Gamified Language Learning: Investigating Duolingo's Impact among French as a Foreign Language (FLE) Learners on Vocabulary Acquisition and Practical Application

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ABSTRACT

Vocabulary acquisition serves as a critical foundation for target language proficiency development (Suziana & Nur Ameera, 2022). This study examines vocabulary acquisition in French as a Foreign Language (FFL) through Duolingo, a gamification-based mobile learning platform. Despite extensive research on Duolingo's pedagogical effectiveness, limited attention has been given to vocabulary retention and the practical application of learned lexical items in authentic communicative contexts. This quantitative investigation analyzes the vocabulary retention and mobilization capacity of A1 to B1 level learners using Duolingo, based on Common European Framework of Reference for Languages (CEFR) criteria. Data collection comprised structured questionnaires assessing usage patterns and learner perceptions, complemented by CEFR-aligned vocabulary assessments. Results demonstrate that Duolingo effectively supports vocabulary acquisition, particularly of high-frequency everyday lexicon. A significant majority of participants reported transferring learned vocabulary to contexts beyond the application, including written coursework and classroom interactions. However, findings reveal a methodological limitation: the study primarily evaluates written vocabulary recognition without measuring oral production or spontaneous conversational competence. This research addresses a critical gap in the literature on technology-enhanced vocabulary learning while establishing groundwork for future investigations into the transfer of digitally-acquired vocabulary to oral proficiency and real-time communicative competence in French. Implications for computer-assisted language learning (CALL) and FFL pedagogy are discussed.

Keywords: Duolingo, vocabulary acquisition, French as a Foreign Language, gamification, CEFR, mobile-assisted language learning

INTRODUCTION

Background Research

In language learning, there are two main approaches: formal learning and informal learning. Formal learning is structured through courses and assessments in an academic setting. However, informal learning is done in a self-directed manner, often via digital resources.

With the emergence of educational technologies, the boundaries between the two types of learning are becoming increasingly permeable, offering learners multiple opportunities to enrich their language skills outside the classroom (Suziana and Nur Ameera, 2022).

This research focuses on the second learning approach using Duolingo, which is one of the most popular language learning platforms in the world. It is designed around the principle of gamification, offering interactive learning that is accessible to all and often free (Mariska Febrianti, 2024). Duolingo is also famous for its flexibility and ability to motivate learners through game elements such as points, badges, and daily challenges. In addition, it provides exercises covering the 4 main criteria in learning a foreign language: reading comprehension, listening comprehension, written production, and oral production (Mariska Febrianti, 2024).

Despite its popularity and the numerous studies on its overall effectiveness, few studies focus on the acquisition and especially the retention of vocabulary in FLE through this application. Moreover, there is a lack of research exploring how learners actually use vocabulary acquired via Duolingo in authentic contexts. This raises the question: does learning through gamification allow for genuine, lasting, and functional linguistic appropriation?

Problem Statement

With the rise of educational technologies, FLE learners are increasingly turning to applications like Duolingo, which offer informal and playful learning based on gamification. While these tools are widely adopted for their flexibility and ability to motivate through game elements, it remains to be seen whether they truly enable acquisition and especially lasting retention of vocabulary. Indeed, most existing research is limited to measuring immediate effectiveness, without examining whether learned words are memorized and mobilized in the long term.

Furthermore, few studies have focused on how learners concretely use vocabulary acquired via these applications in authentic contexts, both orally and in writing. This raises an important problem: does the popularity and appeal of Duolingo necessarily guarantee functional and lasting linguistic appropriation, aligned with CEFR expectations? It is precisely this gray area that this research seeks to illuminate by exploring both vocabulary retention and learners' perception of Duolingo's effectiveness in their French learning.

Research Objectives

The research objectives are:

RO 1: To analyze the lasting acquisition of vocabulary acquired through Duolingo.

RO 2: To observe how learners realize learned vocabulary in real contexts.

Research Questions

To achieve the research objectives, several research questions have been prepared. The research questions are:

RQ 1: To what extent does Duolingo promote vocabulary acquisition and improvement among FLE learners?

RQ 2: How do learners perceive the usefulness and effectiveness of Duolingo in enriching their French vocabulary?

LITERATURE REVIEW

Context: FLE in Malaysia

French as a foreign language (FLE) refers to the teaching and learning of French by people whose mother tongue is not French and who learn it outside any French-speaking environment. It is primarily designed to develop learners' communicative skills, including vocabulary, grammar, oral comprehension and expression, adapted to contexts where French is not an official or dominant language (Council of Europe, 2021). Unlike the concept of French as a Second Language (FLS), which is taught in multilingual contexts where French has official status, FLE is fundamentally a process of acquiring a foreign language that requires deliberate pedagogical efforts (Candelier, 2003).

In Malaysia, FLE has gained a significant presence in secondary and higher education institutions. French is commonly offered as an elective subject within language and international programs. Malaysian students primarily study French to broaden their global perspectives, access cultural content, or enhance their employability, given the international reach of the French language (Mat Saad and Abdul Rahim, 2022).

Duolingo and Other Alternatives

Duolingo is a widely recognized online and mobile language learning platform, launched in 2011. Designed around the concept of micro-learning, it offers short, interactive lessons that emphasize repetition and immediate feedback. Duolingo adopts a gamified approach, using elements such as points, daily streaks, virtual rewards, and playful characters to create an engaging learning experience that encourages users to return each day (Vesselinov & Grego, 2012). According to Riegler (2020), these features draw on psychological principles such as loss aversion and habit formation, making language learning feel like a casual game rather than rigorous academic work.

Beyond Duolingo, the landscape of language learning applications has expanded considerably. Among the most popular alternatives are Babbel, Memrise, Busuu, and Rosetta Stone, each offering distinct pedagogical methods. For example, Babbel focuses on structured grammar and conversational phrases with subscription access, while Memrise incorporates spaced repetition and user-generated content to build vocabulary (Kukulska-Hulme, 2020). Busuu combines lessons with opportunities for interaction with native speakers, and Rosetta Stone emphasizes immersion techniques, using images and contextual cues to teach without translation. Each of these platforms addresses specific learner preferences, such as grammar depth, community involvement, or immersive environments.

Despite the variety of available applications, many learners, particularly casual or beginner learners, prefer Duolingo due to its zero entry cost and playful interface. It allows anyone to start learning without financial commitment, which is a decisive factor for many students. Furthermore, its short, playful lessons fit seamlessly into daily routines, which is particularly appealing for users who sometimes lack time for longer study sessions (Riegler, 2020). According to Mat Saad and Abdul Rahim (2022), Malaysian students cite ease of use, enjoyment, and convenience as the main reasons why they choose Duolingo over more traditional or paid platforms. This preference underscores how motivation, habit, and accessibility are essential in determining learners' choices in digital language tools.

