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THE DIFFERENCE BETWEEN USING PAPER DICTIONARY AND E-DICTIONARY EFFECTS IN MEMORIZING NEW WORDS

Telmuun Zorigt

*English Lecturer, Faculty of Professional English, Foreign Language Department, Mandakh
University, Ulaanbaatar, Mongolia*
telmuun@mandakh.edu.mn

Oyun-Erdene Tumurbat

*English Lecturer, Faculty of Professional English, Foreign Language Department, Mandakh
University, Ulaanbaatar, Mongolia*
t.oyunerdene@mandakh.edu.mn

Abstract

Nowadays, students are using e-dictionary on their smartphones, rather than using paper dictionaries. In this study we aimed to show how paper dictionary is rather beneficial and provides long-lasting knowledge when studying a second language. To ensure the accuracy, we involved 105 EFL sophomores of the same level, studying professional English in Mandakh University, and used mixed methodology of quantitative and qualitative data analysis such as interview, notes, focus group, and observation. We conducted a survey to identify the use of paper dictionaries in the classroom. There was also a memory test, which was taken from the students, to investigate how students encode, store, recall, decode and forget the given words. The result of the survey identifies that looking up a word in an e-dictionary takes only a few

seconds, and the words are stored in short term memory, while using a paper dictionary allows the learner to recite the word multiple times in their mind or mouth and the whole process takes usually a minute. Taking a longer time to look up for a word helps the user to memorize the word in their long-term memory, in this paper we have tried to prove this theory with proper research.

Keywords

Paper Dictionary, E-Dictionary, Memorization, Repetition, Vocabulary Learning

1. Introduction

Many studies have focused on the memorization based on the dictionaries. Students use some kinds of dictionaries in order to learn new words and phrases. There are two main types of dictionaries which are paper and online dictionaries. Rundell implied that since the dictionary began to change its form from the paper to the digital, people have expressed the negative sides of a paper dictionary, the positive sides of an e-dictionary, and the potential usefulness of an electronic dictionary (Rundell, 2014). The dictionary assists to learn foreign languages more easily and, with the invention of the online dictionary, users are now better supported and more effectively (Trinh Thi Lan Anh, 2021). Chen and Dziemianko discussed that many learners use e-dictionaries and paper dictionaries to understand and memorize the meaning of a new vocabulary (Dziemianko, 2010). Memorization is a neurological process to store and remember a previous experience and use such knowledge for daily life. When we close our eyes, then open, and then close to remember a certain image we have just seen, which eventually fades away. In this manner, the image stored in our brain only lasts for approximately 20 seconds. This is called short-term memory. Information stored in short term memory is usually lost after a while, or it can be transferred to our long-term memory after one or two repetitions. The same process happens in our brain when we use dictionaries, but memorizing new words can be difficult. The effect of learning vocabulary items through memory strategies reflected in the result of memorizations. Building up vocabulary is significantly connected to the memorization strategic. Either of using paper and e-dictionary helps to memorize new vocabulary in the terms of long or short term memorization type.

The most popular methods to memorize new words are large amounts of repetition and understanding the logical meaning of the words (Shinebayar, 2019). Most smartphone dictionaries and Google Translate service offers just the meaning of the words, without the usage

of the word in a sentence, thus making it difficult to fully understand both the meaning and usage of the word. Not to mention it only takes a few seconds to look up a word from an e-dictionary, storing the word in our short-term memory. On the other hand, paper dictionaries offer a variety of translations of the word, examples of the word in sentences, and pronunciation. This allows the user to fully understand the meaning of the word along with its usage. While looking up for the word the user also turns several pages, reading the word they are searching for, this repetition in their mouth or mind sends the word into their long-term memory. In this manner, using a paper dictionary allows the user to repeat the word and fully understand its usage and logical meaning. We have done research in order to prove this theory.

