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Using ICT to support students' acquisition and use of second language lexis

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Using ICT to support students' acquisition and use of second language lexis

Abstract

Information and communication technologies (ICT) can be employed to provide learners with effective strategies that allow them to maximize their autonomy outside of the classroom. This includes issues of self-evaluation, aspects of learner motivation and effects on students' reward mechanisms. I will consider how ICT can support the autonomous development of students' lexical skills, their awareness of lexical chunks and correct use of items in various linguistic contexts. To this effect, I will analyse the results of long-term evaluation relating to knowledge, synthesis, accuracy, pronunciation and fluency. These are intrinsically linked to the impact of vocabulary learning strategies on long-term memory, the effectiveness of mnemonics designed to engage multiple intelligences and students' ability to progress from passive to active lexis. Finally, I want to consider to what extent ICT can be used to create a community of practice marked by peer-evaluation, creativity and intrinsic motivation.

Keywords: vocabulary, ICT, CALL, mnemonics, motivation, feedback, gamification, online, community, assessment



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Part One: Introduction

1.1 Short outline and basic motivation

The introductory term of the *stage pédagogique* concluded in a self-evaluative moment. In the report on the experiences I gathered during T0, I identified vocabulary learning as one of the aspects of language teaching that I felt most dissatisfied with. As a learner, I had grown accustomed to traditional vocabulary learning methods. These were clearly inadequate in the light of the pedagogical theories that provided the underpinnings of what effective learning should look like. When I began to look for alternatives, I knew that I wanted to work with means of vocabulary learning that would allow my students to become autonomous learners. This would enable them to maximize their ability to use vocabulary without me having to spend a disproportionate amount of lesson time on lexis.

Transferring the process of vocabulary learning outside of the classroom offered a range of advantages beyond those I had desired to attain. Conversely, the use of ICT came with its own set of challenges that had to be circumvented or addressed in order to provide students with a system that would yield satisfactory results.

1.2 Classroom and teaching context

I focused the implementation of this project on one specific online learning platform. At the same time I compared alternative online computer-aided language learning (CALL) platforms. I decided, however, that it would be impractical and confusing for students to be confronted with a multitude of systems. All practical implementations of pedagogical theories were therefore limited to the online vocabulary learning platform¹ *Memrise*².

In 2011, I introduced both my 3E in the Athénée de Luxembourg and my 8TE in the Lycée Technique Michel Lucius to *Memrise* and uploaded all vocabulary that I wanted them to learn to the platform. With the 3E I focused more heavily on the creative and community-related aspects of the platform, whereas I felt that creating content directly on the platform was too complicated a process to address this aspect with my 8TE class.

I have since continued using *Memrise* with my 4e, 3e and 9e classes in 2012.

¹ I use the term *platform* to refer to online-based learning tools that include or will potentially include both websites and desktop or mobile applications.

² http://www.memrise.com



Part Two: A shared garden – mnemonics and community

2.1 Affective and effective dimensions of mnemonic devices

One of the guiding principles of *Memrise* is the use of mnemonics, or, as they are called on the platform, 'mems'. The name of the platform itself is a pun on the words 'mem', 'rise' and 'memorise'. Mnemonics are one of the most effective means of providing students with a strategy to better retain new vocabulary. This is also known as the keyword technique (Thornbury 145). The mnemonic devices connect the prompt by which the recall process is triggered and the matching answer. They reduce the amount of stress learners often associate with vocabulary learning by providing a technique to fall back on in case of a tip-of-thetongue moment or a blackout. By doing so, Marilee Sprenger argues, mnemonics can inspire self-confidence (Sprenger 129). Some students believe that they cannot learn because they are not intelligent enough. Mnemonics and other learning strategies show them that memory and language skills do not depend on an unusually efficient brain, but on using the most effective techniques.

Whenever Memrise users are shown a new vocabulary item, they are either presented with a mnemonic or invited to create one. Given that this technique is such an important feature of this platform, it is worthwhile analysing how mnemonics help learners assimilate new items. Mnemonics create mental connections that turn abstract or insipid items into more concrete, feature-rich images by which the mind can more easily create links to existing memories. Whereas traditional list-based vocabulary sets suggest that the learners' energy should be used to impress the answer on the mind, mnemonics divert this energy onto the connection to something that is already in their memory. This process parallels Piaget's theory on how learners assimilate new information. As Masciotra summarizes, Piaget's model posits that in order to incorporate something new into our system it is first broken down into parts that do not require our existing model to be disrupted (Masciotra 49). He further explains how this process relies on appropriating new material by turning it into our own words. 'To assimilate is to transform new knowledge into one's old knowledge' (Masciotra 50).³ By using their own language, learners create mnemonics that aid memorization. This aspect is also important for the concept of deep processing, which parallels Piaget's concept of accommodation and will be discussed in part five.

³ 'Assimiler, c'est transformer les connaissances nouvelles en ses connaissances anciennes.'



Mnemonics help assimilate new information by connecting it to seemingly unrelated, existing knowledge. Therefore, their efficiency is inversely proportional to the understanding a learner already has of a given subject or language (Sprenger 103). A beginner will profit from mnemonics the most. It is also easier for beginners than for advanced speakers to create connections between the prompt and the answer: in my own experience, creating mnemonics for high-frequency words commonly taught at A1-A2 level was more difficult than creating mnemonics for low-frequency English words or words in languages which I am not proficient in. For the former category of items, the relationship between the L1 prompt and the L2 equivalent were so apparent to me that this interfered with the creation of alternative connections. Thus, it is easier for learners than for teachers or native speakers to create mnemonics, which, additionally are more likely to aid other learners.

Moreover, certain types of mnemonics are more memorable than others: 'sex, violence and the unusual' make for unforgettable connections (Lowndes, 2009). Ed Cooke of *Memrise* adds: 'They have to evoke emotion, please the ear and amuse – while retaining their naturalness' (Cooke, 'The Mem Team'). This creates a paradoxical situation: beginning learners are more likely to recognize phonemes on which mnemonics can be built, whereas advanced speakers are better at wielding language into something witty that other learners will find interesting. In practice, I have therefore been monitoring and correcting the mnemonics which the 3E students created and ensured that the mnemonics would not be misleading, as was the case, for instance, with a student-created mnemonic that confused 'fantasy' with 'imagination'.

2.2 Listening to flowers: mnemonics and multiple intelligences

Mnemonics allow learners and teachers alike to make excellent use of the possibilities offered by ICT. By varying the type of mnemonic or by including multiple mnemonics per item, teachers and content creators can assure that the learning process caters to the preferred learning style of individual students. The platform remembers which mnemonic the learner finds the most useful. In other words, mnemonics work well with Howard Gardner's theory of multiple intelligences (Gardner and Hatch 27). Due to the restrictions of CALL, ICT supports some of these intelligences better than others. I have found it difficult, for instance, to include aspects that would appeal to learners with a naturalist mind (requiring greater mobility and contact with nature) or a mathematical and logical one (requiring the ability to manipulate material on a much deeper level than is currently possible on such platforms). Likewise, learners' interpersonal intelligence is not fostered during the mnemonic creation process,



though it plays an important role for other aspects. Bodily kinaesthetic intelligence is limited to spatially rearranging items on a computer screen. Thus while virtual objects are handled and combined, there is little or no motor-memory associated with these activities. Multiple students have pointed out to me that they dislike using CALL platforms because they need to physically write the words they want to learn using pen and paper. Finally, the intrapersonal intelligence will be analysed in part three, as intrinsic motivation and self-evaluation are important factors when it comes to creating content on a platform. The remaining intelligences (linguistic, visual and spatial, and acoustic and musical) play the most important role.

A learner's linguistic intelligence is perhaps the most significant one when it comes to creating and using mnemonics. Verbal mnemonics rely on links to the lexis we already know. They can make use either of words from a different language or of other words from the target language that the learner is already familiar with. The process involves separating the target item into smaller parts, looking at its individual phonemes and then comparing those to known words in one's mental lexicon, including the names of objects, places or people. The word 'alienated' from the 3e wordlist, for example, can be reduced to the phonemes *e1, lian, e1t,* and *1d*. These phonemes can be regrouped to form the phrase 'alien ate it'. Thus learners can use their linguistic intelligence to create a mnemonic that is much more memorable than the abstract concept the target word represents on its own. The more ridiculous the resulting idea is, the better: 'There was an alienated ugly duckling. An *alien ate it*'. The element of violence causes an emotional reaction in learners and may be connected by some to a children's story.



Figure 1 memrise.com/mem/289641

Seeing as the more common method relying on linguistic intelligence failed me for high-frequency items, I resorted to an alternative approach. I began to look for products, slogans, movies and song titles from popular culture. The students had encountered many of these target items before, which meant that all that was left for the mnemonic to do was to establish the connection between two words already

present in their verbal memory. Thus, the fast food menu 'Happy Meal' was used as



connector between the German word 'Mahlzeit' and the English word 'meal' (Figure 1). Similarly, the toy cars 'Hot Wheels' connected 'Räder' and 'wheels'. Among the 8TE students, this kind of mnemonic device often led to so-called 'aha' moments: suddenly, a link between two words that had hitherto existed separately in the learners' mental lexicons became apparent. Fortunately, the learners will keep encountering these links regularly. Each time the connection will likely be triggered and strengthened.

Another form of mnemonic device that relies on learners' linguistic intelligence is based on etymologies. These allow learners to connect an item with others that share its linguistic roots in either the same or a different language (Cooke, 'Mems'). For English learners in Luxembourg, these are especially useful. They often recognize common semantic origins for English words and those they already know in Luxembourgish, German, French, Portuguese or Latin. Furthermore, etymological information can help learners identify patterns among affixes that change the meaning of root words, for example, for the word 'pronounce': 'From Old French *pronuncier*, from Latin *pronuntiare*, from *pro-* "out, forth" + *nuntiare* "announce".' The knowledge of what the prefix 'pro' can mean enables students to more accurately determine the meaning of new words that they come across in their own reading, thus increasing their autonomy.



Figure 3 http://www.memrise.com/mem/239381

In spite of their verbal origins, mnemonics commonly effect mental images. Reading about an alien devouring a duckling is likely to conjure up a strong mental image. Since ICT are freed of the spatial constraints of print media, using an abundance of visual material becomes much more practical. Such mnemonics cater for visual and spatial learners. Sprenger affirms that words are learned best when they are associated with an image. Visual learners can use images as a connection between

their affective reaction and the items. Sprenger also refers to a study that showed a 36% performance boost for groups that used texts illustrated with images compared to those who had to rely on their linguistic intelligence alone (Sprenger 60, 63). Images further improve the efficiency of verbal mnemonics. 'A vivid image comes into your brain much more readily than the meaning of a word' (Lowndes, 'Mems & Puns'). A learner prompted with the



definition 'a soldier, especially in the past' may, thanks to a student-created mnemonic, first visually recall an image from a video game, then verbally recall the association between its protagonist's name and the item (Figure 3).