Related Literature

Study Conducted on Vocabulary Acquisition

In the field of teaching French as a foreign language (FLE), several studies have explored the effectiveness of digital tools in vocabulary acquisition, particularly via mobile applications like Duolingo. Among these studies, the research conducted by Suziana and Nur Ameera (2022) focuses on using Duolingo to facilitate French vocabulary acquisition among beginner students in Malaysia. For eight weeks, 21 A1-level students used the application daily and their progress was evaluated through tests, observations, and online interviews (Suziana and Nur Ameera, 2022).

The results of this study highlighted a significant improvement in vocabulary acquisition, as well as very positive perceptions of the application among students. They described Duolingo as user-friendly, accessible, and motivating through its playful method based on gamification, which aligns with previous findings by Munday (2016) and Gafni, Achituv, and Rahmani (2017) on the effectiveness of the playful learning model. Additionally, the study draws on Krashen's (1987) theory of comprehensible input to explain how translation and visual elements offered by Duolingo facilitate learning new words.

However, despite these interesting contributions, certain limitations are notable in this study. First, it is limited to analyzing immediate acquisition without evaluating vocabulary retention in the long term, which is nevertheless essential for judging the solidity of lexical learning (Isbell et al., 2017). Next, the studied sample concerns exclusively A1-level beginners, without including more advanced learners (A2, B1), which reduces the scope of results to a single segment of learners. Furthermore, although the study examines acquisition within the application, it does not address vocabulary use in real contexts, such as spontaneous oral production or free writing, a gap highlighted by Finardi, Leão & Amorim (2016) who remind us that Duolingo remains limited in developing communicative skills.

Moreover, even though the four main skills (reading comprehension, listening comprehension, written production, oral production) are mentioned, no precise link is established between observed results and official descriptors of the Common European Framework of Reference for Languages (CEFR) (Council of Europe, 2001). Finally, the study relies essentially on passive use of the platform without combining Duolingo with active teaching methods.

Therefore, the present research proposes a more thorough and critical approach. It aims not only to analyze vocabulary acquisition, but also to measure retention over a more extended period. It will integrate learners of various levels (A1 to B1) in order to better understand the evolution, specifically the use of acquired vocabulary in authentic contexts. This research wishes to fill an essential gap in existing work on Duolingo. It will explicitly draw on CEFR criteria to evaluate learners' skills, thus providing a more rigorous basis for analyzing results (Council of Europe, 2001).

METHODOLOGY

Research Design and Method

The type of survey that will be conducted and used will be quantitative. The reason for conducting a quantitative survey is to collect information on their frequency of Duolingo use, their perceptions of the platform's effectiveness, as well as their feeling of progress in vocabulary. These closed questions provided measurable data, which will also be easier for data tabulation. The sample size will be 30 to 40 respondents.

Study Location

The online questionnaire was distributed through various groups on platforms such as WhatsApp, Telegram, and Instagram, as these groups are composed of students learning French and who are appropriate respondents for my survey.

Participants

The study adopts a quota sampling method in order to ensure that participants represent the target population relevant to the research focus. Since the study specifically investigates vocabulary acquisition in French Language through Duolingo, it is essential that participants are active learners of French and regular users of the application which focuses on students of levels A1 to B1 (equivalent to first to third year students) studying at Universiti Malaya (UM) and Universiti Putra Malaysia (UPM). This participant's selection criteria is intentional rather than random as the research requires participants who can provide informed insight into the application's impact on vocabulary acquisition.

Procedure

Before making the official survey form public on May 25, 2025, a pilot study was conducted for two days by sharing the survey with three of researcher's close friends who use Duolingo. The objective was to ensure that the questionnaire quality was optimal and that it was possible to answer the survey questions. Data collection began on May 25, 2025 until June 15, 2025, when respondents received a link to a Google form. The survey lasted between 5 and 7 minutes.

At the beginning of the survey form, the researcher's name will be indicated, along with a brief description of this research and a short consent form to protect their responses to remain anonymous. All of these were prepared in French and English to make it easier for those students with a beginner level of French language to understand the purpose of the questionnaire. The online questionnaire method will facilitate data collection and allow respondents to answer the survey at their convenience.

The data were then analyzed by examining the percentage of each response. In Section A of the survey, demographic data, primarily year of study and language level, will be obtained, which will help me segment participants into subgroups for analysis. In Section B, the collected data are objective and subjective data

obtained through vocabulary tests aligned with A1, A2, and B1 levels. This will allow the researcher to directly measure vocabulary acquisition and retention in three cohorts: first-year students will perform A1-level tasks, second-year students A2-level tasks, and third-year students B1-level tasks. Common responses were then categorized and presented as pie charts.

Research Instruments

The research questionnaire consisted of two sections, which respondents had to complete for the researcher to collect quantitative data. In Section A, the Google form includes general questions about participants' use of Duolingo to collect information on their frequency of Duolingo use, their perceptions of the platform's effectiveness, as well as their feeling of progress in vocabulary. The questions in this section were adapted from "Vocabulary Acquisition Using Duolingo in French Language Learning: A Malaysia Context," by Suziana Mat Saad and Nur Ameera Abd Rahim (2022) because the study has similar goals and objectives, which are to study vocabulary acquisition with Duolingo.

Section B consisted of vocabulary tests composed of multiple-choice questions and fill-in-the-blank questions to evaluate their vocabulary acquisition. 5 questions were prepared appropriately for each year of study which are equivalent to their French language level. For example, for first-year and second-year students who are equivalent to A1 and A2 levels, all questions are questions with answer choices. But for third-year students who are equivalent to B1 level, open questions were prepared where they must put their answers in the blanks.

All of the vocabularies used as a part of the test were chosen carefully on how frequently they were used in Duolingo, which follows the CEFR structure where they focused on various themes such as daily routine, food and expression.

ANALYSIS AND DISCUSSION

Overview

The data will be presented in the form of pie charts and bar charts to deepen the figures presented below. The results generated by the questionnaire are as follows.

Analysis of Demographic Questions

Section A is the first section of the survey that contains questions about the demographic profile of respondents, namely primarily year of study and language level.
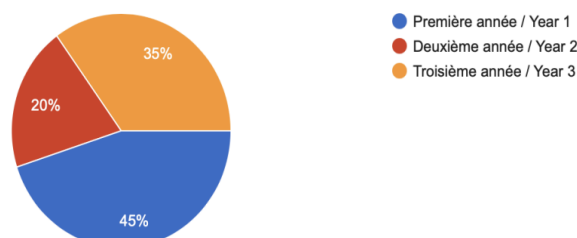

Figure 4.2.1 Data on respondents' year of study

Figure 4.2.1 above presents data on respondents' year of study, where the majority of respondents are first-year students with 18 (45%) respondents, followed by third-year students with 14 (35%) respondents and second-year students with 8 (20%) respondents.

Quel est votre niveau de la langue française?
What is your level of French language?