2. Literature Review

Today, English is the main means of communication between nations. Every learner has a vocabulary problem when learning English and a dictionary can be very helpful in solving this problem. People believe that a foreign language is crucial to life and try to improve their knowledge and ability about foreign language (Bolormaa, 2012). However, many people have issues understanding the meaning, intonation, and usage in the learning process. Thus, the dictionary becomes an essential tool for those who are having problems learning foreign languages (Anh, 2021). Researcher Kipper tried that paper dictionaries are more detailed when it comes to explanation and pronunciation and are a good brain exercise that pushes learners' critical thinking and spellings during the searching process. Furthermore, our fast-growing digital society has led to the popularity of online dictionaries worldwide. According to Shamar e-dictionaries seem to be beneficial in terms of illustrating foreign terms through audio and visual methods. Thus, both online and paper dictionaries are equally appreciated by learners for their own benefits (Trinh Thi Lan Anh, 2021). With the help of dictionary students learn the meaning of unfamiliar words and pronunciation. Researcher Ridley said that being able to make use of a dictionary in the right way enables students to enhance communication and upgrade their academic achievements at school. The usage of dictionaries is a vital assistance in lexical learning and nowadays the orientation of e-dictionaries has emerged a new and valuable resource for memorizing vocabulary (Davoudil, 2016).

There are many kinds of dictionaries that are categorized on the basis of their mode of view. Nesi divides dictionaries into monolingual, bilingual, and bilingualism dictionaries (Nesi, 2008). E-dictionaries come in three types: hand-held dictionaries, dictionaries on CD-ROM, and

Internet dictionaries. We can classify mobile dictionaries as a subgroup of hand-held dictionaries. The main difference between E-dictionaries and paper dictionaries is in their manner of access to vocabulary information (Nesi, 2008).

E-dictionaries provide learners access easily and quickly (Laufer, 2000). Using e-dictionaries increases the chance of acquiring the look-up words while the findings of Laufer and Hill (2000) survey illustrated that many teachers still prefer their students to use paper-based dictionaries. Some teachers are concerned that the ease of access related to electronic dictionaries might lead to heavy reliance on these dictionaries on the part of learners. Also, the study showed that several teachers complain about electronic dictionaries as inaccurate, noisy, and distracting (Stirling, 2005). The computer dictionary, for example, the producer can easily upgrade the dictionary's quality, users can access and search large amounts of information quickly (Trinh Thi Lan Anh, 2021).

Although the development of E-dictionaries in the past decade made them easily accessible to many more students all over the world, many students in Asian countries are still using printed dictionaries as the reference tool in language learning (Davoudil, 2016). Until recently, the only available dictionary was the paper-based dictionary which was huge, fragile and limited in the amount of vocabulary. Nowadays, these bulky paper dictionaries are being replaced with the small, light, stylish and hi-tech electronic dictionaries with colorful LCD (Gujjar, 2012). They include millions of words which can be renewed by linking to the internet free of charge. Some learners are reluctant to use their paper dictionaries when they encounter new words in the process of text comprehension. One source of this reluctance is the fact that flipping through the dictionary pages to look up the definition of new words is time-consuming and cuts the normal flow of reading. This problem is taken care of by electronic dictionaries due to their speed and ease of access. Moreover, Laufer and Hill (2000) identifies that combining the paper and e-dictionaries improves vocabulary retention and memorization. One of the most significant challenges that learners face during the process of foreign language learning is learning vocabulary. Vocabulary has been known as a central point in any language learning (Barham, 2017).

3. Memory and Theories Regarding Memory

Memory makes the bridge to connect the past to our future. This is a process where people feel their surroundings and meet others, the impressions and reminiscences are stored in their brain, then when in need the stored information is recalled (Davaajav, 1974). In other

words, this is a neurological process involving people storing their past experience and feelings, recalling them, and using it for their everyday actions. In neurology, memory is well studied and described. Below mentioned are few of the most common definitions:

- A conscious which allows us to store and recall certain information about the past
- A system which stores all the impressions created in Telencephalon. In this sense, memory can be separated into short term and long term, depending on their time pace.
- When we store information about things and actions happening around us.

Most scholars define memory as a step-process and the steps are distinguished according to how long the information is stored in each one of them. The first step is the direct memorizing effect. In this step every single information coming through our senses will be directly received in about 0.1 to 0.5 seconds. Our sensory memory is not that difficult to understand. Close your eyes, open it, and close it again. The image you've last seen will stay in your memory for a short while. This is sensory memorization. When storing information in this sense, if our upper brain had more attention the image can be seen approximately for 20 seconds. This is called a short-term memory and is the second step.