Apart from using existing images, learners can create their own images to be used as mnemonics. On two occasions, I let 8TE students pick items from the word list and draw a representation thereof. Figure 4 is an example of such a drawing. This has three advantages. Firstly, the learners engaged with their item for a longer time. As shall be discussed in part four and five, this encourages deeper learning. Secondly, this task revealed what students saw as archetypal examples of the items they chose to draw. Seeing as their peers shared, to some extent, the same cultural background, the images were more relevant than generic images a teacher might have chosen. Finally, I added these images to the wordlist before the students had to study it. Seeing their own images on *Memrise* during their learning sessions showed them that they had created something that allowed their peers to learn more efficiently.



Figure 4 http://www.memrise.com/mem/240927

I also tested whether these images could be used instead of prompts in a different language. The idea here was to eliminate the need of other languages as intermediaries for English, thus reducing the tendency among students to translate from other languages into English. While the idea seemed promising, none of the platforms that I analysed offered a flexible enough system to consistently prompt learners with images: ideally, the platform would have to prompt with a different image of the same item for each test. Additionally, organizing, scanning, renaming and uploading a large amount of images created by students resulted in a prohibitive amount of work, so that adding images to all word sets was not

practical in a scenario where only one teacher with one class contributes to a given word list. Alternatively, students could photograph objects at home or at school. Thus one of the biggest disadvantages of ICT, namely the inability to make use of realia, would be remedied to some



extent. Using students' photographs also allows learners with a strong spatial intelligence to visualize items in a concrete physical space.

A further advantage of ICT compared to traditional media is the ability to use videos alongside text to create mnemonic devices or example sentences. Videos are useful to show items, especially non-concrete ones, in situational presentations. A video that shows how somebody does something 'brave' conveys the concept in a visual manner and presents a situation in which one needs to be brave.

Furthermore, ICT offer a wide range of possibilities for working with audio. This aspect helps those learners who heavily rely on their acoustic and musical intelligence. There is an acoustic element bound up even with verbal mnemonics: in order to connect prompt and answer, they rely on phonemes to find words or phrases that sound similar to the item they refer to. In this regard, online dictionaries are an invaluable resource, as they can be searched based on a word's acoustic properties. A learner will often know how to pronounce a word without knowing how it is spelt. Online dictionaries such as *Vocabulary.com*⁵ can help such learners because they can be searched based on metadata. A learner who no longer remembers the written form of the word 'accelerator' but can still hum its individual syllables in his or her head can look for words that describe parts of a car that have five syllables using the search prompt 'syllables:5 +partsof:car'. This parallels a technique teachers often use to provide scaffolding while eliciting words that students have already seen: they hum the word's rhythm to allow students to use their acoustic intelligence while recalling the item. Similarly, learners can search the dictionary for entries that rhyme with a specific word.

Having access to this information also helps those who wish to create acoustic mnemonics based on rhymes or similar sounds or rhythms. *Memrise* has reserved an entire category of such mnemonics. The platform also encourages content creators to include metadata on a word's homophones that raises awareness of possible sources of confusion related to speaking and listening. In my experience, however, unless students feel very confident about their language skills, they avoid creating content for this type of mnemonic. Therefore, teachers have to assure that there is a balanced selection of mnemonics to appeal to multiple intelligences.

In fact, the focus on the acoustic is one of the greatest advantages of ICT: it is possible to include sound samples. On *Memrise*, an audio recording of the current item can be played at the click of a button. It is also played automatically during each testing session. Students

⁵ http://www.vocabulary.com



learn to associate the item's written form and its pronunciation straight away. Using traditional means, this is not possible. *Memrise* further facilitates recognition of sound-symbol relations by displaying phonetic transcription at the same moment the audio is played. However, I believe that this becomes useful only once the learners have developed a sufficient passive understanding of IPA conventions and symbols.

Furthermore, the inclusion of audio files can help learners recognize the item in listening activities and dictations because they have learned to associate an item's written and spoken forms. Sound files also help with speaking by drilling correct pronunciation from the first time a learner encounters an item, thus avoiding common pronunciation problems as those encountered with words such as 'health' and 'heal', 'live' and 'life', 'psychology' or 'climber'. In my own experience with Spanish word lists on Memrise, I noticed after a while that I had developed the habit of saying the word out loud after each test. The audio file then acted as a reference to which I could compare my own utterance. If students develop the same practice, then the platform encourages active pronunciation practice. It is my subjective impression that those students who used *Memrise* to learn new words did indeed have a better mastery of the pronunciation of those items.

My 8TE students were very pleased about the audio feature when I introduced them to Memrise. They commented that this is something they missed when they used traditional word lists. Indeed, time restrictions put a limit to the amount of times teachers can practise pronunciation with their students. Moreover, many students cannot enlist the help of a 'more knowledgeable other' at home who could practise pronunciation with them. CALL, on the other hand, offers learners the ability to listen to an item's pronunciation as often as they wish. This aspect of platforms such as *Memrise* facilitates learning by encouraging sub-vocal repetition: 'the ability to vocalize new L2 words when learning them seems to facilitate that learning; [...] subjects who [are] prohibited from vocally or subvocally repeating new L2 words from a word list [are] much less able to learn those items' (Schmitt 56). My own experiments with Czech on Memrise allowed me to corroborate Schmitt's ideas: it was much more difficult to memorize words in Czech for which no audio file had been uploaded. This was especially true at the beginning, when I was as yet unfamiliar with the system according to which Czech symbols and sounds are commonly associated. This was a revealing experience on how an A1 level student of English in Luxembourgish schools feels when trying to learn vocabulary without being provided with any acoustic support. As such, the use of audio samples is what I perceive to be the greatest advantage of using a platform such as *Memrise* with an A1 level class. The downside of using as young a platform as *Memrise*, on



the other hand, is that most of the content has to be generated by the teachers themselves. During the school year 2011-2012, I recorded, optimized and uploaded a total of 998 audio files for the Lifelines Elementary and Headway Upper-Intermediate wordlists, complemented by 366 files recorded by two of my colleagues. Even with my colleagues' help, this was a significant workload. Fortunately, the audio files are associated to word sets that can be used for more than just one year. Moreover, users worldwide are busy adding their own samples to the platform, ready for usage by the entire community.

2.3 The gardening club: the importance of a community

The kind of cooperation I have just mentioned regarding audio files is just one of many aspects that add up to the community functionality which makes *Memrise* stand out from other CALL platforms, and which also makes it one of the more interesting choices for learning that complement school activities. Platforms such as *Memrise* encourage interaction and therefore the growth of communities among schools in two practical ways: they are free and they can be accessed by learners in their own time and from any computer. Additionally, many platforms have released smartphone applications that allow users to access the platform when they are not near a computer. These aspects are crucial when it comes to generating a community that is willing to contribute to a project in its free time.

Cooperation among schools and teachers is further promoted by the fact that everything users create is added to a central database and thus made available to others. Since the content of course books for English as a second language is often similar, especially at the beginner level, the most common words will often already feature useful metadata and mnemonics. This encourages cooperation among teachers: knowing that many users will make use of this database requires a certain amount of consensus among contributing users, for instance in terms of conventions for new entries. Cooperation among teachers happens on a more local level as well: teachers can add helpful information to items which cause their students the most difficulties. Seeing as one item may feature in multiple word lists, students from other forms and other schools will benefit from the effort any one teacher puts into the platform. The same applies to any improvements a teacher may make to existing items when a mistake or misleading information is noticed.

However, it is not just teachers who invest a lot of effort into this kind of quality control. Many advanced or native speakers have volunteered as curators. For students, their presence is important in that they ensure the content on the site is accurate. Unfortunately, *Memrise* does not yet offer streamlined tools that would make the role of curators much more



useful. With a better interface, it would be easy for curators to keep an eye on the content that learners create on the website. They could thus provide constructive feedback to users by correcting their input (especially mnemonics and sample sentences). As mentioned earlier, I kept an eye on the content that my own students added to the site, but the process was cumbersome and confusing. The platform would benefit from a tool curators can use to confirm that the learner has used the item correctly (thus providing positive feedback) or correcting possible mistakes (thus ensuring other learners see and use accurate mnemonics and samples).

This kind of feedback is not restricted to curators. The platform makes it easy for users to seek help from more knowledgeable others. Each item has a comment section where learners can ask for more information or clarifications, where they can make requests for changes if they spot an error or where they can request more samples. For immediate input, this aspect of a community-based platform is a useful alternative to traditional vocabulary-learning methods: in a survey, only three of my sixteen 3E students indicated that they had somebody at home who would help them study vocabulary. In theory, then, *Memrise* is a great tool for learners to reach out to others and actively ask for support. In practice, however, I have found that if my students still had questions, they would ask me directly during or after lessons. This still allowed me to react and add clarifying information to various items, but it also showed that an online community does not *replace* classroom interaction when it comes to vocabulary learning.

On the other hand, the 'thumbs' feature is a system that works very well on *Memrise*. Users can rate contributions uploaded by others by giving them a 'thumbs up' or a 'thumbs



Figure 5 http://www.memrise.com/mem/178435

down'. If students create a mnemonic or any other content and subsequently receives a 'thumbs up' by another user, the students can see that what they produced has a concrete value for themselves and others and that they are contributing to something bigger: 'they are interested in what they have a role in, the things to which they can see themselves making a difference' (Whately, 'Using memory techniques'). This stands in stark contrast to the affective



dimension of something students produce simply because their teacher has assigned it, and which will most likely be read by the teacher only. *Memrise* encourages users to create content that is as useful and interesting as possible: to this effect, the platform showcases the most popular contributions that have recently been uploaded to the website in the 'mems of the moment' section. One of my 3E students had one of her first samples (for the word 'fairtrade') featured in the showcase after receiving five 'thumbs up' (Figure 5). She looked proud when I informed her about this the next day. Being featured in this showcase can give users a confidence boost. Unfortunately, Memrise does not actively inform users about the fact that their contributions have been featured.

The 'mems of the moment' and the 'mem of the week' blog post on Memrise are also useful in that they show what makes for an effective mnemonic or sample. Successful students use successful learning strategies and effective mnemonics. By looking at which contributions are appreciated by many users, students can learn how to make effective contributions of their own. Encouraging advanced students to add their own material to word

lists is a crucial step for the socioconstructive aspect of vocabulary learning using CALL platforms. Learners are more likely to appreciate, understand and praise material created by their peers than that created by a teacher. For the majority of items where there were mnemonics by both myself and one or more students, the students' contributions were much more popular with the class. One important factor in this respect is that the students share a similar cultural background, so that their contributions will be much more meaningful to their peers than what teachers could offer. Examples of things that were popular with my 3E included movies, internet memes⁷ (Figure 6) and musicians or bands.