40 responses

Copy chart

- Débutant / Beginner (A1 - A2)
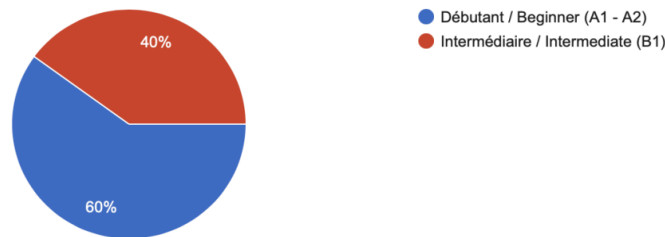- Intermédiaire / Intermediate (B1)

Figure 4.2.2 Data on respondents' French language level

Figure 4.2.1 above presents data on respondents' French language level, where the majority of respondents are beginner-level students, that is A1 and A2 levels with 24 (60%) respondents and intermediate-level students, that is B1 level with 16 (40%) respondents.

Analysis of Closed Questions

Closed questions allowed for obtaining quantitative data on the duration of Duolingo use, frequency of use, and time spent per session. These responses reveal Duolingo usage habits among different learner profiles. Furthermore, subjective perceptions will be collected on whether Duolingo helps them learn new vocabulary, if they noticed improvement, the approximate number of new words they think they learned, and the frequency with which they reuse this vocabulary outside the application. The question about types of vocabulary easiest to memorize will indicate lexical categories (daily life, places, time) that learners find most accessible through Duolingo.

Depuis combien de temps utilisez-vous le Duolingo pour apprendre le français?
How long have you been using Duolingo to learn French?

40 responses

Copy chart

- Moins d'un mois / Less than a month
- 1 à 3 mois / 1 to 3 months
- 3 à 6 mois / 3 to 6 months
- Plus de 6 mois / More than 6 months
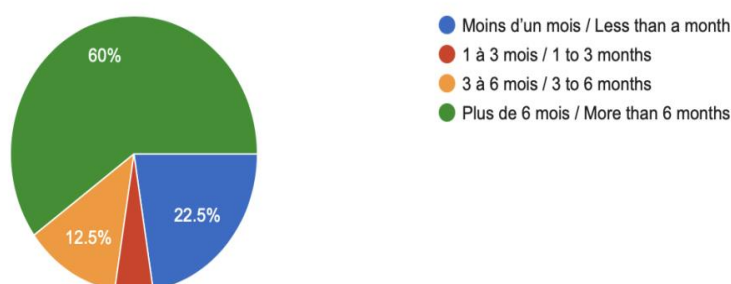
Figure 4.3.1 Data on duration of Duolingo use

Figure 4.3.1 above presents data on duration of Duolingo use. This pie chart shows that most respondents have been using Duolingo for more than 6 months, representing 24 (60%) of them. Then, 9 (22.5%) respondents have been using the application for less than a month. There are 5 (12.5%) respondents using the application for 3 to 6 months and 2 (5%) respondents using it for 1 to 3 months.

These data indicate that the majority of surveyed individuals have extensive experience with Duolingo, having used the application for more than six months. This strong representation of long-term users reinforces the relevance of this sample for studying vocabulary acquisition and retention. At the same time, the presence of more recent users provides comparative insight, allowing us to capture differences in perception and actual vocabulary learning across different durations of application use.

Figure 4.3.2 Data on frequency of Duolingo use

Figure 4.3.2 above presents data on frequency of Duolingo use. Most respondents, 21 (52.5%), do not use Duolingo often. But 10 (25%) respondents use Duolingo every day. Besides these two major results, 5 (12.5%) respondents use the application a few times a week and 4 (10%) respondents use it a few times a month.

These data indicate that while the majority of surveyed individuals use Duolingo rarely, there is still a significant portion of 25% of respondents who use the application every day. The presence of occasional and regular users suggests a wide range of usage habits among learners. This result is valuable for the study, as it allows examining how different frequencies of application use can influence vocabulary acquisition and memorization.
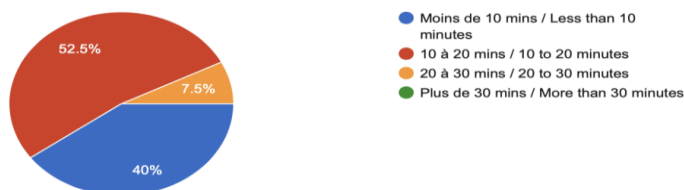
Figure 4.3.3 Data on time spent per session on Duolingo

Figure 4.3.3 above presents data on time spent per session on Duolingo. Most respondents spent between 10 and 20 minutes per session, with 21 (52.5%) respondents. Other respondents, numbering 16 (40%) respondents, devoted less than 10 minutes to using Duolingo. Additionally, 3 (7.5%) respondents spent 20 to 30 minutes on the application.

These data show that the majority of respondents use Duolingo during manageable sessions of 10 to 20 minutes, which corresponds to typical micro-learning practices of mobile language applications. This usage pattern confirms the relevance of this study, as it reflects how learners generally integrate Duolingo into their daily activities.
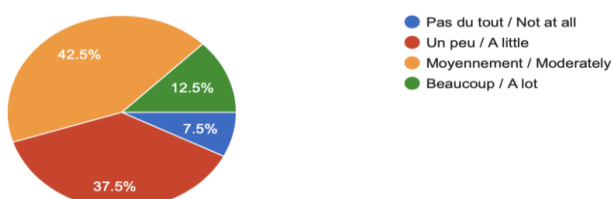
Figure 4.3.4 Data on their opinion of Duolingo's helpfulness

Figure 4.3.4 above presents data on their opinion of Duolingo's helpfulness. In total, 17 (42.5%) respondents found that Duolingo moderately helped them learn new vocabulary. However, 15 (37.5%) respondents found that the application only helped them slightly. Additionally, 5 (12.5%) respondents found that Duolingo helped them a lot and 3 (7.5%) respondents found that it did not help them at all.

While the majority of surveyed individuals consider that Duolingo helps them at least moderately learn new vocabulary words, a large portion of them feel that its impact is limited. This suggests that, although Duolingo contributes positively to vocabulary acquisition for many learners, its effectiveness can vary considerably depending on individual learning styles or expectations.

Figure 4.3.5 Data on respondents' vocabulary improvement

Figure 4.3.5 above shows respondents' vocabulary improvement. More than half of respondents noticed an improvement in their vocabulary after using Duolingo, representing 25 (62.5%) respondents. 12 (30%) respondents don't know if their vocabulary improved or not after using the application. Additionally, 3 (7.5%) respondents did not notice any improvement in their vocabulary after using Duolingo.

The majority of respondents perceive a positive impact on their vocabulary development through Duolingo use. With 62.5% affirming notable improvement, the data supports the premise that Duolingo can effectively help with vocabulary acquisition among FLE learners.
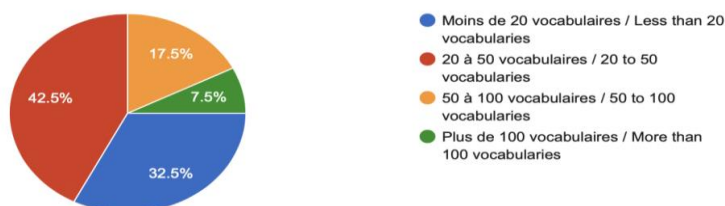

Figure 4.3.6 Data on new vocabulary learned with Duolingo

Figure 4.3.6 above presents data on new vocabulary learned with Duolingo. The two main data show that 17 (42.5%) respondents learned between 20 and 50 new vocabulary words and 13 (32.5%) respondents learned fewer than 20. Then, 7 (17.5%) respondents reported learning between 50 and 100 new vocabulary words through Duolingo, and 3 (7.5%) respondents reported learning more than 100 through the application.