Short term memory is controlled by our consciousness. Information is either forgotten after a while or is transferred to long term memory after one or two successful repetitions. Short term memory capacity is approximately 72 information units on average. Average person can memorize 5 to 9 words, images, or numbers in their short-term memory. The information can be related to each other, or it can be one whole concept, image, or text.

When storing information in long term memory our brain classifies the information into different sections and the irrelevant piece will be forgotten. The process of forgetting information is also divided into full, partial, permanent, and temporary (Dorjjav, 2005). In the full forgetting process the information is fully lost and cannot be recovered. In a partial forgetting process where some irrelevant or corrupt information is lost. The lost information is also unable to be recovered (Surenjav, 2011). Temporary forgetting happens when some parts of our body, especially nerve cells experience problems or are damaged (Ebbinghaus, 1885). And permanent forgetting happens because of severe damage in our nerve cells. The main discussion regarding memory is mainly about not forgetting rather than memorizing. Our memory is rarely as reliable as we'd like (Rust, 2021).

4. Main Processes in Memorization

Memorization is a process where we store information about things around us. There are three important steps when we try to memorize certain information.

1. Encoding and entering the necessary information
2. Storing the information entered in our brain
3. Decoding the stored information, or remembering

The memorization main processes play an important role in accomplishing these steps. The main processes include: encoding, storing, decoding, recalling, and forgetting.

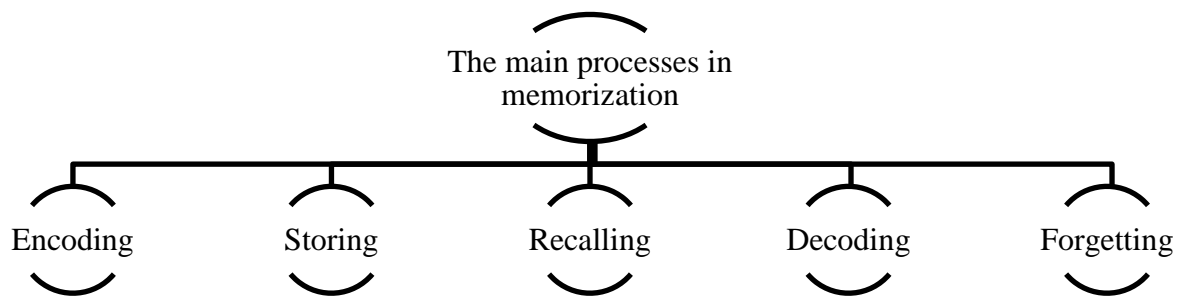


Diagram 1: *Memorization process*

(Source: General Psychology, Batsaikhan, B., & Delgerjav, M.)

Table 1: *(Explanations of memorization processes)*

№	Process of memorization	Explanation
1	Encoding	Before we store information, encoding takes place. Using our senses, emotion, and feelings we encode the information into our brain. The essence of encoding lies in the integrity and cohesion of the information. Creating sensible links to connect the information according to their meaning is a result of our consciousness. The first step to encoding takes place unintentionally, without setting a goal or using any devices. This occurs naturally in actions of our everyday life, their needs, interests, goals, and effects from people surrounding us. The opposite of unintentional encoding is intentional encoding. This is a process which we use to accomplish something or to reach a goal by focusing. In the learning

		process, intentional memorization plays an important role in reviewing the course materials and memorizing them without flaws.
2	Storing	This is where the encoded information is actively processed, systematized, enriched, and eventually stored. Storing encoded information relies heavily on how the person understood the information deeply. The more well-understood it is, the longer the memory stays. The storing process is also dependent on the person's habit or characteristics. An individual usually never forgets crucial information for them. Although, each information has a different impression for people, every memory can be lost. Therefore, repetition is important if one wants to memorize something better.
3	Recalling	Is a process where a person remembers the previously stored information. In other words, despite the fact that a certain event has already happened, a person can re-imagine the whole scenario. This process can either be voluntary or involuntary. Voluntary recall occurs unintentionally, but the involuntary recall has aims and goals. Mostly with the purpose to remember from a past experience. Forgotten information from an old or recent time period requires a certain amount of energy.
4	Decoding	This happens when an object related to a certain memory is seen or felt again. When we see or feel a certain object from the past, the impression, emotion, or the memory is remembered. When a new feeling matches with the old feeling helps to remember the past memory.
5	Forgetting	A process where information in the memory is fully and completely unrecoverable. Encoded and stored information continuously becomes difficult to recall and decode. Forgetting stored information happens when there is a temporary nerve cell failure. Mostly unimportant, uninteresting, unrelated and unnecessary information gets lost easily. Forgetting can be partial, full, and temporary. When information is fully forgotten, it can't be remembered or even recognized, and when it's partially forgotten some parts of the information in our memory can't be recalled or recalled with flaws. Sometimes we can recognize the information but not recall it. Temporary forgetting happens from disturbance in our nerve cells outside

