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DEDICATORIA

With all my love to my children Steven and Brianna, who are my reason for living, my engine and my entire world, each achievement has their name engraved.

To my parents Rocío and Ramón, who have instilled in me the value of being an honest, responsible and respectful person.

Teresa Chiliquinga

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TEMA:

TYPING vs HANDWRITING TO ACQUIRE IRREGULAR ENGLISH VERBS BY YOUNG SPANISH SPEAKERS

MODALIDAD DE TITULACIÓN: *Proyecto de Titulación con Componentes de Investigación Aplicada y de Desarrollo*

AUTOR: *Licenciada Teresa del Rocío Chiliquinga Arguello*

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FECHA: *Nueve de febrero de dos mil veinte y tres*

RESUMEN EJECUTIVO

This study aimed to explore whether handwriting and typing methods are effective to acquire irregular English verbs by young Spanish speakers by examining recall correctness of infinitive, simple past, and past participles of ten irregular verbs. This study comes from students' need of using new strategies to recall vocabulary, especially irregular English verbs, and enhancing the accurate writing. Three research questions guided this study: 1) Is typing effective to acquire irregular English verbs by young Spanish speakers? 2) Is handwriting effective to acquire irregular English verbs by young Spanish speakers? 3) Is handwriting more effective than typing for young Spanish speakers to acquire irregular English verbs? This study involved 18 students from tenth level C at Escuela de Educación Básica Fiscal Riobamba. The data were collected through a recognition task, a distractor task, and a recall task for handwriting and typing using ten irregular verbs that were randomly selected in advance, but verbs with shared orthography as some nouns (e.g., cost) were discarded. The findings provided empirical evidence that handwriting and typing methods seem to be equally effective to acquire irregular English verbs by young Spanish speakers. Moreover, handwriting does not seem to be more effective than typing to acquire irregular English verbs by young Spanish speakers. The

results are discussed in terms of their relation to previous empirical research and their implications for the use of handwriting and typing to increase vocabulary development to create effective communication. It is recommended to increase and enhance the use of both types of writing, handwriting as much as typing to develop the acquisition of new English words, not only verbs but adjectives and nouns. A diversity of activities for handwriting and typing in a real context will increase the acquisition of new words, these activities could be planned to be applied in regular classes.

CHAPTER I
THE RESEARCH PROBLEM

1.1. Introduction

This study is focused on the influence that typing and handwriting have in the acquisition of irregular English verbs in young learners. This research project analyzed which writing method produces a higher level of memorization of new words in a group of participants of Escuela de Educación Básica Fiscal "Riobamba" from Quito-Ecuador.

Every day, second language learners are exposed to new words. Nevertheless, these new terms are forgotten. As a consequence, students struggle to increase their vocabulary. Therefore, the writing method should be considered as a tool to enhance memorization. According to Susanto (2017) it is important to notice that a rich number of words enhances the mastering of a language, people with insufficient vocabulary size struggle with many aspects of the language, so that, a great number of words is necessary to master a language. Thus, to learn English is necessary to acquire new words since they are required to have successful communication. The necessity of increasing vocabulary to learn a new language fosters the use of new strategies such as focusing on the influence of writing methods since handwriting and typing could increase the acquisition of new words and enhance communication in L2.

This research was conducted at Escuela de Educación Básica Fiscal "Riobamba" located in Southern Quito. 18 students in 10th grade, with a low socioeconomic level, were part of this study. These students take three hours of English as determined by Ecuador's Ministry of Education. The research design followed a quasi-experiment design with a convenience sampling. Three tasks based on the study developed by Smoker et al. (2009) were part of this study.

These tasks were applied in one session. The first task was a recognition one where students worked in both methods handwriting and typing using and writing a list of 10 irregular English verbs provided in a printed paper for handwriting and in an electronic document for typing. A distractor task, where students solved 10 additions, came after completing the recognition activity. Finally, a recall task was

applied for both methods. The participants were provided with a printed paper where they wrote as many verbs as they could recall. These three tasks provided information to know what writing method produces a higher level of memorization in the group of participants using 10 irregular English verbs.

1.2. Justification

Vocabulary development has an impact to achieve fluent communication, it is an important issue for language acquisition (Abersek et al., 2018). However, research in the field has demonstrated that there is an impact of using electronic devices in how people acquire a language (Kiefer et al., 2015) Moreover, it seems that learners do not focus as much on meaning of each word because the ease of correction that learners have when they use the autocorrection features in their devices (Kiefer et al., 2015). (Abersek et al., 2018). Handwriting enables people to focus on tracing each term and noticing and learning the meaning of each new word. Typing and handwriting methods have influence on writers and their skills to memorize new words (Abersek et al., 2018).

The present study focuses on the impact of handwriting or typing to ease the acquisition of English irregular verbs by young Spanish speakers, who learn English as a foreign language at Escuela de Educación Básica Fiscal "Riobamba" in 10th grade. This study aims to explore whether handwriting is more beneficial than typing when it comes to the retention and memorization of a list of irregular English verbs.