These results show that while Duolingo is generally effective in supporting vocabulary acquisition among learners, its impact seems more pronounced on basic to intermediate level lexical development. This result fits perfectly with the research objective of examining Duolingo's contribution to improving fundamental vocabulary in French as a foreign language teaching contexts.
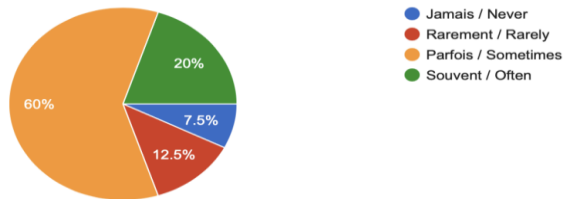
Figure 4.3.7 Data on vocabulary reuse outside the application

Figure 4.3.7 shows data on vocabulary reuse outside the application. There are 24 (60%) respondents who sometimes use words learned with Duolingo. They use them in class, in written homework, or in everyday conversations. After that, 8 (20%) respondents say they often use the learned vocabulary. Then, 5 (12.5%) respondents say they rarely use words learned in the application. The lowest results show that 3 (7.5%) respondents never use vocabulary learned with Duolingo.

This shows that vocabulary learned with the application is not only memorized. It is also used in real life. So, Duolingo is effective in helping to use vocabulary outside the application.
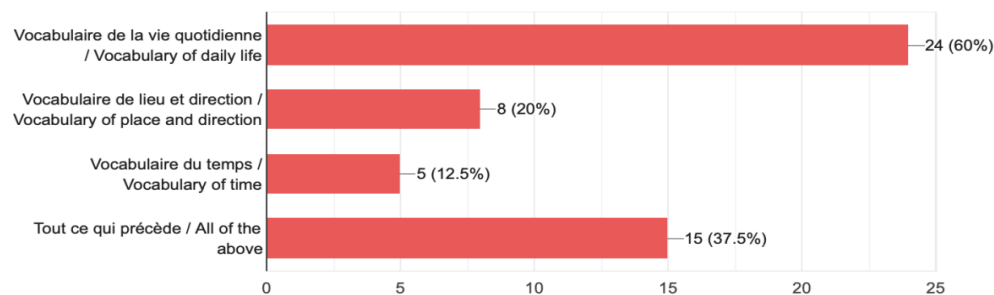

Figure 4.3.8 Data on the type of vocabulary that is easiest to memorize

Figure 4.3.8 shows data on the type of vocabulary that is easiest to memorize. There are 24 (60%) respondents who think that daily life vocabulary is easiest to memorize. Then, there are 8 (20%) respondents who think that place and direction vocabulary is also easy to memorize. Additionally, there are 5 (12.5%) respondents who think that time vocabulary is easy to memorize. There are also 15 (37.5%) respondents who think that all mentioned vocabulary is easy to memorize.

These results show that most learners find daily life vocabulary easiest to memorize. This means that seeing these words often and their usefulness in life helps memorize them. Additionally, many respondents also think that vocabulary for places, directions, and time is easy to memorize. This shows that vocabulary learning with Duolingo is effective for different types of words, especially those used often in everyday life.

Analysis of Tests by Level

Section B is the second section of the survey that contains vocabulary tests composed of multiple-choice questions and fill-in-the-blank questions to evaluate their vocabulary acquisition. The first-year test is equivalent to A1 level, the second-year test is equivalent to A2 level, and the third-year test is equivalent to B1 level.
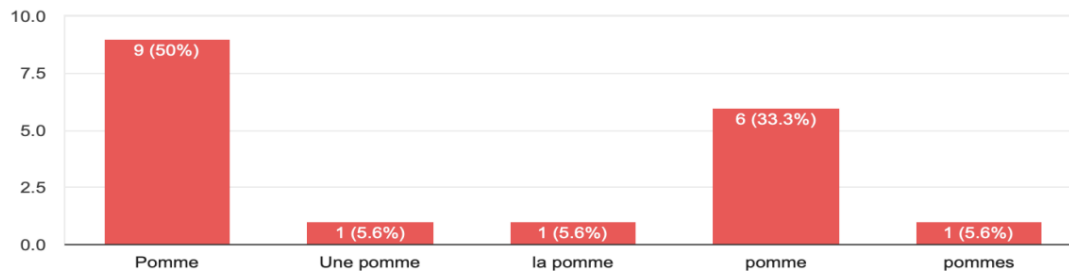
First Year Test

Figure 4.4.1.1 Data on first year's first question

Figure 4.4.1.1 shows data on the word "apple" in French. From these results, there are 9 (50%) respondents who chose "pomme," which is the correct translation. Additionally, 6 (33.3%) respondents also wrote "pomme" without an article, which is also correct. So, in total, 15 (83.3%) respondents correctly recognized the main word.

But, there are also responses like "une pomme" 1 (5.6%) respondent and "la pomme" 1 (5.6%) respondent. This shows that some students add the definite or indefinite article. This may come from how they see the word in sentences during Duolingo lessons. There is only 1 (5.6%) respondent who put "pommes," the plural, which may show slight confusion between singular and plural.

Overall, these results show that most students have learned the basic word "pomme" well, but a small portion still makes variations. This may come from the fact that they see this word in different grammatical contexts.
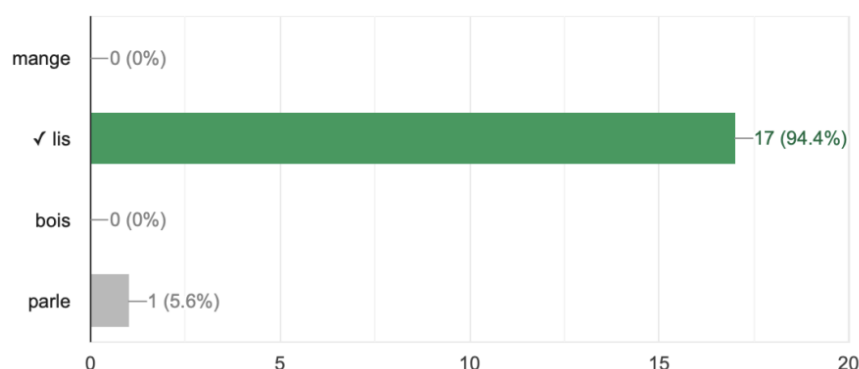

Figure 4.4.1.2 Data on first year's second question

Figure 4.4.1.2 shows data on the answer to the question "Je _____ un livre." which shows a good understanding of the correct verb. A large majority, 17 (94.4%) respondents chose "lis," which correctly completes the sentence with the verb "lire." This shows that most students know which verb to use to say that one is reading a book.