		the brain. Aside from the abovementioned, certain diseases, drugs, amnesia, and alcohol can cause forgetting.
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(Source: General Psychology, Batsaikhan, B., & Delgerjav, M.)

4.1. Types of Memory

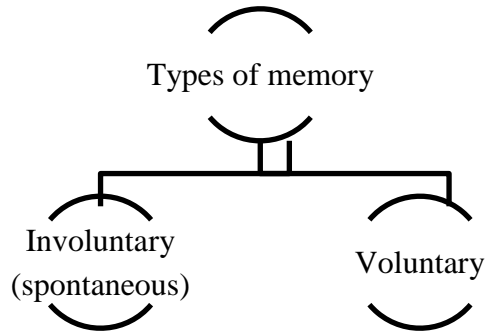


Diagram 2: Memorization type

(Source: General Psychology, Batsaikhan, B., & Delgerjav, M.)

Involuntary (spontaneous) memory: This memorization does not require energy, but is stored when we are working with information or doing actions. It happens commonly in young age, but is weak in adults.

Voluntary memorization: Using a special method to memorize information with a certain aim, usually consuming energy. This memorization can be reliant on many factors, including:

The purpose for memorization: For example: if an information is only stored for an exam, it starts to be forgotten after the exam, or if the information is stored in order to be used for future career, it can last much longer than the previous example.

Table 2: The stored information classifications

No	Memory type	Description
1	Inherited memory	It is called a primary memory. When we drive a car, tie a tie, use a tool and many other everyday actions require many different movement memories from our brain.
2	Image memory	The images stored through our senses are later required to be used, thus it gets recalled. Depending on which sense we are using, the memory can be classified as: visual, hearing, feeling, smelling, and tasting.
3	Emotional	It's created almost at the same time as primary memory and is usually

	memory	stored from our emotions and characteristics in certain times and situations.
4	Oral memory	This type of memory is only used by humans, and is also known as word-logic or semantic memory. Oral memory is defined as when we use our mother tongue in consciousness, creativity, analysis and so on.
5	Long-term memory	It stores information over a long period of time. This type of memory includes: <ol style="list-style-type: none">1. Long-term voluntary storing (using focus and attention to memory a necessary information)2. Long-term closed storing (storing information in unnatural ways, such as hypnosis or nerve shock)
6	Short-term memory	When doing certain actions, accessing long-term and short-term memory to store and use memories at a quick pace.
7	Intermediate-term memory	It allows us to store and access information for a few hours to several weeks. Most of time, our brain stores information during the night time and after a short while this information is transferred to long-term memory, thus giving up some space for the next intermediate memory

(Source: General Psychology, Batsaikhan, B., & Delgerjav, M.)

5. Research Introduction

The above-mentioned research studies about memory mostly imply that our brain effectively memorizes and recalls information that is repeated multiple times or that makes a deep impression on us. For foreign language learners, memorizing new words can be difficult and it plays an important role in their study. Thus, the method they use to look up a new word can be very much relevant to how they memorize the word.

We have taken surveys from sophomore students of Mandakh university. The survey questions were mainly to identify which dictionaries they use and their reasons, another part of the survey was to recognize how much of the word new words they recall. To accurately project the research results, we have chosen a group of students, which all have something in common. Sophomore students of Mandakh university, studying the same course “Professional English 1”.

We used Google Form platform for one week and successfully surveyed 105 undergraduate students. The survey questions were aimed to define which type of dictionary the students use and how it is affecting their vocabulary building. The questions also included a memory test, with the words from “Professional English 1” course, thus allowing us to rule out the differences of their previous study levels. As well as, we picked 50 students out of 105 and gave them 20 words related to their profession and they memorized these words in a week. They were divided into 2 sections of paper dictionary users or e-dictionary users. Then we made a sum of this survey below.