The use of regular and irregular verbs is assumed to be enhanced by handwriting and typing. Thus, this study focused on the acquisition of irregular verbs supported handwriting or typing. To conduct this research, participants focused on tracing and typing words. Through these processes, they were able to acquire new irregular verbs to their vocabulary.

1.3. Objectives

General Objective

To determine the effectiveness of using handwriting or typing to acquire irregular English verbs by young Spanish speakers.

Specific

- To identify whether typing is an effective method to acquire irregular English verbs by young speakers.
- To identify whether handwriting is more effective than typing for young speakers to acquire irregular English verbs.
- To determine whether handwriting and typing activities can support the acquisition of irregular English verbs by young speakers.

CHAPTER II
RESEARCH BACKGROUND

2.1. State of the art

The system people choose to write seems to be important when acquiring new words in English. This research is focused on both ways to write handwriting and typing and their influence on the acquisition of irregular English verbs. The vocabulary acquisition through handwriting is an important issue to be explored in to identify whether any of the two mentioned systems benefit vocabulary acquisition. Additionally, the present investigation aims to identify the differences between handwriting and typing when acquiring new English words to enhance vocabulary. Previous research has been synthesized to have a clearer view about the characteristics and influence of both handwriting and typing in memorization and acquisition of new English words.

2.1.1. Acquisition of irregular English verbs

To store irregular English verbs in young learners' brains, memorization plays an important role (Yang & Lyster, 2010). These learners are more likely to memorize these kinds of verbs; consequently, understanding and using them a list of irregular verbs, which seems to be one useful strategy to active memorization according to the different skills people have. (Pliatsikas & Marinis, 2013). In other words, memorization is essential to store and understand the writing, pronunciation, and meaning of irregular verbs. According to Pliatsikas and Marinis a list of verbs could be useful to introduce the spelling of irregular verbs and their forms to be used by young L2 learners, but it depends on the people's skills to memorize new knowledge.

Pliatsikas and Marinis, Yang and Lyster, and Nicoladis et al. (2007) found benefits from memorization to achieve accurate acquisition of irregular verbs and their forms in English speech. Although, irregular verbs can be more difficult to acquire than regular verbs due to the different patterns they display (Paradis, 2010). However, the frequency of use in this kind of verb can have a strong influence on the acquisition

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by young English learners, as token frequency in irregular verbs is higher than regular English forms that present a higher type frequency (Nicoladis et al.; Pilatsikas & Marinis; Salaberry, 2000).

It is essential to understand that regular verbs follow specific rules indicating to add the morpheme –ed to construct the past tense. However, the frequent exposition to regular English causes the emergence of *overregularization* processes, in which children regularize irregular verbs with rules related to regular verbs. Overregularization is the most frequent error in the acquisition of irregular English verbs by young learners because adding –ed to regular verbs in past form is a common pattern and a simple rule (Miguel, 1989).

According to Nicoladis et al. (2007) it can be common that young English learners overregularize as regular verbs must accomplish with the –ed rule in past tense. Thus, irregular verbs would tend to be object of adding –ed because of the production of regular verbs and the known rules.

Nevertheless, irregular verbs undergo specific changes in past simple and past participle tenses when forming negative and interrogative sentences. As a result, it seems to be easier to acquire irregular English verbs, as there is no need to apply any grammatical rule.. Irregular English verbs seem to be acquired in a shorter term due to this effective exposition to the target language (Blom & Paradis, 2013; Jia & Fuse, 2007; Paradis et al., 2011). Bardovi (1999) agrees with Nicoladis et al. (2007), Pilatsikas and Marinis, and Salaberry (2000) regarding the frequency of this kind of input that can enhance and facilitate the acquisition of new vocabulary. Thus, young English learners can store irregular verbs whether the context provides the possibility of using them.

According to these findings, frequent exposition to irregular verbs can enhance their acquisition by young English learners. Some researchers (i.e, Blom & Paradis, 2013; Jia & Fuse, 2007; and Paradis et al.,2011) suggest that the more exposure to irregular verbs the easier they will be acquired by young L2 learners. Lists of verbs seem to promote exposure of irregular verbs as well as they can help to improve

memorization (Pilatsikas & Marinis 2013).   . Although, they do not have a significant influence in acquisition as irregular verbs are more frequent in English speech than regular verbs; L2 learners are sensitive to the frequent use of these words (Pilatsikas & Marinis 2013).

2.1.2. Handwriting and vocabulary acquisition

The process of writing by hand involves different aspects related to the cognitive and motor development of human beings since many regions of the brain start working due to the concentration to produce movements with the hand (Longcamp et al., 2005). Because of the activation of brain patterns, memorization can be developed, and can enhance the acquisition of new letters or even whole words (Longcamp et al., 2008). Students who write by hand produce more accurate words, and these words are easily stored in the long-term memory. Additionally, the perceptual motor network is activated by handwriting, which can facilitate the acquisition of irregular English verbs (Hsiung et al., 2017).