Figure 6 http://www.memrise.com/mem/238223

⁷ an idea or piece of information that spreads very quickly on the Internet (MacMillan Dictionary)



hoax hauks	+
a plan to deceive sb, or a trick	
The magician pulled off a trick and shouted: 'Hoax poax!'	
Mnemonic by gloda Edit Remix 0 comments	•
Figure 7 http://www.memrise.com/mem/1/0118	

In the survey I conducted among my students at the end of the year, one of them pointed out that she liked the fact that peers could help each other as a class as opposed to only using material provided by the teacher. Thus the community offered by

CALL platforms can serve as the basis for a community of practice among learners. Indeed, the learner's activity on the website had an effect on their interaction in the classroom as well. During a speaking activity in which students had to draw on vocabulary previously studied on *Memrise*, one of the students asked another what the word 'hoax' meant. Her peer did not only give her a synonym that was part of the listed definition, but also brought up the mnemonic that had been added to help the students remember the word (Figure 7). On a socio-constructivist level, it is noteworthy that learners can actively refer to mnemonics to help and remind each other of a word's meaning.

Furthermore, since mnemonics remain accessible for all users, there is interaction among students from different forms and schools, and even across time: the students in the 3e classes I and my colleagues will teach this year will be able to use the work last year's students have already put into the word lists. They will probably also give former students feedback by rating their mnemonics and samples. Considering, however, that none of last year's students used the comment function to communicate with other users, I do not believe that there will be any interaction beyond that point between the forms. The platform seems to lack those elements which make interaction on platforms such as *Facebook*⁸ so popular. In fact, *Memrise* invites its users to connect their account to their *Facebook* profile. I believe, however, that connecting the two platforms could be seen as an intrusion of school into the students' private life. This might lead to students subconsciously perceiving *Memrise* as something annoying. On the other hand, posting about their learning achievements on *Facebook* might invite positive feedback from family and friends who, in spite of not using *Memrise*, could thus give the learners additional motivating feedback.

⁸ http://www.facebook.com



Part Three: Motivation

Learning platforms such as *Memrise* require learners to invest high amounts of time into vocabulary learning. Therefore, it is important to ensure they remain motivated. The learners' motivation strongly depends on four aspects: the community they interact with, their willingness to use vocabulary strategies, their reaction to the gamification of learning and the different kinds of feedback they receive.

3.1 Plant of the year: the motivating effects of a community

I have already described the motivation that can be gained from receiving 'thumbs up' or being featured in one of the showcases on *Memrise*. But the platform has a few further community-related features that can act as motivators. After all, the social aspect of any learning activity 'enhances motivation of the participants' (Schmitt 145). It makes sense that online learning platforms should draw on social dynamics often found in functional classrooms.

One such feature on *Memrise* is the use of 'high-fives'. These are tokens of recognition, a generic form of praise. They are useful in that the students' efforts are recognized not only by their teacher but also by their peers or even other users. There is no apparent risk of cyberbullying associated with this feature: 'high-fives' have no negative equivalent. However, this powerful motivator has a downside: a high-five does not relate to any specific effort a user has made, thus losing most of its effect. This form of praise should relate to specific actions or efforts, such as creating new content or having completed a successful round of testing. The praise users get should always refer to their actions, not to their perceived general ability or intelligence, as shall be discussed in part 3.4.

In general, leader boards seem like an interesting community-based concept to keep users motivated. The friendly competition is an incentive to keep going, to outdo other users. However, a learner seeing that there are thousands of people ahead of him or her on the leader board may actually feel demotivated. For this reason, the default view on *Memrise* focuses on personally selected 'mempals', or friends, on the one hand and on short time periods on the other. Using leader boards on this smaller scale is much less daunting for new or slower learners. Additionally, *Memrise* has announced that there will be leader boards for creators of mnemonics, samples and other helpful content, encouraging users to create content on the platform. While the 'mem of the moment' section refers to the platform's zeitgeist, a leader board can give a more global appreciation of the effort a user has contributed. If the ranking is



based on the number of 'thumbs up', it will also be indicative of how strong an impact a student has on the learning process of other users.

3.2 A green thumb: vocabulary learning strategies

Before introducing CALL platforms to students, it is vital to get the learners excited about the use of vocabulary learning strategies. 'It is important to gain cooperation of the learners, because a study has shown that students who resisted strategy training learned worse than those who relied on their familiar rote repetition approach' (Schmitt 133).

When I introduced my 8TE to Memrise in October 2011, most of their questions started with 'Do we have to ...?' Due to practical issues, I had only been able to show them the platform rather than let them use it. As a result, their initial impression was that using Memrise would result in additional workload rather than making learning vocabulary easier for them. It would have been better to create a need in the students for the mechanisms that online learning platforms offer before introducing learners to them. A variety of tasks could be used to this effect. For example, by making students guess the pronunciation of difficult words such as 'indict' even advanced learners may be sensitized to the importance of audio files. To show students the importance of regular recycling of learnt items, two short lists of completely unknown words can be presented and recycled at two different schedules in class before testing which list students could recall better (Schmitt 140). I have tried this with my 4M6 class before introducing them to Memrise: every single student was able to recall more items from list A, which had been studied for the same amount of time as list B, but using distributed practice. (Appendix p. 55). The same approach with two lists could be used to show the learners how efficient mnemonic devices can be. Finally, the skeptical reactions I got from my 8TE class during the initial presentation of Memrise were strikingly different from the enthusiastic ones I saw later when letting them use the website themselves. This has made it clear how important it is to let the learners try the platform immediately without explaining too much at once. Otherwise, they will worry too much about details, in which case the ludic aspect of the platform may get lost. (When I introduced the 3C2 to Memrise, there were not enough computer stations. The four students who could only watch, but not participate during that first session, are even now among those who are using *Memrise* least.) If, in spite of these attempts to create a need in the learners, they are forced to use ICT against their will, they may, as Schmitt points out, do worse than if they had been left to their own devices. Therefore, it is important to offer alternative ways for these users to study the vocabulary they are assigned. According to my final survey, eleven out of the sixteen 3E



students used printed lists of the vocabulary instead of or alongside *Memrise* at least once over the course of the school year. There is a risk of the teacher's own motivation suffering from this, as students who print out the lists do not profit from any of the advantages that result from the effort the course creators put into online wordlists. Rather than seeing this as a setback, however, one must simply keep in mind that students must never be prevented from choosing the learning methods that suit them best.

The use of ICT in general has an effect on students' motivation to make use of learning strategies. Most students are already familiar with computers. They tend to associate computers with socializing and games, not least due to platforms such as *Facebook*. Working with ICT gives learners a sense of empowerment: they are given tools to affect their own learning; they control how often, when and where they make use of it. Nonetheless, setting students up for their first use of a platform such as *Memrise* can be a hurdle, especially for lower classes, or classes which are not used to working with computers in or for school. When I wanted to set up my 8TE class with accounts on *Memrise*, a number of issues arose. This mostly concerned the various passwords they needed to get online, as well as having to think of a new password required to sign up to *Memrise*. I have learnt from this: this year, I informed students that all this information would be necessary before taking them to a computing room to set them up with accounts. I also provided my 8TE students with handouts to guide them in their usage of the platform when they tried it out again at home (Appendix p. 52).

Having access to online learning platforms presupposes that the learners have access to the internet in the first place. In Luxembourg, this is less of a concern than it may be elsewhere: 98 per cent of households with children in Luxembourg have access to the internet at home (Frising & Airoldi 2). Additionally, students should be informed about what options they have to access the internet at school. And yet, in spite of the general ease of accessing online learning platforms, the fact that these are external, hosted learning tools means that there is an element of unreliability. Three of my 3E students regularly had problems connecting to *Memrise* or found that the service was slow. Students of this generation have become used to a certain speed with which programs and websites load. If a platform is unresponsive, the likelihood of a user switching to a different website increases rapidly: 'one in four people abandons surfing to a website if its page takes longer than that, regardless of the speed of one's internet connection. With longer load times, students' motivation decreases and the risk of them switching to a procrastination website of their choice grows. Learning



platforms are also affected by downtime: the service may be unavailable due to updates or technical difficulties at the very moment a learner felt the most motivated to study. In a worstcase scenario, a platform might even lose data. Teachers should be prudent and keep backups of the vocabulary that they want their students to learn. If the lists become unavailable, offline backups guarantee that students can carry on studying using traditional methods. Similarly, I have experienced just how dependent users are of the administrators' goodwill: in February 2012, *Memrise* agreed to provide me with statistical usage data on my 3E class. To this date, in spite of having been in constant communication with the platform operators, I have not received the data that would be necessary for me to make statistically significant claims about the effects *Memrise* usage has on learners' test results.

There are further issues with vocabulary learning platforms: without extrinsic motivators, students may return to the rote repetition approach or to cramming. As long as vocabulary is tested in ways that allows students to get good marks with short-term recall of prompts and answers rather than ways that encourage deep processing of vocabulary, cramming remains an attractive alternative. As long as these platforms are used in a scholastic context, students' motivation risks remaining essentially extrinsic and focused on short-term results. It is important to highlight the advantages that vocabulary learning strategies offer in the long run to students and how they affect their language skills in general. The focus should be, for instance, on the satisfaction of getting better at something. For some learners this alone is sufficient to create intrinsic motivation. One student of mine who switched to a different class after the first term kept using *Memrise* to revise the vocabulary she had learned so far, even after the extrinsic motivation (that is, the tests I held regularly) had been removed. Creating intrinsic motivation in students is a delicate task and one that I would like to focus on more in the future: of the sixteen 3E students, only six stated in the final survey that they would continue to use Memrise. This indicates that cooperation among teachers who subsequently teach the same class is essential if one wishes to protect students from the effects of attrition.

3.3 Playing in the garden: gamification

Considering the difficulty of fostering intrinsic motivation, it is important that the process of using CALL platforms itself is as interesting and motivating as possible. The mechanisms that *Memrise* uses are designed in such a way that users are compelled to return to the platform. During the lesson I used to introduce my 8TE to *Memrise*, one of the students



exclaimed: 'This is so much fun!'⁹ In the light of a comment such as this one, it seems that the developers of the platform have achieved their goal. 'That's our dream: turning learning into pure recreation' (Dredge). Most of my students, both in the 3E and the 8TE commented at various times that using *Memrise* was fun and entertaining. If learning is perceived as a game, the process of vocabulary learning is associated with positive emotions.