6. Research Results

We gave 30 professional English vocabularies to the 50 out of 105 students who enrolled in the prior survey and they memorized these words a week (during the class and home). 25 students have memorized using paper dictionary and the other 25 used e-dictionary. Then we have checked the process about how students encode, store, recall, decode and forget the 20 words. Researchers checked their memorization result in the terms of mini test and observational survey. The students who used paper dictionary performed the exam 21 percent rather than e-dictionary users which mean paper dictionary users performed the exam as of 86 percent while e-dictionary users were evaluated by 65 percent. Thus, we concluded that using paper dictionary is more beneficial rather than e-dictionary to memorize new words.

We tried to make out the relationship between students who use paper-based dictionaries and e-dictionary.

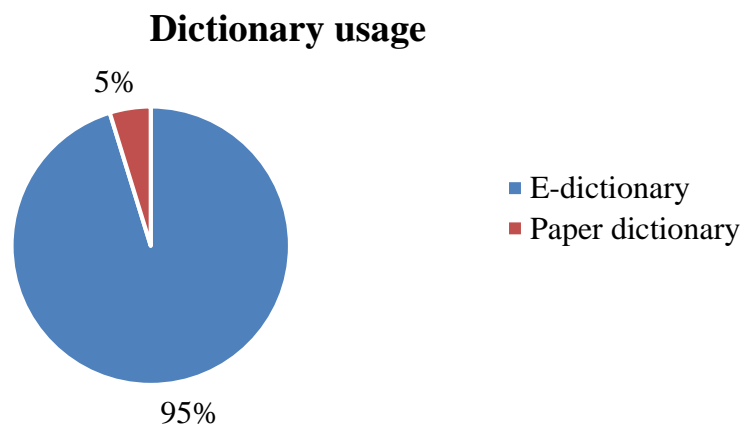


Figure 1: *Survey question 1 results*
(Source: Self)

From the graph above, we can clearly see that most of the survey respondents use E-dictionary. We assume that it's due to the fact that e-dictionaries are easy to access and much faster than paper dictionaries.

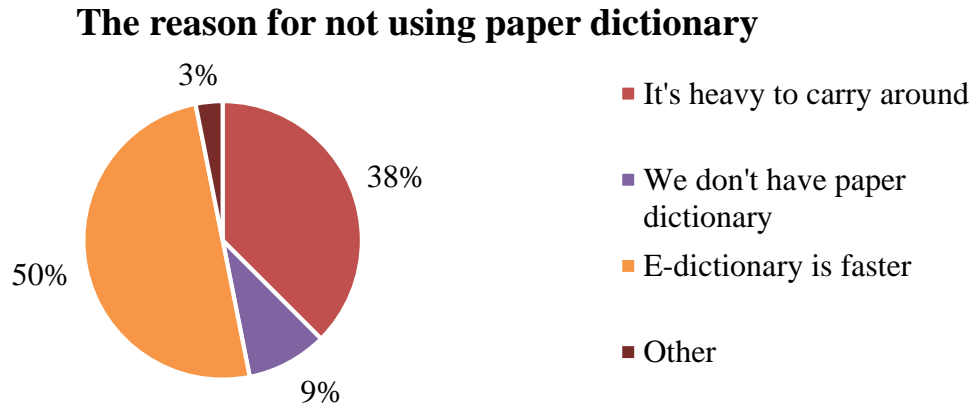


Figure 2: *Survey question 2 results*
(Source: Self)

With this question we have tried to define the main cause for not using a paper dictionary. The figure clearly indicates that the main cause is that e-dictionaries are faster and paper dictionaries are heavy to carry around. The 9% doesn't own paper dictionaries and when questioned, they replied: "taking dictionaries from the library is annoying, and sometimes when they forget to return the book, fines are applied".