Handwriting is not only related to hand training but also to the memory and handlink (Mendwell, 2009). Learners develop their cognitive capacity when handwriting as the brain activates different regions linked to sensory-motor skills such as imagination, observation, execution, and production, which evolve into the learner's concentration when producing letters (Mangen et al., 2015). To develop concentration, the brain activates a temporal and spatial component during handwriting (Smoker et al., 2009). However, Longcamp et al. (2005) found that handwriting seems to demand a higher level of concentration, as result, multi-tasking is not possible when writing by hand.

Lyu et al., (2021); Longcamp et al.; Mangen et al., (2015) have observed the influence of handwriting on cognitive skills. Their results demonstrate that handwriting can help to activate neural and cognitive processes due to the movement of hands, which demands concentration and attention from the learners. These mental processes can generate new knowledge due to the attention given to the process of writing by hand as handwriting can enhance sensory-motor skills (Guan et

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al., 2011). The individual's brain is supposed to work more efficiently to activate each process involved during the complex relation with hands during handwriting. However, Longcamp et al., (2005) suggest that handwriting can interfere with the production of multitasking due to the concentration it requires to trace letters and words. It means that individuals cannot perform more than one activity when they are handwriting.

Hsiung et al. (2017) identified the effectiveness of typing and handwriting in Chinese as a second language learners to recognize Chinese characters in 91 learners of a Chinese study program. In this study, pre-tests, post-tests, and delayed post-tests were applied to two randomly assigned groups. Immediately, after two groups were assigned and after two weeks, the participants were exposed to writing and non-writing exercises of 12 previously selected Chinese characters. Both groups were provided with a computer and training on the Chinese characters and later they were asked to handwrite some of 12 Chinese characters selected for this research. The researchers found that handwriting enhanced the identification of Chinese characters in this group of Chinese as a second language learners. Additionally, Hsiung et al. suggest the benefits of handwriting or even watching the stroke-order animation can improve the acquisition and recognition of Chinese characters, which leads to think that handwriting can be an effective method to facilitate the acquisition of new terms accurately and their store in the long-term memory.

Hsiung et al.(2017)claim that the characters produced by handwriting were more accurate and developed a link between form and meaning. Additionally, it was demonstrated that the form and meaning of a character are enhanced through handwriting, and fosters the meaning of Chinese characters in the long-term memory.

Similarly, Longcamp et al. (2005) found that handwriting movements are closely related to memorization. These researchers suggest that children tend to recognize characters easily after handwriting them, which can be a result of handwriting providing signals from vision and motor skills that are distributed on time. Longcamp et al. (2005) suggest that handwriting promotes letter memorization and recognition as the brain produces a series of neural networks. Cognitive processes

seem to be developed during the tracing of letters. In addition, Ose et al. (2020) propose that children should be instructed in handwriting from their early school stages to establish neural patterns. Additionally, sensory-motor integration and hand movements can enhance the learning process as well, which seems to indicate that precise and accurate hand movements contribute to the brain's activation (Ose et al., 2020).

According to Guan et al. (2011), handwriting produces a high level of accuracy in orthography recognition and state that when characters are taught by handwriting, learners can recognize and represent them faster and more accurately. These researchers demonstrate that for either native or language learners, a sensory-motor source produces advantages because handwriting eases characters acquisition and memorization. Additionally, handwriting produces accurate recognition, memorization, and accurate orthography of words, which can occur in the mother tongue or a foreign language as well(Guan et al., 2011),.

Lyu et al. (2021) found that handwriting provides better letter acquisition and writing fluency, as the longer processing time can benefit memorization. These researchers claim that orthographic and semantic learning improves through handwriting in Chinese native speakers but not in English native speakers acquiring L1 due to the more appreciable activation of semantic processing during writing in Chinese, which is different than in English writing. Furthermore, Lyu et al. demonstrate that writing by hand can have a lasting effect on memorization and the use of acquired words in L2 in Chinese learners, which shows that motor memory is better developed by handwriting. According to these researchers, Chinese learners have many benefits when they handwrite; letter and word memorization can be long-lasting, and can provide a better use of orthographic rules in these learners.

Perceptual-motor network during handwriting facilitates letter learning; thus, learners perceive a variation in the use of senses and it enhances learning, network activation is recruited by the brain due to the use of handwriting before people become literate, and produces letter recognition (James, 2017). James and Mangen et al. (2015) share the same results as Guan et al. and Lyu et al. because they also conducted studies to

identify the effects of handwriting. The results seem to be aimed to letter recognition and long-lasting memorization of letters related to the activation of the brain, networks and patterns.

Handwriting movements enhance letter memorization, and mnemonics, and can help with memorization and letter recall (Mangen et al., 2015). Additionally, handwriting can produce brain activation in learners. The handwriting cognitive benefits can enhance the recall and recognition of letters. However, there are no specific results that demonstrated the acquisition of whole words by handwriting. Similarly, handwriting seems to enhance letter naming and different tasks related to hand movements; thus, influencing categorization, recognition, and letter memorization (Wiley & Rapp, 2021). Handwriting is linked to motor skills that produce representations and could produce routes to achieve benefits.