This, in turn, ensures that the learners' affective filter does not prevent intake of new material. The platform has succeeded in creating a ludic space, 'a free and safe space that provides the opportunity for individuals to play with their potentials and ultimately commit themselves to learn, develop, and grow' (Kolb & Kolb 27). The ludic aspect of Memrise works efficiently because fear is removed from the learning process. Students can engage in learning and recycling items without fear of negative consequences. The points system which the platform uses, for instance, does not feature any penalties. There are also no negative consequences in terms of assessment: learners can take as many tests as they wish without the same fear of 'failing' that they commonly associate with certificative evaluation in school tests: 'the absence of extrinsic evaluation in the space [frees] individuals to set their own learning agenda in their own terms' (Kolb & Kolb 47). Secondly, the platform intelligently analyses users' learning and avoids tests which it thinks they are likely to fail. (See part 4.5.) This maintains a student's motivation to continue learning and recycling vocabulary: 'we'd often rather not test ourselves than run the risk of finding ourselves unintelligent' (Cooke, 'The Memory Garden'). Again, the affective dimension plays an important role: 'people who doubt their capabilities shy away from difficult tasks which they view as personal threats. They have low aspirations and weak commitment to the goals they choose to pursue' (Bandura). Thus, the ludic aspect of many CALL platforms encourages learners to commit to their personal objectives. The platform creates long-term semi-intrinsic motivation: '[t]he player is drawn to and kept captive by the game itself' (Kolb & Kolb 30).

The term semi-intrinsic here refers to the fact that the students' motivation may latch onto the game-like aspects of the platform, rather than the learning that is the actual goal. Gamification has become a buzzword for many products, and often results in turning the central experience into something hollow. 'To some industry stalwarts, the gamification craze [... means] mindlessly deploying gaming's most superficial and addictive features, such as leaderboards and badges, without providing the underlying experience that gives them meaning [...] [S]uccessful games mimic the feelings of accomplishment we get when we do

⁹ 'Dat hei mécht déck Spaass !'



fulfilling work' (Tanz). My experience with *Memrise* on my own and with classes allows me to state that these 'addictive features' are used appropriately. The progress that users make is real and not confined to a virtual, meaningless game-dimension. By expanding their lexis, their interaction with the platform results in concrete progress regarding their ability to communicate and interact in real life.

Unfortunately, progress in the real world is often abstract, intangible and nonmeasurable from a personal point of view. Concrete symbols of progress allow learners to gain a sense of how much headway they have made. *Quizlet* uses a variety of awards and badges to this effect. Users are assigned levels according to the number of points that they have earned. This visualizes the effort they have invested in that particular platform. There are further achievements for small successes such as completing an entire round of testing without making any mistakes (Figure 8). In order for these symbols to have any effect, however, they must refer to how well learners do, not merely to the fact that they are spending time on a platform: 'rewards don't have motivational power unless they make you feel



Figure 8 A Vocabulary.com achievement

competent' (McRaney). For instance, if badges are based on points given to users regardless of whether they do well or poorly, then these badges are less likely to encourage the development of intrinsic motivation. Nonetheless, they can become intermediary goals. Obtaining specific badges breaks down the process of learning into smaller steps. On the one hand, this allows learners to set themselves temporary goals

('If I study for five more minutes, I can earn a new badge.'); on the other hand it creates more opportunities at which they can feel a sense of achievement.

However, there is a flipside to this quantification of progress. Awards prevent learners from rationalizing their activity on a CALL platform as something they want to do of their own accord. The rewards risk subconsciously suggesting to the learners that they are studying *for* the badges: 'if you are offered a reward to do something you love and then agree, you will later question whether you continue to do it for love or for the reward' (McRaney). Therefore, points and badges must be signs of progress towards students' self-set goals, without replacing those goals. When used correctly, 'rewards amplify your internal motivations; they build your self-esteem and strengthen your feelings of self-efficacy' (McRaney). This motivates learners and reduces the risks Bandura refers to when he talks about 'people who doubt their capabilities' (Bandura).



3.4 Petals: the role of feedback

Badges and awards are not the only way to give learners a sense of their progress and to keep them motivated. More varied feedback plays an important role in this regard. The feedback offered through ICT, like that offered in classrooms, can be either positive feedback, negative feedback, or extinction. It can also be used to efficiently inform learners about how well or how quickly they are moving forward.

Positive feedback can have a dramatic effect on learners' motivation to continue using vocabulary strategies. Some examples of the positive comments a user can receive upon completing a round of testing on Vocabulary.com include 'We have a winner' or, if the first attempt was wrong, 'We knew you'd figure it out'. The affective aspect of feedback also speeds up learning: it causes positive stress and triggers the release of chemicals in the body which assist the brain (Sprenger 76-77). However, the affective impact of this kind of feedback diminishes after a while: learners realize that feedback is based on an automated process. There is a risk that feedback generated by a computer will be interpreted as condescending. Conversely, encouragement given by a human being is much more effective. 'Learning with others who show interest in you and care about you helps make learning more enjoyable' (Duda, 'Coerced vs Un-coerced Learning'). Fitocracy,¹⁰ an online platform focusing not on learning but on fitness has harnessed the power of feedback exchanged among users to encourage people who want to become healthier: users can give each other 'props', signs of recognition. These 'props' have a strong effect: they are sent by human beings who went out of their way to congratulate other users on their effort and motivate them to keep going.

Nonetheless, not every kind of praise will have a positive effect on a student's attitude to learning. The developers behind *Memrise* have taken into consideration the research conducted by Claudia Mueller and Carol Dweck:

[P]raise for intelligence [has] more negative consequences for students' achievement motivation than praise for effort. Fifth graders praised for intelligence were found to care more about performance goals [...]. After failure, they also displayed [...] less task enjoyment [...] and worse task performance than children praised for effort. (Mueller & Dweck 33)

Thus, learners who are praised for their effort are more likely to continuously challenge themselves and remain motivated. Students praised for their intelligence, on the other hand, focus on their abilities as something predetermined. They are much more likely to be strongly

¹⁰ http://www.fitocracy.com



affected by setbacks. 'Because they view insufficient performance as deficient aptitude it does not require much failure for them to lose faith in their capabilities' (Bandura). If the majority of feedback that users receive is generated automatically, it must be triggered by their actions and phrased so as to refer to their recent efforts. It should give learners details about exactly what is positive about their progress, rather than offering generic comments which make them feel like anonymous users among a mass of others who all get the same run-of-the-mill, nondifferentiated feedback. Feedback could, for instance, refer to learners' success in accurately recalling an item that had caused them difficulties in the past.

Negative feedback is largely absent from the platforms I have used over the past year. However, *Memrise* gives useful feedback as a result of mistakes. If users can no longer recall the answer to a prompt, the mnemonic which was meant to help them is blamed. The platform then encourages users to either choose a different mnemonic or create their own. Additionally, when a learner confuses two similar items, the platform offers them information that helps distinguish between them. It also recognizes partially correct answers, such as those with orthographic mistakes. It focuses on offering learners alternative methods or additional information rather than dwelling on the mistake. 'Feedback which focuses on learners' efforts and learnable strategies encourages students to take on new challenges' (Sprenger 86).¹¹

Extinction is the third possibility when it comes to feedback. It refers to the absence thereof. In classrooms, teachers often miss out on the opportunity to give some kind of feedback or become tired of doing so. However, this has dramatic effects on learners' self-confidence, which suffers as much as that of those students who are criticized (Sprenger 77). The automated process by which feedback is given on CALL platforms has a great advantage in this respect. It is immune to the psychological tendency among teachers to only look for or notice top performances (Sprenger 78). Each step forward deserves recognition, and CALL platforms will never tire of giving feedback on each action a learner takes. If this makes students feel good about their learning process, then they will return to the platform for more.

For learners who are indeed motivated enough to visit *Memrise* on a regular basis, information on their progress becomes one of the most important motivational factors. *Memrise* has taken a unique approach to visualizing this progress, but it fails to make use of its full potential. The vocabulary knowledge a learner gradually builds up on *Memrise* is visualized through a garden metaphor (Figure 9).

¹¹ 'Feedback, das ihren Einsatz und erlernbare Strategien in den Mittelpunkt stellt, schafft bei den Schülern Anreize, neue Herausforderungen in Angriff zu nehmen.'



[W]e're expressing the growth of your memories as the growth of flowers. Their life begins as a seed in a greenhouse – just planted in your brain – and ends as a strong and blooming flower in the garden – a memory deeply etched into your mind, whose connections run deep. (Cooke, 'The Memory Garden')



Figure 9 The garden metaphor (http://memrise.com)

This metaphor offers itself as a representation of learning for a number of reasons. First of all, it represents knowledge as a living thing. The garden metaphor emphasizes growth as something infinitely expandable, as

opposed to intelligence, which is commonly perceived as immutable. This model embraces the idea of growth at different stages, 'from the faint trace of recall of something encountered just once obscurely in the past, to the rich, indestructible memory that is so much part of us that we cannot imagine not having known it.' (Cooke, 'The Memory Garden') Moreover, this conceit also clearly shows that memories can fade or disappear if they are not revisited. It is a visual and concrete reminder of how our brains operate. As such, it serves as an intuitive illustration for students on why it is important to regularly recycle, or 'water', that which has been learnt. Additionally, the garden of memory as a spatial representation of one's learning supports the concept of a ludic space: 'play is [...] acted out within a "consecrated spot" mentally and physically' (Kolb & Kolb 30). The representation of users' gardens also reduces the risk of them believing that they are stalling. My students could see how more and more flowers began to bloom in their gardens.

This kind of feedback is important to give learners a sense of their progress. For it to be as effective as possible, Connellan defined three major criteria (Sprenger 84). Feedback should be goal-oriented; it should use images and visual graphs, and it should be given immediately. I believe that the feedback *Memrise* currently gives does not sufficiently fulfil the first criteria. The platform offers immediate goals in terms of planting, growing and watering all plants of a given word list. However, it does not provide any feedback on users' long-term goals. Ideally, users would be able to inform the platform about what they are currently aiming for. Some may wish to simply learn a certain amount of randomly selected words in a given language. Others might be interested in learning the five hundred most common words of a language, in improving their grasp of a given lexical field, or progressing through a larger course of interconnected word sets. Yet others may wish to learn all words in



a set before a given date. In this case it would be useful if the platform could inform them about whether they are still on track for their long-term goal. It is also quite difficult to get an idea of lifelong progress that has been made on *Memrise*. In contrast, *Quizlet* keeps track of users' highest scores in tests or the fastest times for certain games. This data allows users to set themselves short-term goals by beating their previous record as well as long-term goals by looking at how their past results have evolved.