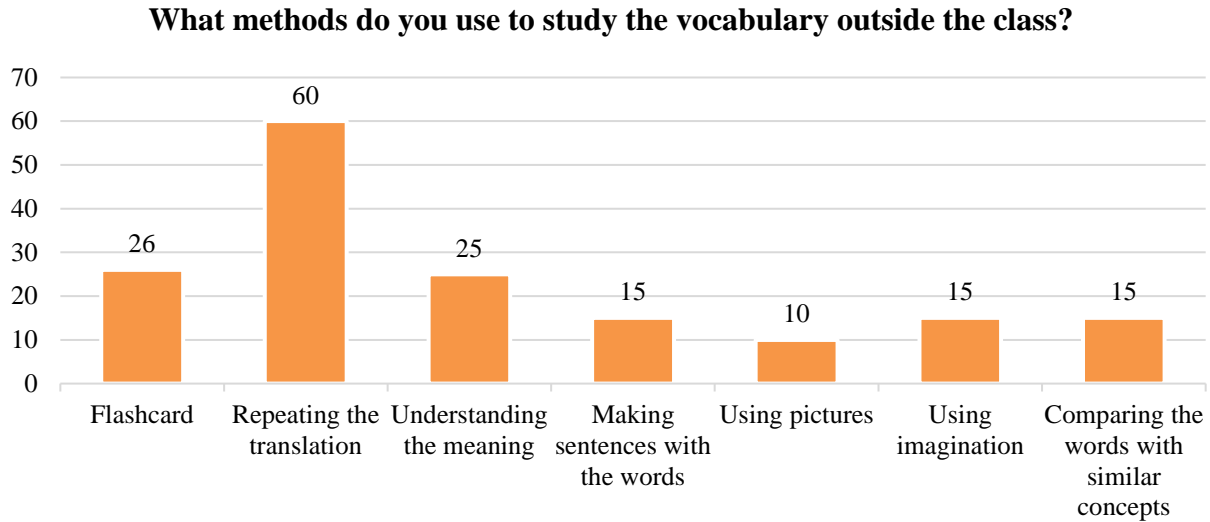


Figure 3: Survey question 5 results
(Source: Self)

63% of the respondents answered that they study their vocabulary from the lessons, outside the class or during their free time. The highest column represents that 60 of the students use the mechanical storing method or repeating the translation of the new words, 26 students use flashcards and 25 students understand the logical meaning of the words and so on.

What are the reasons not to study the vocabulary outside the class?

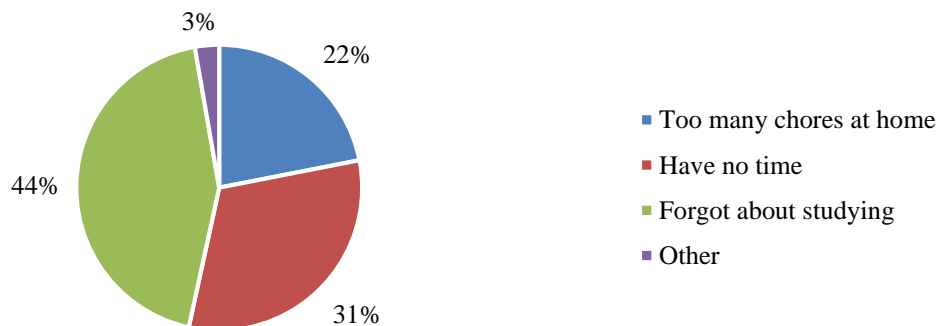


Figure 4: Survey question 6 results
(Source: Self)

27% of the total respondents said they do not revise their new-words outside the class. By recalling the past information (in this case, new words learnt from lessons), it can be transferred to the long-term memory, in other words it's best to recall the new words. With the above questions are able to divide the respondents into the following categories:

- a. Paper dictionary users /don't revise/
- b. E-dictionary users /don't revise/
- c. Paper dictionary users /revises/
- d. E-dictionary users /revises/