Longcamp (2015) suggest Furthermore, vision, motor commands, and kinesthetic feedback are developed by handwriting; thus, activating the visual representation of letters (Longcamp, 2015). However, it seems that only letters are recognized through handwriting but not whole words (Mangen et al.,2015), which will have an impact on reading performance (Kiefer et al., 2015). Contrastingly, Smoker et al. (2009) suggest that handwriting can enhance whole-word recognition due to the effort and time involved during the production of movements by hand, as temporal and spatial components are inherent in handwriting, which provides benefits to memorization and acquisition of words.

Although there is strong evidence favoring the importance of handwriting for word and letter recognition, categorization, recognition, and letter memorization (Wiley & Rapp, 2021), Lu et al. (2019) found that the use of handwriting in Chinese language acquisition by English native speakers is not significantly effective. In their study, Lu et al. found that Chinese word sets which were repeated three times by hand of paper scored lower than the ones that were not handwritten. Lu et al. suggest that long-term memory is not developed by handwriting and that spending time on handwriting does not have benefits when acquiring Chinese words. These authors demonstrated that handwriting was not effective for letter and word acquisition neither for recall,

recognition, or memorization. Moreover, Kiefer et al. (2015) do not find benefits in letter naming as Longcamp et al (2005); Mangen et al (2015); Hsiung et al (2017), and Lyu et al (2021) suggested in their studies where it was claimed that word writing, word recognition, reading, and writing seem to be enhanced through handwriting in Chinese, but there is no strong evidence of handwriting's influence in letter recognition for the English language.

2.1.3. Handwriting versus typing

Writing involves the handling use of a tool, which can be from a pen to any device that produces a readable text (Mangen & Velay, 2010). The acquisition of writing skills in new generations is influenced by new technologies. The use of devices changes spatial, tactile, visual, and temporal relations between the writer and the text to be produced (Aberšek et al., 2018). According to Longamp et al. (2005) handwriting and typing are two strongly distinct ways of writing from a sensory-motor point of view with different central processes and vast mechanical differences (Mangen & Velay, 2010). Handwriting and typing are different ways to write. For instance, handwriting use one hand and typing uses both hands. Moreover, typing is less time-consuming than handwriting as it does not involve graphomotor components, unlike handwriting, which involves shaping letters (Kiefer et al., 2012).

Longcamp et al. (2005) demonstrate that keyboarding is not as effective as handwriting when memorizing and recognizing letters because of the less significant processes produced during locating and tapping a key. These processes do not provide enough information to the brain. Moreover, typing, different from handwriting, can affect the representation and recognition of letters. It appears that there are no spatial-temporal patterns during typing. Contrastingly, handwriting involves visual, motor, and kinesthetic connections that provide important information linked to the brain patterns. Additionally, writing a letter requires deeper levels of cognitive processes than visual discrimination to type a key (Longcamp et al., 2005).

Aberšek et al. (2008) performed a study aimed to know the differences between writing and typewriting in teaching science. 26 children between 10 and 11 years old from a Slovenian school participated in this mixed-methods exploratory research. The participants had access to a computer and attended the same biology class. The researchers narrowed the influence of other factors, which can influence the results. Thus, the same educational contexts for each participant were guaranteed. In this research, two instruments were developed. A pre-test was performed at the beginning of the research. After having applied some activities related to the main aim, a final test to know the students' progress was applied. The researchers found that typing can enable students to write more words and more sentences than handwriting.

The words and sentences, used in Aberšek et al's. (2008) study, were not recognized and recalled because the change from pen to keyboard has a deep influence on thinking processes and cognitive development (Mangen et al., 2015). Consequently, more complex and accurate structures were produced by students who handwrote due to the cognitive processes developed by the brain. Additionally, it was found that a higher level of understanding was produced by students through the usage of handwriting, which leads to think that meaningful knowledge was acquired through handwriting. It seems that this finding is as the result of the involvement of visual, tactile, and motor stimuli. Aberšek et al. claim that students who typed wrote a smaller number of accurate words in comparison with handwriting, which suggests that handwriting can enhance the acquisition and use of new words. Furthermore, the understanding of foreign words can be enhanced through handwriting rather than typing.

In a different study, Kiefer and Trumpp (2012) state that changing pens for keyboards can have consequences on the cognitive processes of human beings. Each body movement and perceptual activity are involved in the process of writing acquisition to enhance the acquisition, recognition, and production of a letter and words. These movements produced the activation of motor regions of the brain that facilitates the recognition of letters. In contrast, typewriting does not activate these regions in the brain, which makes the recognition of words by typing not as easy as by handwriting (Kiefer and Trumpp, 2012).

Handwriting focuses on the shape and position of letters within a word, whereas typing focuses on the position of letters. Moreover, letter-shape conversion and graphic-motor planning are produced during handwriting. In contrast, typing produces graphic-motor planning (Lyu et al. 2021). These planning can be produced by the different brain regions activated during handwriting and not in typing as handwritten input develops better performance on recognition tasks. In addition, Lyu et al. (2021) claim that handwriting produces a stronger effect on orthographic learning either in L2 or L2 English students. However, typing can stimulate students' writing referred to motivation, quantity, and quality of written texts, which can be an important advantage of typing over handwriting (Lyu et al., 2021).