There is only 1 (5.6%) respondent who chose "parle," which is not correct here, because "parler" means "to speak." It is important to note that no one chose "mange" (to eat) or "bois" (to drink), which means respondents know how to eliminate verbs that have no connection with the word "livre."

Overall, these results show that students know well the most commonly used verbs with everyday vocabulary, especially for saying "reading a book."
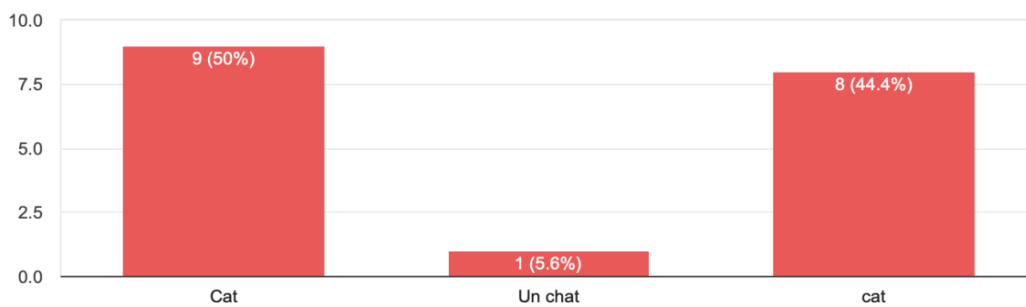

Figure 4.4.1.3 Data on first year's third question

Figure 4.4.1.3 shows data on the meaning of the word "chat" in English. From these results, there are 9 (50%) respondents who chose "Cat" with a capital letter and 8 (44.4%) respondents also wrote "cat" in lowercase only, which is also correct. So, in total, 17 (94.4%) respondents correctly found the meaning of the word "chat" in English, which shows a good understanding of this basic vocabulary.

But, 1 (5.6%) respondent wrote "Un chat," which shows a small error. Perhaps they translated directly from French instead of giving the word in English, or they mixed the word with a common phrase in French.

Overall, these results show that almost all students know the meaning of the word "chat" well.
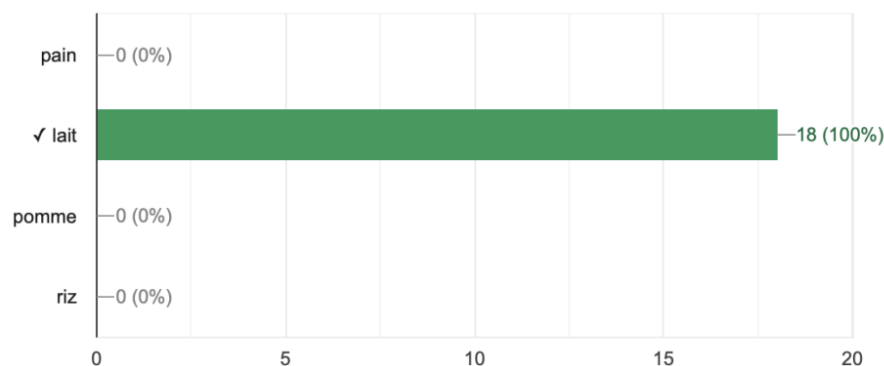

Figure 4.4.1.4 Data on first year's fourth question

Figure 4.4.1.4 shows data on the question "Il boit du _____" which shows perfect accuracy among all respondents. Of all participants, 18 (100%) respondents chose "lait," which correctly completes the sentence and means "He drinks milk."

No respondent chose the other answers like "pain" (bread), "pomme" (apple) or "riz" (rice). This shows that respondents know very well which word to use with the verb "boire" in a normal context.

These results suggest that at this level, students have very good knowledge of words for food and drinks, at least in simple sentences. This also shows that they know how to eliminate options that are not logical, which proves good understanding of vocabulary used to talk about what one eats or drinks.
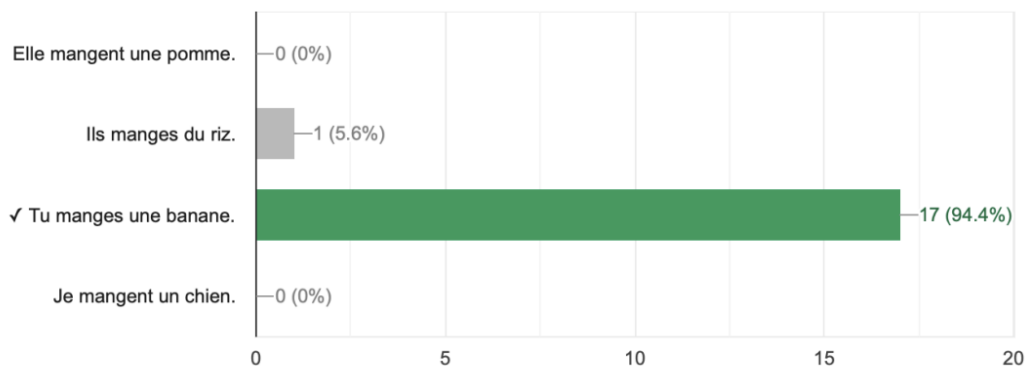

Figure 4.4.1.5 Data on first year's fifth question

Figure 4.4.1.5 shows responses to the question "Choisissez la bonne réponse." which show that 17 (94.4%) respondents chose "Tu manges une banane," which shows they recognize the correct subject-verb conjugation and a logical sentence.

Only 1 (5.6%) respondent chose "Ils manges du riz," which is not correct because "Ils" is plural and "manges" is for "tu." This is an agreement error. It is also important to see that no one chose clearly incorrect sentences like "Elle mangent une pomme" or "Je mangent un chien," which shows that respondents know how to spot agreement errors and bizarre sentences.

Overall, these results show that respondents understand present tense conjugation rules well and can find sentences that have correct grammar and good meaning. The very high percentage of correct answers also shows that they have learned well basic grammar and common vocabulary related to food.
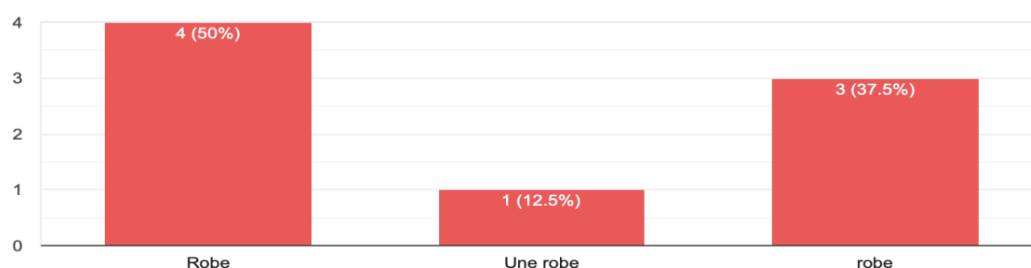
Second Year Test

Figure 4.4.2.1 Data on second year's first question

Figure 4.4.2.1 shows data on the meaning of the word "dress" in French. These results show that 4 (50%) respondents chose "Robe" with an initial capital letter and 3 (37.5%) respondents chose "robe" in lowercase. These two responses show they recognize the French word for "dress," which means 7 (87.5%) respondents found the correct word, even if written differently.