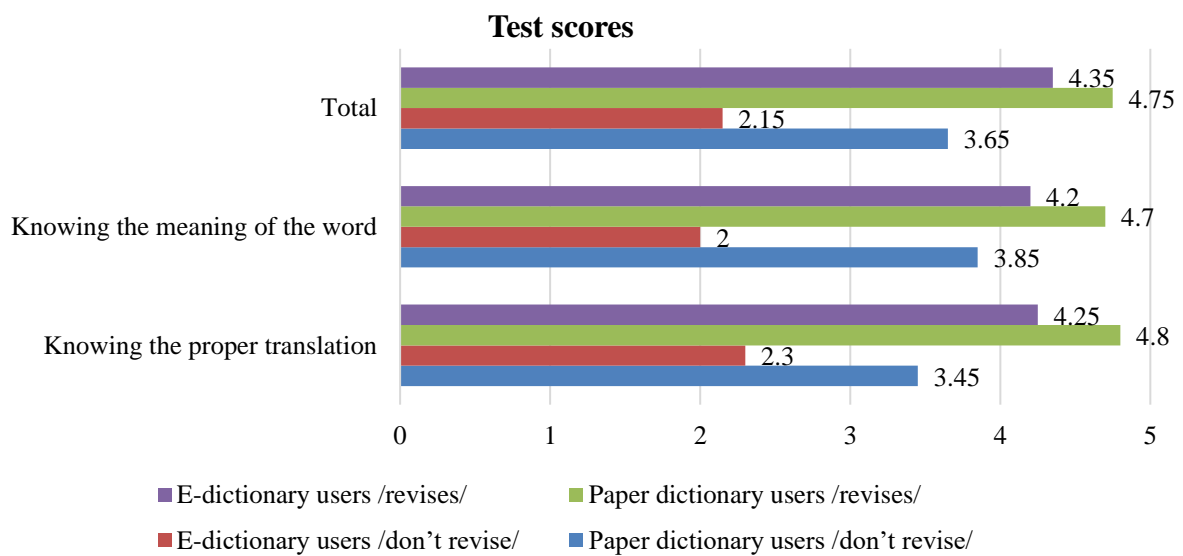


Figure 5: Survey question 3 and 4 results
(Source: Self)

We have also taken a mini test with 2 sections to inspect how well they remember the new words from the lesson. The first checks the students' ability to translate the words, the second part sees if the students could find the words' meanings. Each had 5 scores and the results are shown above.

7. Research Limitations

We had 25 students as our test subject, which is not quite enough to represent the total population of EFL learners in Mongolia. For better results, we must increase the number of students in our research. Another flaw in our study was that the questions in our survey did not

fully evaluate the students' vocabulary ability. We believe it's best to study more about vocabulary evaluation systems, and include standard set questions for accurate results.

8. Conclusion

As mentioned by some scholars in the first chapter, using a paper dictionary makes learners repeat the word multiple times and, in this sense, the new words are stored in long term memory. From the studies we can conclude that students who mechanically memorize new words know the translation of the words, but made some mistakes in matching the meaning exercises. On the other hand, students who compare the words and use their imagination know the meaning of the new words better than the others. Learners who use paper dictionaries had the same results as students who use imagination to memorize new words. We set the Research Limitations EFL sophomores studying professional English in Mandakh University's full-time program.

One mechanically memorizing example is using a paper dictionary. The study findings have proven that learners who use paper dictionaries are better at exams than those who use e-dictionaries. Also, if we compare the results of paper dictionary users who don't revise the new words had much better scores than e-dictionary users who also don't revise, to summarize that using a paper dictionary has a better impression on our consciousness.

In the one part of the survey result paper dictionary users (25 students) were evaluated by 86 percent or more than 21 percent on the examination which checked student's memorization processes of vocabulary encoding, storing, recalling, decoding and forgetting compared to the e-dictionary users (25 students) accomplishments of 65 percent.

It's also worth mentioning that e-dictionary or smartphone dictionaries mostly show the translation of the words only; it lacks the context to provide full information about the word. Looking up a word in an e-dictionary only takes a matter of seconds, so the information is encoded and stored in short term memory, which usually fades away easily. While using a paper dictionary provides examples and usages of the word, a learner approximately uses one minute to look up a word. This process enables the user to repeat the word, understand the full meaning, seeing the words used in sentence and other context, and eventually storing the words in their long-term memory through repetition and sensory memory. The first chapter of our study also included that e-dictionary is commonly appreciated for everyday usage as using e-dictionary is

definitely faster than paper dictionary, but not for the learning process as the new words are only stored in short term memory and will be lost eventually.

Using a paper dictionary has many benefits for language learners, for taking a certain amount of time to look up for the new words definitely sends the information to our long-term memory. Thus, making it easier to remember the new learnt word. As foreign language educators, we must encourage the learners to use paper dictionaries in their study.

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