Referring to memory influenced on writing, Smoker et al. (2009) conducted a study aimed to compare memory for handwriting versus typing. The participants were 61 adults who were recruited by an online announcement. All the participants had an important percentage of technology usage. A list of 36 words was used to be replied to students. In the handwriting conditions, participants were provided with a printed worksheet where the words were alphabetically written on the left side of the sheet. Participants were asked to copy the words on the right side of the same worksheet. Time was recorded and was not limited. In typing conditions, the procedure was similar, the list of words was different but these words, in alphabetical order, were displayed on the left side of a word document. The participants were asked to type them on the right side as well. After these activities, the participants were given a distracter math task. After having completed this task, the participants were asked to recall and write down on a blank sheet of paper as many words as they remember from both types of writing. For this activity, the participants had 5 minutes to write the words. The researchers found that typing does not produce extensive kinesthetic information. Additionally, the movements in typing are repetitive and not identifiable, whereas writing by hand requires complex movements to shape letters. kordigel et al. (2009) suggest developing more research to identify the influence that types of writing can have on cognitive processes.

Kiefer et al. (2015) claim that motor program produced during typing does not facilitate written language acquisition. In contrast, handwriting provides benefits because reading and writing at the word level have a significant improvement due to the movement of hands that activate cognitive patterns. In addition, Longcamp et al. (2008) found that characters written by hand are easier to remember, write, and identify, moreover motor activity marks a significant difference during handwriting and typing, as a result, typing does not enhance letter and word recognition.

CHAPTER III
METHODOLOGY

3.1. Location

This research was conducted at Escuela de Educación Básica Fiscal "Riobamba" located in southern Quito. A low socioeconomic level is predominant in families of this school. This school offers from pre-kindergarten to the tenth level of elementary education in its morning and evening sections. 1595 students and 62 teachers are part of this school. Regarding English instruction, there are 3 teachers in the morning section and 3 teachers in the evening section. One teacher oversees all the classrooms from second to sixth grades. Another one is in charge of all the classrooms from seventh grade to 8th classrooms. One teacher oversees all the classrooms from 9th to 10th classrooms. From the 2nd to 7th grades, students take three hours of English per week, while the 8th through 10th grades take five. The assigned English hours follow the Ecuador's Ministry of Education guidelines.

3.2. Tools and Techniques

Worksheets, a list of verbs, pens, and erasers were the main materials used for this study. These materials were easy and cheap to access than tablets or laptops. Additionally, 24 desktop computers from the school lab were used to collect the data.

3.3. Research Approach

This study employed a quasi-experiment approach. This kind of experiment use intact groups. In other words, participants were not assigned randomly. The participants were selected by convenience sampling, which Creswell (2015) explains "In convenience sampling, the researcher selects participants because they are willing and available to be studied. In this case, the researcher cannot say with confidence that the individuals are representative of the population" (p. 144). This sample was aligned with my research approach as participants were not assigned randomly. This group of students was part of the existing 10th grade; it was an intact group.

3.4. Hypothesis Verification - Hypothesis Approach

Alternative hypothesis (H1)

The use of handwriting facilitates the acquisition of irregular verbs.

Research questions:

- Is typing effective to acquire irregular English verbs by young Spanish speakers?
- Is handwriting effective to acquire irregular English verbs by young Spanish speakers?
- Is handwriting more effective than typing for young Spanish speakers to acquire irregular English verbs?

3.5. Population and simple

To develop this research project, 18 students from tenth grade participated as a convenience sample. In this group of students, there were ten females who represent 55% of the sample and eight males representing 45% of this group. The participant's ages ranged between 14 and 15 years; all participants are from Quito. The level of English of this group of students is A2 according to the Common European Framework of Reference. By the end of the school year, this group's grade average for the English subject was 7,66/10. This average was determined as *Alcanza los Aprendizajes* according to the statements provided by the Ministry of Education. Table 1 shows the main information about the average obtained by this group of students by the end of the school year 2021-2022.

Table 1

Results by percentage.

Quantitative-Qualitative scale	Percentage	
	N	%
10-9: Domina	2	
		11
7-8,99: Alcanza	13	68
4,01-6,99: Próximo	4	
		21
<=4: No alcanza	0	
		0

3.6 Data collection

To gather data, three instruments were applied to each participant: one recognition task for both handwriting and typing, one distractor task and one recall task for both handwriting and typing. This study and the instruments were adapted from the methodology and protocols performed by Smoker et al. (2009). Once the instruments were adapted the Chair of this Plan de Titulación validated them.

This research was developed on May 27th, 2022, in the Escuela de Educación Básica Fiscal "Riobamba" at 08:00 am. Each participant was asked for a consent. They agreed and provided oral consent. The same participants were part of recognition, distracting, and recall tasks.

The data collection was performed in one session in the school's computer laboratory. At the very beginning, the participants were explained about the purpose of the different tasks to be developed.

At the beginning of the school year, the participants were provided with a list of 147 irregular English verbs to work on their regular classes. Participants worked with this list of verbs along the school year.

For this study, ten verbs were randomly selected from the list above mentioned and discarded verbs that shared the same orthography as some nouns (e.g. answer, burn, brush, copy, dance, fight) to avoid any possible confusion.