Connellan's second criterion is the use of visually appealing ways of presenting informational feedback. The garden of memory conceit on Memrise was certainly a step in the right direction. It gives students quick visual feedback of the state of their memory of individual items. This helps learners form a much better idea of how well they know any given item than a simple correction or comment on a traditional test corrected by a teacher. Unfortunately, the representations of the flowers in their various states of growth give users no information about the history of their progress. Furthermore, there is no easy way to see which words cause the most difficulties. In keeping with the garden metaphor, it would be interesting if those words or flowers actively sought the learners' attention, encouraging them to engage in deep processing for that item. Furthermore, the representation of the garden as a whole is but partly satisfying. The developers' goal was to create something 'aesthetically pleasing: it had to present the results of learning as beautiful, enticing - as something to delight in, not fear' (Cooke, 'The Memory Garden'). However, the current layout is rigid. Each flower is compartmentalized and stands on its own, oblivious to what other memories are growing and wilting around it. I believe that, unfortunately, this layout is symptomatic of the way that *Memrise* encourages users to memorize vocabulary. There is not enough interaction among individual items. This, in turn, makes it difficult for learners to become more aware of lexical chunks. Additionally, after a certain point, the sheer number of flowers in the garden grid becomes so overwhelming that it no longer conveys any sense of progress (Appendix p. 51). The progress bar used on Vocabulary.com, on the other hand offers users a very clear and intuitive graphic representation of their data. This gives a learner a much more concrete sense of how their knowledge has evolved (Figure 9).







Finally, Connellan calls for informative feedback to be immediate. ICT have a distinct advantage over traditional means of vocabulary learning in this respect. The feedback that learners get about their progress is nearly instantaneous. No matter how quickly a teacher manages to correct students' productions, there will always be a delay between the time when students take the test and the moment they can read the feedback the teacher has provided. The sooner learners are provided with this feedback, the more effectively can it be used. While this seems obvious enough, it was striking to notice how much of a difference, subjectively, half a second can make in this respect. If an online platform loads fast enough to tell learners whether their answer is correct the very moment they submit it, the resulting affective impact is much stronger than if the result is revealed but a second later. ICT thus allow for a reduction without compare of the negative effects of delaying feedback.



Part Four: Recycling and testing

4.1 General considerations

ICT allow learners to test their vocabulary knowledge as often as and whenever they like and get instant feedback without creating additional workload for teachers. One needs to consider, however, what the reasons for testing are, *what* aspects are to be tested, and *how* learners' skills can be tested.

Placement tests are a common reason for testing vocabulary. These have no important role in the Luxembourgish school system. Conversely, the most common reason for testing in Luxembourgish schools is to measure achievement in a certificative perspective. This aspect should remain completely removed from ICT based platforms. Using them to measure achievement would be an intrusion into the ludic space these tools create and thus cancel out one of their most important advantages. Moreover, testing can have a strong motivational effect on students. I have already discussed the affective dimension of taking tests on CALL platforms. Yet the motivational factor of in-class tests for students' learning should not be ignored: if students know that they will eventually be tested for certificative reasons in class, this can act as an extrinsic motivator for those who have not developed sufficient intrinsic motivation.

Furthermore, testing can be used for diagnostic reasons. It can be used by learners for self-evaluation. If sufficient data is made accessible to teachers, they can use it to allow for positive washback. Statistics can show which items are commonly forgotten, misspelt or confused and are therefore in need additional information or better mnemonics. Teachers can also use statistics on individual learners' performance to look for patterns. On a larger scale, such statistics could offer information on difficulties which are commonly encountered in (and specific to) Luxembourg: this kind of systematic error analysis could reveal issues such as L1 interference.

However, the awareness of being 'watched' could make learners feel uncomfortable and interfere with their enjoyment of the learning process. There is also a risk of teachers seeing these platforms as a convenient means of evaluation, which would completely disrupt the beneficial effects of their ludic aspects. Finally, a common reason for testing is to indicate learners' progress. If students are never tested on all the learning they have done, they will never know whether they have progressed.

The question of progress raises an important point about what aspects of knowing a word can and should be tested. Vocabulary comprehends a whole range of information that



students should be aware of in order to really 'know' an item (emphasized in the following paragraph) (Schmitt 5). Currently, CALL platforms such as Memrise, Quizlet, Vocabulary.com, and Word Dynamo only test recall of an item's written form, and, to some extent, its *meaning*. A student deciding which word or phrase to use in a sentence also needs to be aware of its connotations (which includes issues of pragmatics, such as deciding whether to talk about gypsies or Roma) and its *register* (which includes issues of *frequency* and style). There is currently no efficient way to use ICT to test a student's awareness of the fact, for instance, that certain words can cause offense in certain contexts, or that certain words are dated and would therefore make their produced language appear odd. In order for ICT-based platforms to raise learners' awareness of these aspects, they would have to feature thoroughly organized metadata that allows computers to highlight and test on the various ways in which items are interconnected and how they differ from one another. At the moment, these aspects are not sufficiently tested by any of the CALL platforms I have come across. Students must therefore be made sensitive to these aspects in class using a range of activities. Thus one must seize teaching opportunities when coming across certain words to raise awareness of an item's characteristics in context. Alternatively, one could set dedicated vocabulary activities, such as organizing items into categories based on, for example, their register, part of speech or connotations. This is even more relevant seeing as ICT provides very limited means of testing students' use of vocabulary in free writing, which in turn brings in issues of *collocations*, *derivations* and *grammatical characteristics*.

Finally, teachers who want to work with ICT will have to decide on what kind of prompts they wish to use to trigger students' answers. Seeing as CALL platforms are restricted in their interpretational capabilities, only the kind of prompt that allows for closed questions is currently practical. Thus, a teacher can use definitions as prompts. Two problems arise at his point: proficient learners may answer using a synonym of the term the platform anticipated, which leads to their answers being counted as wrong where a teacher might very well accept the answer as valid. For weaker or stressed students, a different issue arises: they may eventually have perfect knowledge of the connection between the definition and the item, without having gained any deeper understanding of what the item actually stands for. In the final survey, one of the 3E students stated: 'I often learned the words without the meaning, just to know them, and that's also a reason why I don't remember all of them.' This means that if tests exclusively use definitions as prompts, a student can achieve a perfect score without having understood anything! This is counterproductive, as it will have no positive effect on a student's overall mastery of the target language.



One way of avoiding this, at least at lower levels, is to prompt students using pictures. The risk of a student not understanding a picture is much lower than that of a student not understanding a definition. I have already discussed the advantages of using learners' own images for ICT based word sets. An added benefit is that pictures circumvent the need for L1 translations as prompts. On the one hand, this reduces the learner's tendency to translate from L1 in order to form a sentence in L2. On the other hand, it allows for the creation of L1 independent courses. This is useful for classes in which students from mixed origins and language backgrounds come together, such as *classes d'insertion pour jeunes adultes*.

A further option is prompting using gap fill exercises. The advantage is that this requires learners to have understood the item and be able to use it in context. However, there are two disadvantages. It requires learners to understand all or most of the sentence that provides the context. Additionally, it requires a high number of sentences to avoid constant repetition of the same prompts, seeing as ICT platforms encourage students to recycle vocabulary frequently.

4.2 Watering: the importance of recycling vocabulary

In keeping with the garden of memory conceit, *Memrise* refers to revisiting learnt vocabulary as the watering of plants. The more commonly used term is 'recycling' (Thornbury 129). It is analogous to the recap activities teachers can use in class to consolidate what has been learnt before. The advantage of ICT is that the recap must happen on an individual level. It is not possible for a learner to wait for one of his or her peers to recall the item faster, which would deprive the learner of the beneficial aspects of remembering it. Furthermore, the testing system, which is similar to the word card technique, requires the learner to be actively engaged with the platform. The risk of a learner simply giving a vocabulary list a cursory glance and thinking 'I already know this' is thus eliminated. Additionally, the randomized sequence with which items are recycled counteracts what Sprenger refers to as the primacy-recency effect: 'we have better recall of words seen at the beginning or end than those seen in the middle'¹³ (Sprenger 58).

The mechanism used by CALL platforms also results in much shorter delays between learning and testing. Using traditional methods, oftentimes weeks pass between a learner's first encounter with an item of vocabulary and the teacher-corrected test which shows the student whether the item has been learnt. By reducing this interval, learning and testing are no

¹³ 'Aufgrund des Primär- und Rezenzeffektes, wonach wir uns an Wörter vom Anfang und vom Ende besser erinnern als an die in der Mitte, schaffen es die wenigsten, alle Wörter aufzuschreiben.'



longer experienced as separate processes: the learners get continuous feedback about their mastery of individual items. This means that learners are engaged in a constant verification of whether the relevant information is still accurately memorized. If however, a user submits a wrong answer, *Memrise* reacts quickly: 'When you recall a memory wrongly, that can cause you to remember it the same wrong way next time round. Memrise tries to react quickly when you get something wrong, and to guide your brain back onto the straight and narrow' (memrise.com).

The short interval also reduces the anxiety about in-class tests: being tested becomes an integral part of the learning process. Furthermore, the platforms' mechanisms not only allow, but encourage 'post-test reviews', that is, recycling of vocabulary after it has already been tested in class (Thornbury 129). Based on my own time as a student and from the impressions I get as a teacher, I posit that there is a tendency among students to no longer concern themselves with certain types of material once the certificative moment represented by an inclass test lies in the past. Memrise counteracts this tendency in a number of ways: old vocabulary is interspersed with new vocabulary when students study on the platform; dving memories are represented as sad-looking, wilting plants, and learners are occasionally reminded via email about the fact that some of their memories are dying, thus letting all the effort they have invested in learning those items so far go to waste. If learners take a test in response to such an email and can indeed no longer remember the answer to prompts, they are made aware of the need for revision and renewed exposure. Ideally, at this point the platform would point such users to material that contains the vocabulary, such as short articles, rather than sending them back to the learning process. At this point, frequent reading may have a more beneficial effect than simple vocabulary revision.

The mere fact that students using ICT have the ability to recycle vocabulary so frequently has immediate positive effects on their performance. Schmitt refers to a study which found that 'a number of shorter practice periods are more effective than one longer period' such as those students often resort to when trying to cram just before a test (Schmitt 18). Sprenger also refers to a number of studies about the frequency of testing: each renewed encounter with an item reduces the time it takes to recognize it, thus eventually allowing for more fluent reading; frequent recycling reduces the risk of a blackout by making the final test more predictable for students, thus reducing fear of assessment; finally, studies found that students who had to undergo regular tests got better results in final tests (Sprenger 91, 110, 114).



However, in the final survey, one of my 3E students summarized a feeling many of them had expressed in one way or another: 'I don't like it that it takes so long to revise all the vocabulary because there are many repetition at the beginning' [sic]. To students, the continual recycling may feel like going in circles, going back time and again to items that they already know. Teachers who use platforms that rely on recycling, as well as the platforms themselves, should therefore make it clear to learners why they are tested on items so many times and what the advantages of this approach are.