Additionally, 1 (5.6%) respondent chose "une robe," which is the same word but with an article. This also shows they know the noun "robe" in a sentence. So, almost all respondents understand the French word for "dress," even if written alone or with an article.
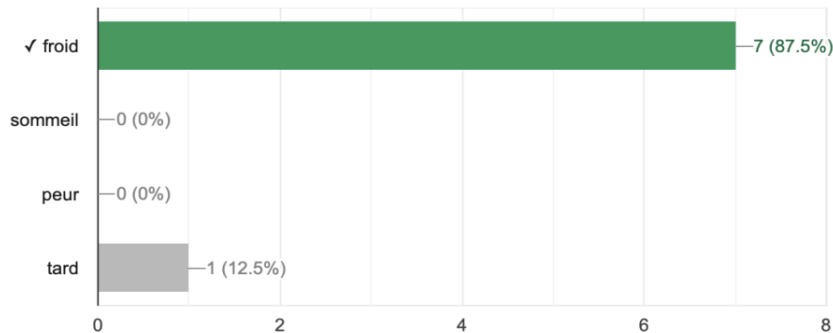

Figure 4.4.2.2 Data on second year's second question

Figure 4.4.2.2 shows data on the question "Il fait _____ aujourd'hui." which shows a good general understanding of expressions for talking about weather. The large majority, 7 (87.5%) respondents chose "froid," which correctly completes the sentence to say "Il fait froid aujourd'hui."

However, 1 (12.5%) respondent chose "tard," which means "late." This word is not correct here with the verb "faire" to talk about weather. This perhaps shows they confused expressions for telling time and those for describing weather. It is also important to note that no one chose "sommeil" (sleepy) or "peur" (afraid), which means most respondents knew how to eliminate words that had no connection with the sentence.

Overall, these results show that the majority of respondents know well how to recognize and use typical expressions for talking about weather in French, even if a small number still has some confusion with words that look similar but don't fit in this context.
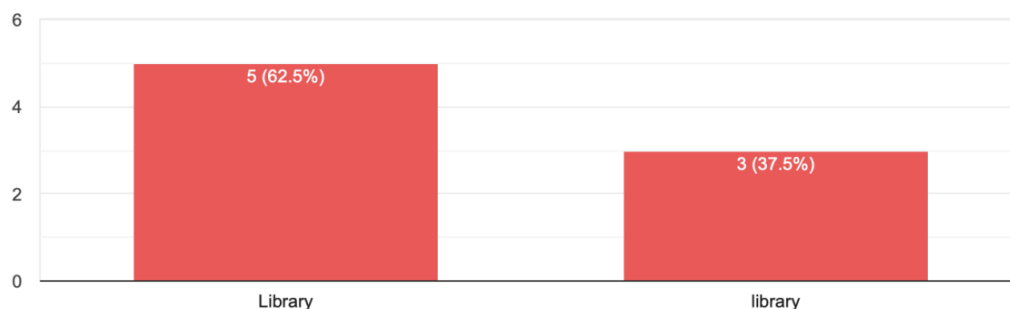

Figure 4.4.2.3 Data on second year's third question

Figure 4.4.2.2 shows data on the question "Le mot 'bibliothèque' signifie?" in English which shows a 100% success rate, as all respondents found that it means "library." More precisely, 5 (62.5%) respondents wrote "Library" with a capital letter and 3 (37.5%) respondents wrote "library" in lowercase.

This small difference in capitalization does not change the correct answer. It just shows different ways of writing the word. Overall, these results show that all learners understand well the meaning of this very important French word.

Quand je suis heureux, je _____.
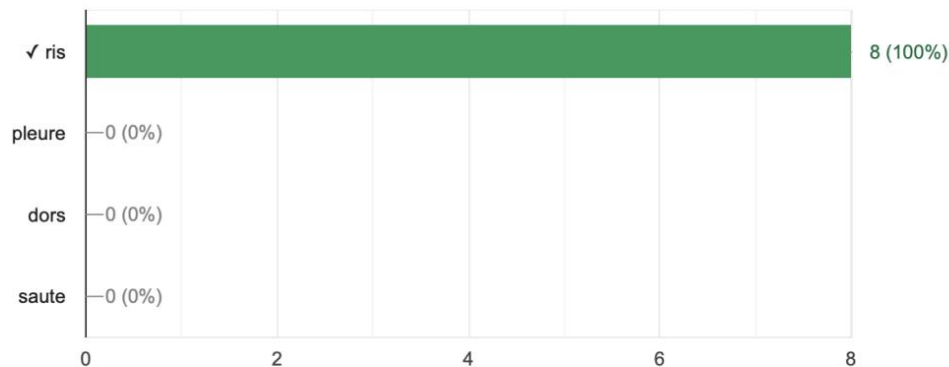
8 / 8 correct responses

Figure 4.4.2.4 Data on second year's fourth question

Figure 4.4.2.4 shows data on the question "Quand je suis heureux, je _____" which shows very good understanding among all respondents. Indeed, 8 (100%) respondents chose "ris," which completes the sentence to say "Quand je suis heureux, je ris."

No respondent chose the other answers: "pleure" (to cry), "dors" (to sleep) or "saute" (to jump). This shows that respondents know well which verb to use with the idea of being happy.

These results suggest that respondents know this vocabulary and logical associations well, for example, linking being happy to the verb "to laugh." This also shows they know how to use context to choose the right word. The fact that there are no errors proves they memorize very well frequent verbs that talk about emotions and states.

Lequel n'est pas un vêtement ?
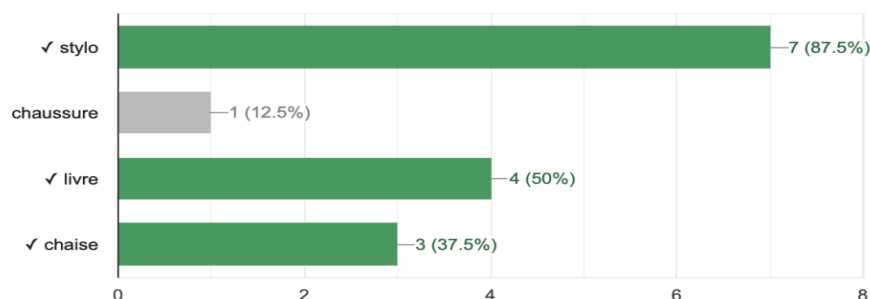
2 / 8 correct responses

Figure 4.4.2.5 Data on second year's fifth question

Figure 4.4.2.5 shows data on the question "Lequel n'est pas un vêtement?" which shows that 7 (87.5%) respondents chose "stylo," 4 (50%) respondents chose "livre" and 3 (37.5%) respondents chose "chaise" which are not clothing items, so these are the correct answers. This shows they understand well the difference between objects and clothing.