Three tasks, recognition task, distractor task, and recall task were part of the investigation. For the recognition task students were given an individual desktop computer from the school laboratory with a digital document where 10 irregular English verbs previously selected were displayed on the left side of the screen. Students had to type them in front of each one. The participants took as much time as they needed to complete this task.

Later, participants were provided with a worksheet where 10 different irregular English verbs were printed on the left side of the sheet, participants wrote by hand these verbs in front of each one. Again, the participants took as much time as they needed to complete this task. Later, the students were given a distracter task of 10 complex additions, they had as much time as they needed to complete this task.

Finally, students were given a recall task, so that the participants wrote as many words as they remembered on a blank sheet of paper. The correct writing of irregular English verbs was the data for this study. These verbs were identified whether learned by typing or handwriting.

Annex 1 presents the recognition task; Annex 2 presents the distracter task, and Annex 3 presents the recall task applied in this study. The data collection session lasted for about one hour.

3.7. Data processing and statistical analysis

To process data, Excel was used as main tool. This software produces the same results as other statistical tools. Descriptive and inferential statistics were calculated. The descriptive statistics included frequencies and measures of central tendency. Additionally, 3 dependent t-test were performed to correlate the differences among correct recalls, incorrect recalls, and correct – incorrect recalls. The correct recalls

compared *Correct Recall Handwriting* and *Correct Recall Typing*, the incorrect recalls compared *Incorrect Recall Handwriting* and *Incorrect Recall Typing*. The correct-incorrect recalls compared *Correct Recall Handwriting* versus *Incorrect Recall Handwriting* and *Correct Recall Typing* versus *Incorrect Recall Typing*.

3.8. Response variables or results achieved

The response variables are the responses and scores the participants scored for the handwriting and typing tasks. The independent variable is the scores participants obtained for handwriting tasks and typing tasks.

CHAPTER IV
RESULTS AND DISCUSSION

The main purpose of this study was to explore whether *handwriting* ease the acquisition of irregular English verbs better than *typing*. To achieve this purpose, a data collection instrument of 10 irregular English verbs measured through descriptive and inferential statistics, both covered the three constructs: 1) *Correct Recall Handwriting versus Correct Recall Typing*; 2) *Incorrect Recall Handwriting versus Incorrect Recall Typing*; 3) *Correct Recall Handwriting versus Incorrect Recall Handwriting and Correct Recall Typing versus Incorrect Recall Typing*. It provided further light on the relationship between handwriting and acquisition of irregular English verbs. The results of the data analysis are presented to respond the research questions previously stated in Chapter III.

4.1. Results for Handwriting Recall

The 10 irregular English verbs proposed for this study aimed to investigate participant's recall when writing by handwriting or typing. Each English irregular verb was previously written in both methods, handwriting, and typing. Participants' recall of each verb was analysed through descriptive statistics, specifically frequencies and measures of central tendency. The frequency distributions in handwriting are presented in Table 2. For the ease of describing correctness, the percentages in handwriting are high in infinitive recall and simple past recall, and for describing incorrectness the percentage in handwriting is higher in past participle recall.

Table 2

Frequencies and Descriptive Statistics for Handwriting Recall.

Recall / Method	Infinitive Handwriting	M	SD	Simple Past Handwriting	M	SD	Past Participle Handwriting	M	SD
Correct	29 74.36%	1.61	1.81	27 72.97%	1.5	2.09	24 70.59%	1.33	2.14
Incorrect	10 25.64%	0.55	0.78	10 27.03%	0.55	0.70	10 29.41%	0.55	0.61
Total Responses	39			37			34		

As it is displayed in Table 2, infinitive English irregular verbs recalled by handwriting had the highest Mean (1.61) and showed a high correctness (74.36%). The other 25.64% of verbs were incorrect recalled. The major percentage (72.97%) in simple past English irregular verbs recalled by handwriting was for correctness, whereas 27.03% of these verbs were incorrect recalled. Regarding past participle English irregular verbs recalled by handwriting, 70.50% were correctly recalled, while 29,41% were incorrectly recalled.

The major trends of participants' recall regarding verbs written by handwriting are best observed through the frequencies for each of the verb tenses described above. For the sake of illustration, these frequencies are displayed in Figure 1 as the infinitive verb frequencies are color coded in blue, the simple past tense are color coded in orange, and past participle in grey.

Figure 1.