4.3 Wilting: fading memories

Recycling is effective not least because it greatly reduces the amount of vocabulary students forget. If students are exposed to an item only once, the chance of retention for that item lies between five and fourteen per cent (Schmitt 137). The advantage of using ICT is that computers do not mind recycling and repeating information for learners again and again (Schmitt 146). Teachers, on the other hand, may tend to move on to new material when the majority of a class has had sufficient exposure. Thus, ICT allows for greater differentiation when it comes to recycling. The questions that remain are how, why and when students forget. Neurologically speaking, connections in a learner's brain that are not used become increasingly weaker. Fortunately, research has also discovered some useful information about *how* we forget: 'most forgetting decreases' (Schmitt 130). This knowledge has given rise to the form of recycling known as 'distributed practice'.

4.4 Keeping plants alive for longer: distributed practice

According to research, the effect of distributed practice on the rate of forgetting is considerable. 'Expanding rehearsal is the most time-effective way to manage the review of partially known vocabulary that has been explicitly considered' (Schmitt 138). Each time an item is reviewed, forgetting takes a little longer to degrade memory (Figure 10). For this effect to work, recycling must happen at a rather specific point in time. '[T]he greater the interval between presentations of a target item, the greater the chances it would be subsequently recalled [...]. The ideal practice interval is the longest period that a learner can go without forgetting a word' (Schmitt 130). If the delay before recalling an item is too great, it will have been forgotten and the beneficial effect of recalling it from one's own memory is lost. However, revisiting an item too soon can have equally negative results, reducing 'the benefit of the review' (Novikoff 2). The developers of *Memrise* posit that reviewing an item





Figure 10 Distributed practice (Wolf)

that has only recently been seen leads learners to perceiving it as boring. If they feel that they are tested on an item that they (still) know well anyway, learners are 'not likely to give it [their] full attention' (Duda, 'Spacing effect'). Too early and therefore easy a review would also have a negative effect on learners' motivation: 'if people experience only easy successes they come to expect quick results and are easily discouraged by failure. A resilient sense of efficacy requires experience in overcoming obstacles through perseverant effort.' (Bandura)

In a classroom setting, respecting the ideal interval 'requires discipline on the part of teachers' (Thornbury 130). In my experience, however, discipline alone is not enough to recycle material with learners at the right moment. Apart from the fact that some classes are taught only once a week, there is the issue of keeping track of which items have been taught when and how often they have been recycled. The perfect formula for individualized review times is so complex that it is unrealistic for students to keep track of the most efficient scheduling and sequencing of items for their own learning, even more so for a teacher to keep track of the schedule of a multitude of students. To illustrate this, I have included a formula established by researchers, which they use for a simplified calculation of the ideal interval (Novikoff et al. 5):

$$t_n = 1 + \left(\sum_{k=2}^{n-1} (4k-3)\right) + 1 = 2n^2 - 5n + 4.$$

An equation as complex as this one cannot practically be used by teachers to dynamically adjust teaching methods on a per-item basis. Computers, on the other hand, will



have little difficulty applying even more complex algorithms to a student's learning schedule. 'Such a system would model the process of a teacher observing student progress before deciding what to teach next,' with the notable difference that, thanks to ICT, it happens at a much more refined level (Novikoff et al. 6). Thus washback becomes more precise and flexible. Additionally, platforms using such an algorithm can adapt learning immediately because there is no delay between a learner's production, its assessment and the resulting decision about what items will be presented or reviewed next.

Furthermore, ICT greatly facilitates differentiation for vocabulary learning: 'students can use the principle of expanding rehearsal to individualize their learning' (Schmitt 130). Differentiation is all the more important considering that 'different students need to review at different rates. [...] [S]tudents who need a lot of review and who only derive benefit from very well-timed reviews will be more difficult to teach' (Novikoff et al. 1, 3). On call platforms, tests are individualized. If learners make a mistake or can no longer recall an item, the interval until the next test is shortened. If they answer it correctly, the interval becomes longer. Combined with the fact that this happens on a per-item basis, ICT thus efficiently avoids the risk of overlearning easier items (Schmitt 130). *Memrise* avoids boring students with reviews of items they remember well, thus allowing them to focus on those that cause them more difficulties.

Unavoidably, constant recycling and distributed practice take more time than other methods. However, the fact that they are highly more efficient makes up for the additional time spent. In my personal tests of *Memrise*, learning one hundred items from an SAT word list in June 2011 took me a total of three hours. After a one-week break in July following the initial learning sessions, I was still able to answer one hundred per cent of the tested items correctly. Learning 253 words took me less than eight hours. On average then, I spent a little less than two minutes on each word. This includes the initial exposure and repeated testing.

While I find that this is a worthwhile time investment, five out of my sixteen 3E students stated in the final survey that learning vocabulary on *Memrise* took up too much time. On the one hand, while distributed practice may not require significantly more time to be spent on the platform, it requires a lot of time in between sessions. I have learnt that I need to make vocabulary lists available to students a long time before I test those items in class if I want my students to fully profit from the advantages of distributed practice. Giving access to a word list too shortly before an announced test encourages cramming. Seeing as the goal of platforms such as *Memrise* is long-term retention and improvement of learners' language skills, they are hardly suitable for last-minute studying. Cramming can indeed lead to better



Figure 11 Memrise iPhone app

test results if the test is taken briefly afterwards; however, it also leads to students quickly forgetting what they have stored in their short-term rather than long-term memory (Sprenger 114).

There is yet another advantage of the forced waiting period on *Memrise* compared to traditional vocabulary learning strategies. The longer a learner is forced to wait before the next review, the higher become the chances of something about the learning context having changed: 'by using spaced repetition you associate more contexts with a memory and thus create more pathways from which to subsequently access it' (Duda, 'Spacing effect'). More sessions result in more emotional, spatial, circumstantial or

temporal contexts. This effect is supported by the availability of mobile applications (Figure 11, Figure 12). The ubiquity of smartphones among young learners means that many students can use non-stationary devices to learn with ICT. Mobile apps encourage students to learn wherever they are and in short sessions. (In my experience mobile apps are rarely used for longer than a few minutes.) These applications could even replace other activities students may use to procrastinate or to spend time on their daily commute to school. This illustrates how ICT make it possible to combine learning with technologies and activities that students are already interested in. Unfortunately, because

LUXGSM 3G 14:	40 🕴 91 % 🚍
100 Most Common SA	25.7
irritation, frustration	arid
divergent	precocious
disloyal	jubilation
exasperation	extremely dry
talented beyond one's age	
discredit	rabble-rousing leader
joy, exultation	variant, moving apart

Figure 12 Quizlet iPhone app

these applications were still in development last year, I was unable to gather student feedback on their usefulness. Nonetheless, it is safe to say that by increasing the ways by which students can access these portals, the likelihood of them recycling items at the ideal moment is greatly increased.

4.5 Types of tests

Given the advantages that recycling vocabulary using tests on ICT based platforms offer, it is not surprising that developers have tried to diversify the means and methods they use to test users' knowledge. A higher diversity of test methods means that the platforms can



test for different types of knowledge and that the difficulty of the test can be adjusted based on a learner's knowledge of any given item. *Memrise* switches between different tests based on how well an item has been learnt. Shortly after a user's first exposure to a word, they are tested with a multiple-choice question with four options. This is easy allows learners to experience feelings of success from the beginning. After some additional exposure through these tests, the platform switches to typing tests. This ensures that the learner has correctly internalized the item's written form. Typing tests are still used later on in the context of distributed practice insisting on written production. These tests are interlaced with multiplechoice questions that offer eight options to choose from. These tests promote speedy recognition of the target item while providing scaffolding.

There is a further reason why the possibility to move back and forth between tests of varying difficulty is so important: giving a wrong answer may lead to false memories. Recycling test may lead to a reinforcement of the given answer instead of the correct answer. To prevent this from happening, *Memrise* analyses students' usage data to determine the likelihood of the answer still being remembered correctly. '[I]f we think that you aren't going to remember it, we try and avoid the case where you could [give] a wrong answer or have a tip of the tongue moment' (Greg Detre qtd. in Winkler). Thus ICT allows scaffolding to adapt dynamically to the amount of help a user is likely to need in order to correctly answer a question.

Inevitably, the use of ICT also comes with a number of restrictions for testing. Only the kinds of tests that a computer can evaluate are possible. All other kinds of evaluation will have to be handled by feedback given by the community. *Memrise* is the only platform that I am aware of that combines computerized testing of closed questions on the one hand, and the possibility to get feedback on free writing on the other hand. At present, computers are still unable to check free writing for aspects such as the correct use of collocations or many aspects of grammar. Nor can they evaluate spoken productions. In this respect, it is exciting to see how quickly products by companies such as *Nuance* (who develop the dictation program 'Dragon NaturallySpeaking') and *Apple* (who have included the voice-activated personal assistant 'Siri' on their mobile phones) are evolving. It may well be that in the near future, CALL platforms will be able to evaluate user's spoken production.

Regardless of the technology behind ICT platforms, however, one problem that is intrinsic to testing remains: no single test can give a solid evaluation of how well a learner truly knows an item and its different facets. All the tests that will be described hereafter 'are only capturing partial knowledge of the targeted words [...]. They measure vocabulary



knowledge as separate from other language skills' (Schmitt 168, 173). For this reason, it is important for ICT platforms to test all facets that are important when it comes to truly knowing vocabulary. The different types of tests that I would like to analyse can be categorized into multiple choice (1), listening (2), meta-language (3) and writing (4).

(1) Multiple choice is especially useful when a learner has not yet mastered the written form of an item or may have forgotten the connection between the prompt and the answer altogether. Within this test, scaffolding can be provided for learners. This is especially useful for the *Assessment* questions used on *Vocabulary.com*. Before having been taught anything about an item, learners are already asked to select, for instance, a synonym among a choice of four options. If learners require scaffolding to find the correct answer, they can request hints. These include a the option to look at the word in as many example sentences as it takes for the user to understand the word's meaning from context. This level of dynamic scaffolding is unattainable without ICT. In case learners choose the wrong answer nonetheless, they are given a second chance. This increases the odds of their eventually choosing the correct answer *themselves. Quizlet* offers an interesting alternative approach to multiple-choice tests. Their version, 'Scatter', requires users to drag multiple items onto their prompts. This adds a semi-kinaesthetic dimension to the learning process, while adding scaffolding by letting users solve easier items first.

(2) *Quizlet* is also the only platform so far to have harnessed the potential of listening exercises. Their 'Speller' test evaluates and trains learners' ability to associate sound with orthography: it requires users to type the word they hear. This reduces the amount of phonological errors made by learners, especially at lower levels where learners have not yet assimilated 'sound-symbol correspondences' (Schmitt 48). However, it still does not practise recognizing items in a flow of words. Another option to test listening, which is not currently used by any platform I know, is the use of IPA transcriptions. These could be used to ask learners to mark a word's stress, or to select the correct transcription among multiple choices.

(3) Similarly, platforms with a well-organized item database can test users using metalanguage. Users could be asked to determine the part of speech of an item, or to check only those collocations from a list that can indeed be formed with that item.