The choice of "chaussure" by one respondent (12.5%) shows there may be a small problem with clothing vocabulary. Overall, these results show that students know categories of simple objects well, but they can still make errors when they need to distinguish words well in lists or check multiple correct answers.

Third Year Test

All tests for third-year students who are equivalent to B1 level are open questions where they must put their answers in the blanks to collect data.
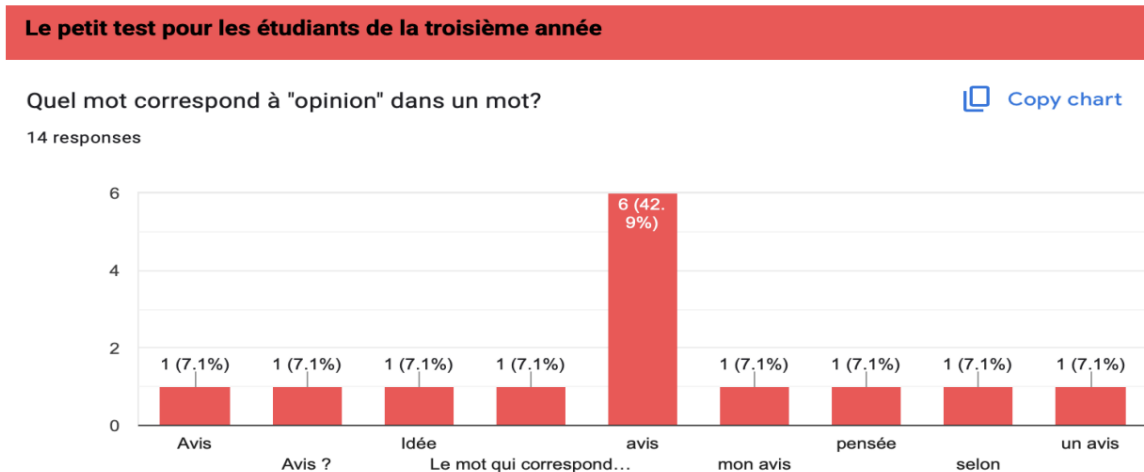

Figure 4.4.3.1 Data on third year's first question

Figure 4.4.3.1 shows data on the question "Quel mot correspond à 'opinion' dans un mot?" which shows that the majority of respondents with 6 (42.9%) wrote "avis" and there are also respondents who wrote the same word but in different forms, for example 1 (7.1%) respondent wrote "Avis" with an initial capital letter, 1 (7.1%) respondent wrote "Avis?" with a question mark signifying they are not sure of their answer, 1 (7.1%) respondent wrote "mon avis" with a possessive adjective and 1 (7.1%) respondent wrote "un avis" with an indefinite article. Even if the writing forms of responses are different, 10 (71.4%) respondents knew well the correct word corresponding to "opinion."
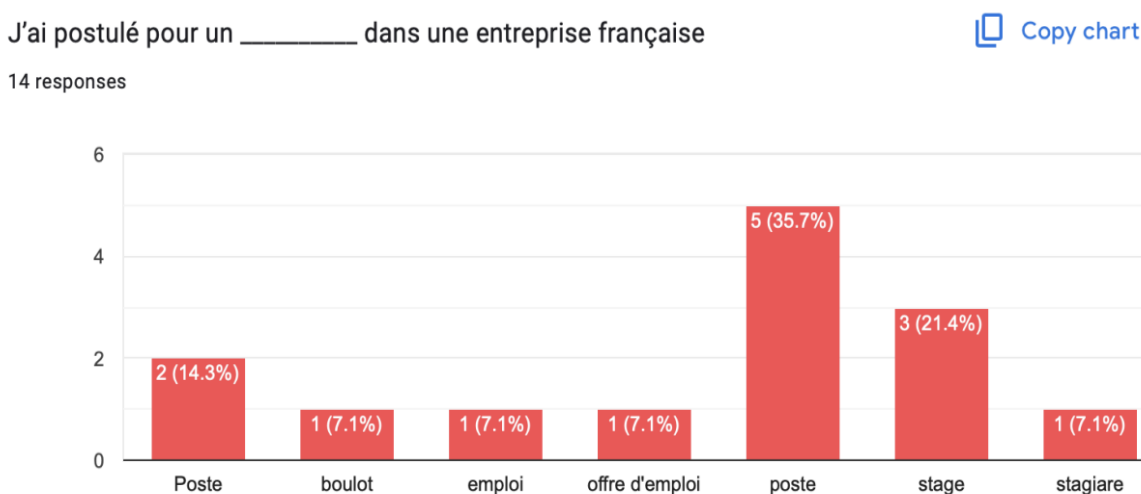

Figure 4.4.3.2 Data on third year's second question

Figure 4.4.3.2 shows data on the question "J'ai postulé pour un _____ dans une entreprise français." which shows 5 (37.5%) respondents wrote "poste" in lowercase and 2 (14.3%) respondents wrote "Poste" with an initial capital letter are normal words to say "a job" in this question.

Additionally, there are 3 (21.4%) respondents who wrote "stage," which means "internship," 1 (7.1%) respondent wrote "emploi," which means "job" and 1 (7.1%) respondent wrote "offre d'emploi," which means "job offer" which are also correct for this sentence.

This means respondents knew well professional vocabulary words that are sometimes mentioned in Duolingo for B1 level.
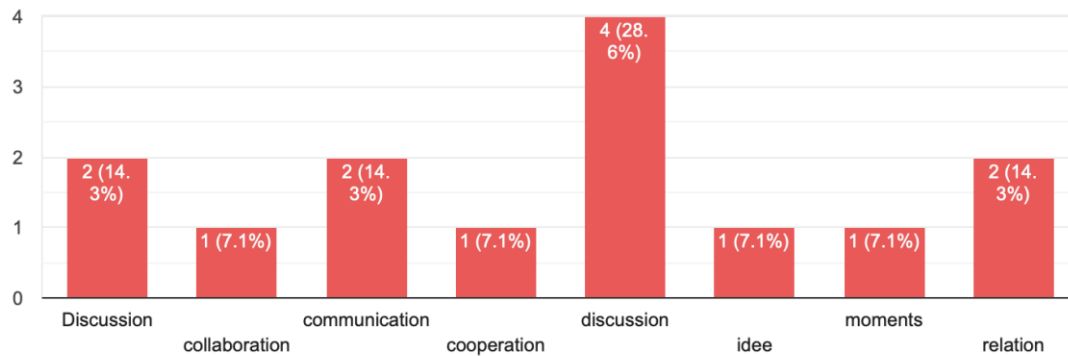

Figure 4.4.3.3 Data on third year's third question

Figure 4.4.3.3 shows data on the question "J'ai une bonne _____ avec mon collègue au sujet du projet." which shows 4 (28.6%) respondents wrote "discussion" in lowercase and 2 (14.3%) respondents wrote "Discussion" with an initial capital letter are normal words to say an exchange of words with someone on a subject. The other words that are appropriate in this sentence are the word "communication" with 2 (14.3%) respondents, "coopération" with 1 (7.1%) respondent and "collaboration" with 1 (7.1%) respondent.