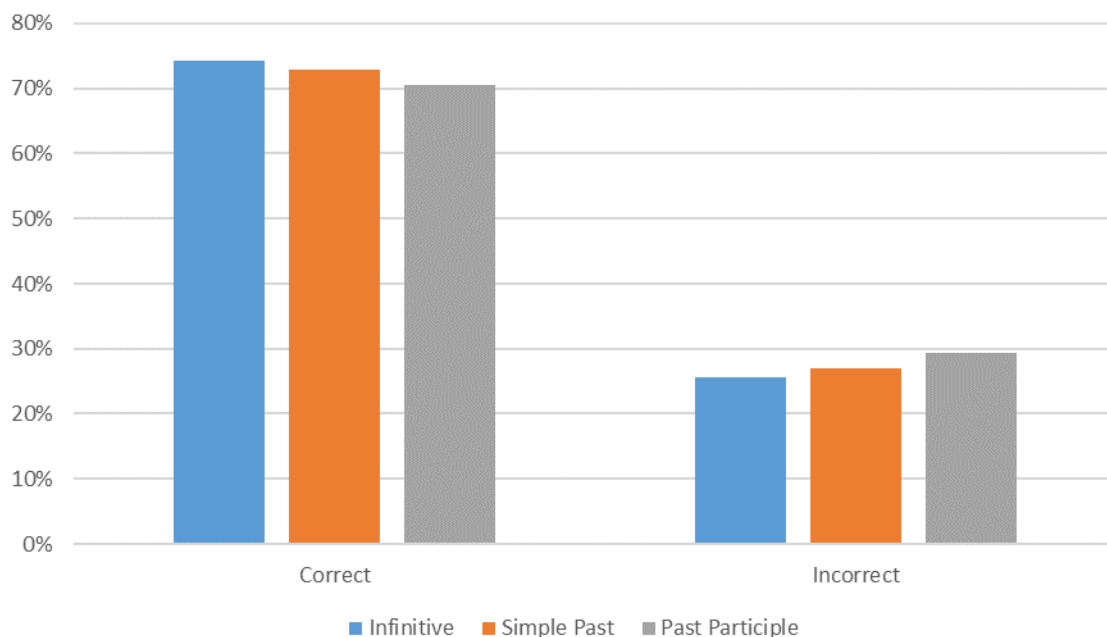Correct and Incorrect recall with Handwriting Method in Three Different Irregular Verb Tenses.

Figure 1 illustrates that correct handwriting recall is higher in infinitive, simple past, and past participle of English irregular verbs, this is supported by the relatively high frequency (74.36) of correctness in infinitive form, showing that participants had a better recall in this verb tense by using the handwriting method. Simple past tense and past participle forms elicited higher frequencies (around 72%). Regarding incorrect recall, the frequencies are rather low (below 30%), the lower frequency is presented in the infinitive form (25.64%). Simple past and past participle recall had a higher frequency of incorrectness. In other words, participants recalled a high frequency of infinitive verbs by having written these verbs by handwriting; however, simple past and participle had relatively high frequencies of correctness as well. The incorrect responses are not up the 30%, which implies a high accuracy in correct recall by the handwriting method.

4.2. Results for Typing Recall

The same 10 irregular English verbs used for handwriting recall were used to investigate the typing recall. Each English irregular verb was previously written by

typing as well. Participants' recall of each verb was analysed through descriptive statistics, specifically frequencies and measures of central tendency. The frequency distributions in typing are presented in Table 3. For the ease of describing correctness, the frequency in typing is high in infinitive recall and for describing incorrectness the frequency in typing is higher in past participle recall.

Table 3

Frequencies and Descriptive Statistics for Typing Recall

Method / Recall	Infinitive Typing	M	SD	Simple Past Typing	M	SD	Past Participle Typing	M	SD
Correct	51 89.47%	2.83	2.43	34 64.15%	1.88	1.84	33 62.27%	1.83	1.97
Incorrect	6 10.53%	0.33	0.59	19 35.85%	1.05	1.25	20 37.73%	1.11	1.18
Total Responses	57			53			53		

As it is displayed in Table 3, infinitive English irregular verbs recalled by typing had the highest Mean (2.83) and showed a high correctness (89.47%). The other 10.53% of verbs were incorrect recalled. The major percentage (64.15%) in Simple Past English Irregular verbs recalled by typing was for correctness, whereas 35.85% of these verbs were incorrect recalled. Regarding Past Participle English irregular verbs recalled by typing, 62.27% were correctly recalled, and 37,73% were incorrectly recalled.

The frequencies for correct and incorrect recall by the typing method are illustrated by Figure 2. Recall of infinitive forms are coded in blue, whereas recall of simple past tense is coded in orange and past participle is coded in grey.

Figure 2.