(4) Finally, various platforms have developed a multitude of writing tests. The *Word Dynamo* generates crossword puzzles based on wordlists within seconds. For this test, the answer must have the appropriate amount of letters and must fit in with other words. It also allows learners to start with easier items. Each answer slightly increases the amount of scaffolding for difficult items. *Quizlet* offers a test mode called 'Space Race'. This test



displays prompts moving across the screen that have to be answered quickly. With each level, the speed at which the prompts appear increases. This allows the platform to display a very high number of prompts in a short amount of time: 'useful games are those that encourage learners to recall words and, preferably, at speed' (Thornbury 102).

In comparison, the typing tests on *Memrise* are fairly mundane in this regard. They also suffer from the fact that they can be answered without having understood the item. One way to prevent this from happening is to create gap fill exercises using sample sentences from the database. If we want to test learners for their understanding of an item, Schmitt argues, enough context is necessary to allow the activation of a schema that the item could feature in: 'context is necessary to activate the full resources of word meaning' (Schmitt 28).

However, two problems arise when items are tested in this manner. Firstly, more than one answer may make sense in the context offered by a sample sentence. Secondly, a single sentence may be 'uninterpretable without context' (Schmitt 28). To remedy both problems, I have begun to set up vocabulary tests that use multiple sentences from each of which the same item has been removed. (Appendixp. 54). This greatly reduces the odds of more than one answer being acceptable; it also facilitates understanding by providing multiple contexts in which the item could be encountered. When choosing sample sentences, I give preference to those created by students. This acts as an additional incentive for students to create samples, as they may well be tested on their own creations; it also encourages students to read existing samples and thus also increases their exposure to the lexical chunks in which items appear.



Part Five: Beyond simple recall

5.1 Flowerbeds: samples and context

The ideas advanced at the end of the previous part would require the database of CALL platforms to be well stocked with sample sentences. Indeed, they are an invaluable resource not only for testing, but also for learning. First of all, it is useful for learners to put new words or phrases into a context as soon as possible (Thornbury 37). For words that belong to a shared semantic field, curated texts can provide a rich context in which learners can root what they learn. Additionally, the availability of a range of sample sentences for each item allows for better understanding: 'Numerous exposures to a word in various contexts are required before it is fully mastered' (Schmitt 30). Samples can be employed for testing, thus forcing users to read the sentences and associating them with the item, or simply displaying them alongside other types of tests whenever a correct answer has been submitted. The same principle could be used to display other kinds of additional information to help increase cognitive depth. The focus could thus shift from individual items towards chunks and phrases.

Sprenger lists four criteria posited by Peter Kahn according to which sample sentences could be grouped (Sprenger 62). Samples of the first kind are *simple*. They are self-explanatory. Users can understand and make use of them without any additional help or context. Secondly, there are *typical* examples. They help with prototype decisions. The prototype theory 'proposes that the mind uses a prototypical "best example" of a concept to compare potential members against' (Schmitt 25). Thirdly, there are *unusual* examples. They are more memorable because they strike users as something outside of the norm. When learners create such examples, they thereby show their ability to think outside of the box, which requires complete comprehension of typical examples. Finally, there are samples which serve to illustrate *exceptions*. These help delineate a concept by showing what an item does not extend to.

Once more, ICT turn out to be an invaluable resource. Electronic corpora greatly facilitate retrieving authentic samples of items in use. The problem with such samples is that they may contain too many unknown words, which may prevent learners from understanding the sample or the context. In place of automated processes such as those used by *Vocabulary.com* to build a collection of over 100 million samples then, it may be more beneficial to let students access corpora manually. They are unlikely to choose samples that they do not understand. This is a simple way of assuring that featured sample sentences are appropriate for the learners' level.





Besides, student produced sample sentences are even better than corpora material. Students are likely to write about things that they themselves are interested in. The samples they create are often personally relevant: 'if we connect what's being learned with things which are already of high interest to a learner, we can increase interest in what's being learned' (Duda, 'Coerced vs Un-coerced Learning'). For instance, one of my students posted her favourite cookie recipe¹⁴ to illustrate the item 'recipe'. Other students posted material related to video games such as *Skyrim*, artists such

as The Who, or TV shows such as How I Met Your Mother (Figure 14).

5.2 Roots: active involvement & deep processing

The creation of sample sentences should be actively encouraged by the platform layout. Schmitt argues that 'the more one manipulates, thinks about, and uses mental information, the more likely it is that one will retain that information. [...] In the case of vocabulary, the more one engages with a word (deeper processing), the more likely the word will be remembered for later use' (Schmitt 121). Thus, creating sample sentences would stand in contrast to shallow processing, for which Schmitt goes on to list examples such as 'repeatedly writing down a word on a page'. On Bloom's taxonomy, shallow processing corresponds to knowledge, comprehension and application (Anderson et al.). Knowledge requires the mere ability to correctly recall an item. Comprehension requires minimal engagement with items, for instance in the form of forming prototypes from various contexts. Application refers the learners' ability to use vocabulary in gap fill exercises and adapting the form of items according to grammatical requirements.

In his research, Schmitt found that 'learners often favor relatively "shallow" strategies, even though they may be less effective than "deeper" ones' (Schmitt 132). He explains that

¹⁴ http://www.memrise.com/mem/179864/



while this type of activity is suitable for beginners, 'intermediate or advanced learners can benefit from the context usually included in deeper activities.' Learners should be encouraged to eventually proceed to the higher levels of Bloom's taxonomy as revised by Anderson: analysis, synthesis, evaluation, and creation (Anderson et al.).

In terms of vocabulary learning, *analysis* can refer to reducing words to their morphemes. This can involve recognizing derivatives, comparing root words and inflections or comparing items to synonyms and antonyms. It also involves issues of register and context. Generally speaking, analysis involves looking up additional information about words. On *Memrise*, this is slow and complicated, partly due to the fact that the database is still young and incomplete. Additionally, the platform is geared towards *showing* information to users rather than looking up information. This stands in stark contrast to *Vocabulary.com*. Its dictionary presents a lot of useful information in a functional layout on one page. A fast, functional dictionary encourages users to engage in analysis.

Synthesis requires learners to recognize patterns across multiple items or to combine multiple lexical items to construct new meaning. This mental activity takes place in the form of decisions. A useful kind of decision-making that could be implemented using ICT is the categorization of items in the mental lexicon. Learners could try to group items according to their word class, semantic field, or common affixes. They could also group items that they have come across in a common context.

The next level on Bloom's taxonomy is *evaluation*. On *Memrise*, learners can comment on other users' contributions or evaluate them using the 'thumbs' function. They can also choose which mnemonics help them the most. But one could easily implement a function which would allow users to rate courses, questions and tests according to their usefulness. Evaluation can even include an affective dimension if users are allowed to rate items based on how much they like the words, their sound, or how difficult they find the item.

The final step is *creation*. Sprenger argues that learners are more likely to remember material when they embed it into self-created contexts (Sprenger 59). Teachers should therefore keep encouraging students to *create* sample sentences that are personally relevant. To motivate students, learning platforms should prompt learners who have shown a certain level of mastery of a word to create content. Sprenger also points out that students enjoy telling stories. Trying to create short stories with the vocabulary from a given list could be an efficient in-class (group) activity. Of course, there are students who are intrinsically motivated to upload content. One of the 3E students had created five video-based mnemonics by 1 December 2011, without me having encouraged students to create mnemonics or having



shown them how to do so. In February, another student created mnemonics for a unit within hours of me having uploaded the word list, even before I had a chance to email students and tell them the new list was online.

Not every student can be expected to be this motivated. Some may be uncertain about how to create content. To deal with this issue, I dedicated one lesson to teaching the 3E how to create effective mnemonics and useful sample sentences (Appendix pp. 48, 49). This gave them an opportunity to ask questions and to experiment. A further means of encouraging students is to simply set the creation of samples as homework. When I tried this approach, my sixteen students created over one hundred samples and mnemonics within three days. The problem at this point is that students who are coerced into creating material are less concerned about the quality of what they write. For this reason, I devised a different approach that would result in recognition for effort rather than sanctions for not doing homework. I told students that they had the option of earning a limited number 'jokers' for vocabulary tests by adding samples and mnemonics to the *Memrise* database. Thus only those students who were at least somewhat interested created material, and I had a possibility of recognizing their effort by letting it positively influence their mark. All in all, the sixteen 3E students together earned a total of three hundred and thirty-one 'thumbs up' on Memrise. The material they have created is helpful to the 3e I am teaching in 2012-13.



Part Six: Analysis / Interpretation of results

6.1 Memrise activity compared to test results

Any statistical analysis I can carry out of my students' activity on *Memrise* in relation to their scholastic performance is of limited use due to the small number of students with whom this project has been piloted and the absence of a control group. Nonetheless, some trends become apparent.



Figure 14 gives an overview of the vocabulary related activity of my 3E class over an entire school year.¹⁵ The (anonym) entries are sorted based on the transparent blue *Memrise* score which each student had attained as of September 2012.¹⁶ The yellow area represents each student's yearly average score in per cent, derived from twelve separate vocabulary tests. The golden trendline indicates that, on average, there is a correspondence between the learners' *Memrise* score and the marks they obtained in vocabulary tests. Unfortunately, it is not possible to conclude that there is a causality between the two. It may be that students who use the platform extensively get better marks. Conversely, it is equally possible that students who do well like using the platform. Whilst keeping this in mind, it is interesting to note that

¹⁵ Student H left the class after the first term and was therefore excluded from this graph.

¹⁶ The score is a good indicator of how active a user is on the platform, regardless of proficiency.



there is a similar trend for the number of mnemonics created by the learners (orange) and the score they got in the final long-term memory test (blue). The latter tested students on 99 items chosen from among the entire vocabulary they had seen that year. Two students' results are noteworthy. Firstly, Student A's *Memrise* score is off the chart (378,718 points). This student has also correctly answered 87% of the items in the long-term test correctly. Secondly, Student Q's yearly test results show that students who refuse to use the platform can nonetheless obtain acceptable marks. In the final survey, this student stated: 'I printed out the vocabulary on *Memrise* and study them' [sic].

The short term statistics on the results my 4M6 and 3C2 classes have obtained this year allow for similar conclusions (Appendix p. 56): in general, the trendline affirms that there is a correlation (though not necessarily causality) between the results students obtained in tests and the degree to which they have interacted with *Memrise*. However, they also show that there are students who obtain great results in spite of not using the platform, as well as students whose results are disappointing in the light of the effort they have invested into studying the vocabulary.

6.2 Analysis of students' free writing

My evaluation of my learner's ability to use the lexis they have acquired is a subjective one. I have noticed that students are much more likely to actively use items when they have encountered them in sample sentences that show them how they behave within lexical chunks. Students are also more likely to use idioms if enough information on their connotations, register and enough samples of the idioms in use has been provided. For instance, many of my 3C2 students referred to 'waves of tourists' and people who 'have the travel bug' in the free writing tasks of this years' first test. For this test, an adequate understanding and ability to use items from within the lexical field related to tourism was required.

