatt øver på papir og får noen til å hjelpe meg (en person leser dem opp på norsk og jeg staver dem på engelsk), men jeg bruker oftere quizlet.	2/19/2021 12:38 PM
14	mye bedere og huske det enn før	2/19/2021 12:38 PM
15	fordi jeg synes quizlet var bedre	2/19/2021 12:37 PM
16	Jeg øver mer på quizlet	2/19/2021 12:37 PM
17	lettere me quizlet	2/19/2021 12:36 PM

18	Fordi den jeg bruker nå er lettere	2/19/2021 11:44 AM
19	er ikke en annen, men hvis glosetesten er på papir øver jeg på pair, er den på pc øver jeg på quizlet	2/19/2021 11:44 AM
20	før leste jeg bare på de flere ganger og nå bruker jeg quizlet fordi det er gøyere og jeg lærer ordene fortere.	2/19/2021 11:43 AM
21	Jeg endret strategi fordi den nye var bedre enn den gamle	2/19/2021 11:43 AM
22	Øve på quizlet	2/19/2021 11:42 AM

SP4: Hvilke strategier bruker du vanligvis for å lære deg nye ord på engelsk nå?

ANSWER CHOICES	RESPONSES	
Jeg leser gjennom glosene på norsk og engelsk.	52.86%	37
Jeg skriver glosene for hånd.	40.00%	28
Jeg bruker Quizlet for å øve.	80.00%	56
Jeg lager setninger med glosene.	15.71%	11
Jeg får noen til å høre meg i glosene/jeg sjekker meg selv.	31.43%	22
Jeg skriver glosene på data.	15.71%	11
Jeg kombinerer ulike strategier.	21.43%	15
Annet (vennligst spesifiser)	1.43%	1
Total Respondents: 70		

#	ANNET (VENNLIGST SPESIFISER)	DATE
1	Youtube	2/19/2021 11:43 AM

SP5: Ranger: Hvilken strategi synes du fungerer best nå for å lære deg nye ord på engelsk?

	1	2	3	4	5	6	7	IKKE RELEVANT	TOTAL	SCORE
Lese gjennom glosene på norsk og engelsk.	10.53% 6	33.33% 19	19.30% 11	12.28% 7	5.26% 3	1.75% 1	1.75% 1	15.79% 9	57	5.23
Skrive glosene for hånd, f.eks. i glosebok.	24.14% 14	18.97% 11	15.52% 9	8.62% 5	3.45% 2	5.17% 3	3.45% 2	20.69% 12	58	5.28
Bruke Quizlet for å øve.	50.00% 31	20.97% 13	8.06% 5	3.23% 2	6.45% 4	4.84% 3	1.61% 1	4.84% 3	62	5.88
Lage setninger med glosene.	4.92% 3	4.92% 3	13.11% 8	8.20% 5	14.75% 9	9.84% 6	3.28% 2	40.98% 25	61	3.89
Få noen til å høre meg i glosene/sjekke meg selv.	1.64% 1	11.48% 7	21.31% 13	22.95% 14	8.20% 5	9.84% 6	1.64% 1	22.95% 14	61	4.21
Skrive gloser på data.	4.92% 3	4.92% 3	13.11% 8	16.39% 10	16.39% 10	9.84% 6	3.28% 2	31.15% 19	61	3.88
Annet.	5.45% 3	0.00% 0	0.00% 0	3.64% 2	3.64% 2	5.45% 3	18.18% 10	63.64% 35	55	2.55

Totalt 68 respondenter, 2 hoppet over spørsmålet.

SP6: Hvilken strategi synes du er best hvis du skal velge mellom å øve for hånd eller bruke Quizlet?

ANSWER CHOICES	RESPONSES	
Jeg lærer best når jeg skriver for hånd.	31.88%	22
Jeg lærer best når jeg øver med Quizlet.	68.12%	47
TOTAL		69

REFLECTIVE NOTE. KAREN JOHANNESSEN

It feels satisfying to reach this stage of my Master in Foreign Languages in School and be able to reflect on the process. Writing a master thesis would have been a challenge in any case, but as I have studied on top of having a full-time job and family, it has been demanding. The Covid pandemic and the closing down of schools in March 2020 put the work on my thesis on hold for several months. First, because I was unable to test pupils and collect data from tests in a way that would yield valid and reliable results. Second, home schooling swamped me in work, leaving no extra time for my studies.

When I was able to resume my project in the autumn of 2020, it was with three new classes of Year 8. This meant that I needed to get parental consent for their participation in my study. Pupils, parents, and the administration of the school have all been positive in the process but getting the consent forms signed was time consuming. In fact, I had to start my project before receiving all the forms, and in the end, a few pupils had to be excluded from the material because they never handed in a signed copy. On the positive side, being able to carry out a study with 12–13-year-olds clearly fills a research gap, as not many studies cover pupils younger than 15.

It was also a lengthy process of deciding which vocabulary to pick for practice and testing. In fact, the practice and testing went smoothly compared to the hours spent pondering over vocabulary lists finding relevant words from texts and videos we were going to use in class, and which would fit into the project. If I were to do a similar project, I would do some adjustments, for example avoid multiword items and words which are easily confused. In addition, I would do a pre-test or a vocabulary test to estimate the pupils' vocabulary level before starting the project and have a control group for the tests to ensure results of an even higher level of validity and reliability. A pilot of the surveys would also have been a good idea, because it turned out that the question of rating strategies was complex and could have been changed. Furthermore, it would be interesting to include more learning strategies and use qualitative methods for collecting data, i.e., interviews or logs to gain additional insight into how pupils perceive working with different strategies. However, time limitations and the number of classes I have had access to, have had a decisive effect on my research design.

All in all, I was content to discover that my results support my hypothesis that learner autonomy and awareness of learning strategies are more important than the strategy itself, and hopefully this will inspire other teachers to work with different learning strategies allowing their pupils the autonomy to find the strategy that work best for them.