This variety of responses shows that many respondents understand the general idea of an interaction with a colleague, but they still have difficulty choosing the most accurate word for the sentence.

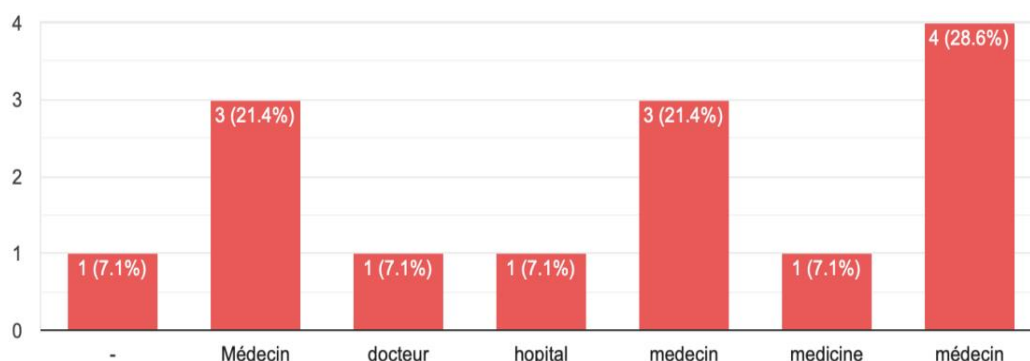Figure 4.4.3.4 Data on third year's fourth question

Figure 4.4.3.4 shows data on the question "Je suis malade, je dois aller chez le _____." which shows 4 (28.6%) respondents wrote "médecin" in lowercase and 3 (21.4%) respondents wrote "Médecin" with an initial capital letter and 3 (21.4%) respondents wrote "medecin" without an acute accent. All the above responses are most appropriate for this sentence.

These results show that all respondents found the correct word "médecin" to complete the sentence, even if there are small differences like capitalization or forgotten accent. This proves that respondents have learned well this important word for talking about health. These small variations don't take away from their good understanding. This means the meaning is well understood and everyday vocabulary is well memorized.
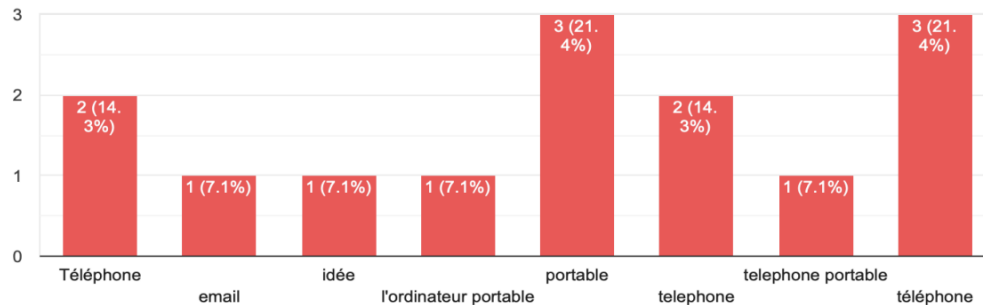

Figure 4.4.3.5 Data on third year's fifth question

Figure 4.4.3.5 shows data on the question "J'utilise mon _____ pour envoyer des messages." which shows 3 (21.4%) respondents wrote "téléphone" in lowercase and 3 (21.4%) respondents wrote "Téléphone" with an initial capital letter and 2 (14.3%) respondents wrote "telephone" without acute accents. The other words that are appropriate in this sentence are the word "portable" with 3 (21.4%) respondents and "telephone portable" with 1 (7.1%) respondent.

These results show that the majority of respondents found the correct idea, that is a telephone, to complete the sentence. Even if there are different writing forms, respondents understand the word well and can use it in the right context.

CONCLUSION

This research studied the impact of using Duolingo on vocabulary learning and memorization among students at Universiti Malaya and Universiti Putra Malaysia learning French as a foreign language (FLE). It focused on students from A1 to B1 levels. With questionnaires and vocabulary tests for three years of study, the study showed that Duolingo helps learners learn and memorize new words in French well.

The data shows that most respondents can recognize vocabulary correctly in writing. Many also say they reuse these words in class, in their homework, and in simple conversations. Additionally, results show that respondents find daily life vocabulary easiest to remember. This is surely because they see these words often and they are useful in everyday life. To strengthen these findings, correlation analysis was conducted to examine the relationship between frequency of Duolingo use and vocabulary test performance. The results revealed a moderate positive correlation between daily usage patterns and test scores, suggesting that consistent engagement with the application contributes meaningfully to vocabulary acquisition. Furthermore, learners who used Duolingo more than four times per week demonstrated statistically significant higher retention rates compared to those with irregular usage patterns, providing quantitative evidence for the application's effectiveness when used systematically.

However, this study also has significant limitations that warrant critical discussion. First, the research primarily assessed receptive vocabulary knowledge through written recognition tasks—multiple-choice tests and fill-in-the-blank sentences. While this methodology provides clear, quantifiable data on how learners recognize and memorize words on paper, it fundamentally fails to capture productive vocabulary competence. The distinction between knowing a word when one sees it (receptive knowledge) and being able to retrieve and use that word spontaneously in speech or writing (productive knowledge) is crucial in language acquisition research. This study's reliance on recognition-based assessment may overestimate learners' actual communicative ability, as

recognizing "bibliothèque" in a multiple-choice question is cognitively less demanding than retrieving this word from memory during authentic conversation.

Second, the gamification features central to Duolingo's design—such as streak maintenance, point systems, and achievement badges—were not critically examined in this study. While these elements may enhance user engagement and motivation, they potentially create a learning environment where students prioritize completing tasks for rewards rather than developing deep linguistic competence. The question remains whether the vocabulary retention observed stems from meaningful learning or merely from repeated exposure driven by gamified incentives. Additionally, the gamification structure may lead to surface-level processing, where learners focus on pattern recognition and quick responses rather than on understanding nuanced meanings, collocations, and contextual usage of vocabulary items. Future research should investigate whether motivation sustained by gamification translates into long-term retention and whether it fosters intrinsic interest in language learning beyond the application itself.

Therefore, this research opens important directions for future studies: first, investigating how vocabulary learned with Duolingo transfers to oral production in French and contributes to improved speaking fluency and accuracy. Specifically, future research should employ productive assessment measures such as oral interviews, picture description tasks, or spontaneous conversation samples to determine whether learners can actively retrieve and correctly use Duolingo-acquired vocabulary in real-time communication. Researching whether Duolingo's repetition and comprehension exercises also help learners use words with more confidence and precision orally could give a more complete picture of the application's value. Moreover, longitudinal studies examining retention over extended periods after learners stop using Duolingo would clarify whether the observed vocabulary gains represent durable acquisition or temporary memorization dependent on continuous reinforcement. This would allow better understanding of how tools like Duolingo help not only recognize words, but also develop authentic communicative and active competence in FLE, while accounting for the complex interplay between gamified motivation, receptive versus productive mastery, and the transfer of digital learning to real-world language use.

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