Conversely, I noticed the consequences of not providing enough sample sentences to show the restrictions in meaning of certain items. Thus, the definition provided for 'demolish' was 'to deliberately destroy something'. Unfortunately, the idea of this being a fairly short action was missing, so that many students referred to tourists who *demolish* cultural sites, when in fact their visits *slowly destroy* the latter. Thus, *Memrise* can have a highly encouraging effect on students when it comes to using newly learned lexis actively. However, plenty of samples and explanatory notes on usage must be provided if students are to use them in correct lexical chunks and in appropriate contexts.



Part Seven: Conclusion

7.1 Competences reached

The work on this project has allowed me to work on most aspects delineated by the *référentiel des compétences*. The cooperation with the developers of *Memrise* has resulted in productive *communication with a partner outside of school*. By communicating with them, I could convey my needs as a teacher in using *Memrise* as a tool to support English classes. Exchanging ideas with other users of the platform also allowed me to refine my position on certain topics such as feedback and evaluation. The correspondence with the developers also allowed me to get a better understanding of the platform's underpinnings and the direction into which it was headed. Additionally, the many conversations with other teachers and their ideas and concerns regarding the use of the platform have provided plenty of food for thought. (C1)

Working this extensively with ICT has also confirmed my desire to continue using and experimenting with tools in this domain. Seeing as this area is under constant development, staying up to date with the most efficient applications of ICT in the context of education and helping other teachers make use of new technologies can become a rewarding long-term *professional project*. (C2)

Encouraging my students to use *Memrise* has turned out to be a highly informative *pilot project* that offered many insights into the advantages and limitations of CALL platforms for vocabulary learning. The support I received from other teachers and the interest that many have shown in the project has been encouraging and suggests that other teachers will be interested in the results that can be attained using ICT. (C4)

Working on this project required me to be familiar with the *use of ICT* from the start. Seeing as these technologies are something I grew up with and use regularly, mastering them was not a concern. I have, however, learned that there is great heterogeneity when it comes to learners' familiarity with ICT. In my eyes, mastering these technologies therefore no longer solely refers to the teacher's own ability to use ICT, but also to his or her ability to assist and motivate students to use them. (C6)

The creative aspect of a CALL platform that encourages learners to submit their own material holds the potential to create a database of material rich in multiple *social and linguistic backgrounds*. While some students have drawn on their individual language



backgrounds for their creation of mnemonic tools, I feel that this is an aspect which could be further developed so as to maximize its positive effects on the learning of entire forms. (C7)

In terms of assessment, the research on this project has shown me that assessment can take place in a far greater variety of forms than I was aware of. It has also shown how pedagogical theories of assessment can practically be employed and observed. As a result, I have gained a greater understanding of the tools that are at my disposition for the *certificative assessment* of learner's vocabulary knowledge. (C8)

The on-going use students make of *Memrise* has offered many insights into how theories of *psychology and pedagogy* impact students' perception of ICT. This project has shown me the importance of motivating factors when it comes to students' willingness to work on their lexis in their own time. (C9)

In this sense, it has been very rewarding to see how passionate some of my students became about the platform and, in general, how *autonomous* most of them became in their learning of vocabulary. Giving students the means to affect their own learning to a greater extent has motivated them to set their own personal long-term goals. Additionally, the possibility to adjust learning to their own pace and their own needs has allowed for an unprecedented level of *differentiation* and ensured high amounts of useful *formative feedback* was tailored individually to each student. I feel that these two aspects have been the most important ones for this project. (C5, C10)

Similarly, the fact that the work students invest into the creation of material to be added to the platform's database will remain available for users other than their immediate peers has been an important motivator for them. Through this project, I have been able to show them that they are capable of and invited to take on *responsibilities* in the form of helping not just themselves, but also others succeed in their scholastic endeavours. Similarly, I am looking forward to cooperating with other teachers to continuously improve the existing word lists for courses used by the whole school, as well as cooperating on new material that all classes can make use of. (C12, C13)

Finally, the feedback that I get from teachers, students and the data the platform provides allows me to continue experimenting with different approaches to the use of ICT. It allows me to continue developing techniques and finding out which ones are most effective in the context of vocabulary learning for students. This is an area that will continue to yield new results and theories that could become future foundations of teaching with ICT. This, in turn, will require me to *continuously re-evaluate* the use I make of these technologies and adapt my practice accordingly. (C11)



7.2 Future Outlook

Using ICT to support vocabulary learning has been a positive experience. The feedback my students have given me as well as the interest other teachers have shown in the project mean that I will continue to work with these tools for the coming years with confidence. As *Memrise* gradually develops into a more mature platform, more and more of my colleagues are interested in joining efforts to allow their students to profit from the advantages CALL platforms offer. I am currently working on a revised version of the word list for 3e. The word lists for 4e will be gradually set up over the course of the year. Word list for the new course books that are used in the LTML this year, where multiple teachers are interested in using the platform with their students and have participated in a workshop I held on the subject, have already been prepared.

However, working with ICT has also made it clear that not every student enjoys learning using computers. This means, on the one hand, that I will research into possibilities to make the experience more enjoyable and efficient for them. On the other hand, I will try and apply the findings of this project to vocabulary teaching in general. I intend to make greater use of vocabulary teaching activities that do not rely on ICT as well as teaching learners how to apply the principles that guide platforms such as *Memrise* to their own learning strategies.

Nombre de mots: 17284.

Je soussigné déclare par la présente avoir réalisé ce travail par mes propres moyens. Date et signature:



Part Eight: Appendices

Handout: slideshow on the creation of mnemonics. 3E. 23 January 2012





Handout: slideshow on the creation of sample sentences. 3E. 23 January 2012

Creating sample sentences for vocabulary Why?

- Students learn better when they have to **use** a language.
- Samples show how words are used in clusters.
- Students learn better from other students.

From the Student's Book

- Check whether the sentences make sense out of context.
- Indicate the source so others can refer to the sentence.
- E.g.: A group of 18-24 year-olds were canvassed for their opinions. (Headway U-I SB 3rd ed., p.48)

From dictionaries

- MacMillan: macmillandictionary.com
- Cambridge: dictionary.cambridge.com
- Oxford: oxforddictionaries.com
- ...and others.
- Make sure you pick the right use of the word.

From Corpora

- British National Corpus: natcorp.ox.ac.uk
- Pick short and easy sentences, indicate the source.
- E.g.: 'We have had our differences and I am sorry if it has caused offence.' (The Daily Mirror, 1992)

From lyrics

- Choose lyrics from songs that you actually listen to and like.
- Watch out for non-standard English (e.g. 'gonna', 'ain't',...).



From lyrics

• E.g.: The Script - The Man Who Can't Be Moved: Some try to hand me money / They don't understand / I'm not **broke** / I'm just a broken-hearted man



From movies

- Use YouTube clips if you can find them. (The shorter the better.)
- Use famous quotes from movies.
- Add the important text in writing.

From movies • E.g.: Aragorn: "They are the Nazgul, Ringwraiths, neither living nor dead. At all times they feel the **presence** of the ring... drawn to the power of the one... they will never stop hunting you."

From your imagination

 Write your own sentences with the language you already know and situations that make sense to you.







Screenshot: visual representation of a filled garden. 1 September 2012

All 26	0 Words	1 Discus	ssion	Seeds (Nev	w words)	Greenho	use (Short t	term memory) Gard	en (Long te	rm memory)		
All (26	60) He	ealthy (204)	Wi	Iting (56)				Water you	r garden:	Healthy	plants	Wilting p	plants
R	P	Ŷ	R	R	Ÿ	%	R	R	Ŷ	R	9 4	R	R
Ŷ	R	R	æ	*	R	R	P	R	R	P	9 4	%	R
Ŷ	P	Ŷ	R	P	R	9	9	P	P	R	P	R	
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Click 'Sign up'



Spreadsheet: long-term revision test results, 3E, June 2012.





3C2 Vocabulary Test Unit 2, October 2012

	3C2. Surname: First name:	Athénée de LuxembourgThursday, 11 October 2012Final mark: $\cancel{7}$ / 10= $10 \times (\boxtimes/30)^{1.6}$
		English Vocabulary Test Unit 2
		□□□□ Jokers for <i>mems</i> created on <i>Memrise</i> . Deadline:
	Complete the sen	tences using the appropriate word from the tested unit (\square) in the correct form (\square).
	2012 jewellery	Sarah doesn't usually wear much (?), but today she put on a gold necklace. Rob the robber has stolen (?), including watches and rings, worth £10,000.
	22 worsens	We should hurry home before the weather (?). I think it's going to rain. I've already told you that smoking (?) your health. You should stop.
	make up for s	When you (????), you can't stay in the same place for very long. We (????). We need to go somewhere far away as soon as possible.
	respect	Kids have to show (?) for their parents, but parents must do so, too. It is said that kids nowadays don't (?) any kind of authority.
	I II ·	The company's (?) has dropped by 20% in the last quarter. The main (?) source of magazines and newspapers is advertising.
		My friends were (?) by two gang members not far from the pub last night. I was (?) right in front of my own house! And I thought we lived in a safe area.
	Image: Consumes	This light bulb is not economically friendly. It (?) a lot of energy. My friend Jim never (?) any meat. He is a vegetarian.
	☑ ☑ motivated	My football team's success is certainly due to our highly (?) players. The students are all very (?) to learn English vocabulary on <i>Memrise</i> .
	vital	When administering first aid, the victim's (?) functions must be checked. Oxygen is (?) for survival. If you stop breathing, you die.
	Write sentences t	o illustrate the meaning of these items. (content \square ; use \square , form \square)
t+ww	J√□ decade (n)	In a decade, technology evolvated a lot, now we
		have smart phones and nanochips.
	⊿√√ be opposed to (phrase)	Jahe is opposed to the new school reforms.
P	idyllic (adj)	Islands are usually idyllic places.
or/t	v⊽□ pollution (n)	Air pollution is increasing if we don't start to live an
		environmentally friendly, lifestyle.
	☑ Total: <u>25</u> /30	



Vocabulary revision experiment, 4M6, October 2012

Vocabulary revision experiment

Below are two lists of 5 Thai words each, with their English equivalents. Study list A for 2 minutes and list B for 5 minutes. In one hour review list A for 1 minute, then in two days for 1 minute, and one hour later for 1 minute.

List A	
bank	tha-na-khaan
bird	nok
cry	rong-hai
hot	phet
expensive	phaeng

List B

egg	khai
blanket	pha-hom
bright	sa-waang
heavy	nak
fish	plaa



Short-term statistics for October 2012







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