Correct and incorrect recall with typing method in three different irregular verb tenses
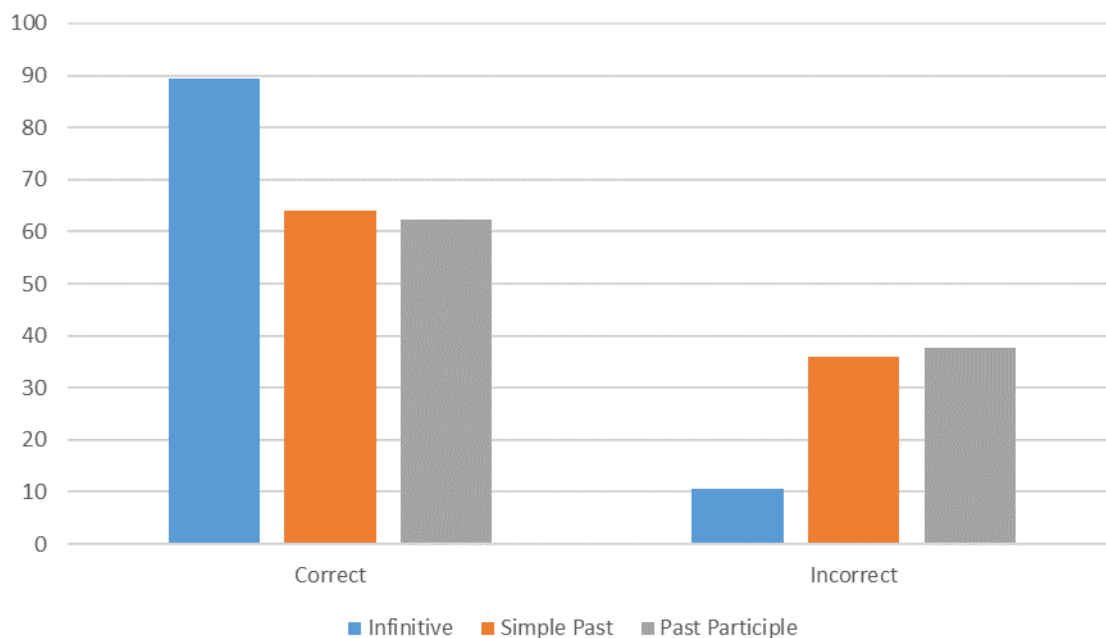

Figure 2 illustrates that correct typing recall is higher in infinitive, simple past, and past participle of English irregular verbs, which is supported by the relatively high frequency (89.47%) of correctness in infinitive form, showing that participants had a better recall in this verb tense by using the typing method. Simple past tense and past participle forms elicited rather low frequencies (below 65 %). Regarding incorrect recall, the frequencies are rather low (below 50%). The lower frequency is displayed in the infinitive form (10.53%). Simple past and past participle recall had a higher frequency of incorrectness. In other words, participants recalled a high frequency of infinitive verbs by having written these verbs by the typing method.

Likewise, simple past and participle had relatively high frequencies of correctness as well. The incorrect responses do not reach the 40%; it means there is a high accuracy in correct recall by the typing method.

4.3. Comparisons between Handwriting Vs. Typing.

In the next section of the data analysis inferential statistics were performed to establish whether there exists a significant difference when comparing handwriting and typing methods. Correctness was compared with incorrectness through 3 dependent t-tests. The purpose of this analysis was to observe whether correctness was statically different than incorrectness in both handwriting and typing recall. Table 4 displays the results for the t-test analysis.

Table 4

Correct and Incorrect Recall Handwriting versus Correct and Incorrect Recall Typing

Paired comparisons	N	Total means	SD	T (17)	Sig. (two tailed)	Effect Size
Correct recall handwriting infinitive vs.	18	1.61	1.81	1.69	.03*	.75
Incorrect recall handwriting infinitive	18	0.55	0.78			
Correct recall handwriting simple past vs.	18	1.50	2.09	1.69		.60
Incorrect recall handwriting simple past	18	0.55	0.70		.07	
Correct recall handwriting past participle vs.	18	1.33	2.14			.49
Incorrect recall handwriting past participle	18	0.55	0.61	1.69	.14	
Correct recall typing infinitive vs.	18	2.83	2.43			
Incorrect recall typing infinitive	18	0.33	0.59	1.69	.00**	1.41
Correct recall typing simple past vs.	18	1.88	1.84			
Incorrect recall typing simple past	18	1.05	1.25	1.69	.12	.52
Correct recall typing past participle vs.	18	1.83	1.97			
Incorrect recall typing past participle	18	1.11	1.18	1.69	.19	.44

Note: * = Significant at alpha .05: **= significant at alpha .001

The first comparison between *correct recall handwriting infinitive* and *incorrect recall handwriting infinitive* showed a statistically significant differences, $t(17)$ = .1,69, p = .03, *effect size d* = .75.   In other words, *correct recall handwriting infinitive* score was significantly higher than *incorrect recall handwriting infinitive* score. This difference displays a large effect size (Cohen 1988) as demonstrated by the calculated Cohen's d, which leads to the conclusion that the participants in this study correctly recalled the verbs that were part of the list they were provided.

The comparisons between *correct recall handwriting simple past* and *incorrect recall handwriting simple past* showed $t(17)$ = .1.69, p = .07 *effect size d* = .60 , *correct recall handwriting past participle* and *incorrect recall handwriting past participle* $t(17)$ = .1.69, p = .14 *effect size d* = .49 ,*correct recall typing simple past* and *incorrect recall typing simple past* $t(17)$ = .1.69, p = .12, *effect size d*= .52 , and *correct recall typing past participle* and *incorrect recall past participle* $t(17)$ = .1.69, p = .19, *effect size d* = .44, showed no significant differences.

However, there is a strong difference between *correct recall typing infinitive* and *incorrect recall typing infinitive.* The dependent t-test show a significant difference between these groups at an alpha level of .05 $t(17)$ = .1.69, p = .00, *effect size d* = 1.41, and the results of the calculated Cohen's d indicate that they differ largely. This finding shows that similarly to the relationship between *correct recall handwriting infinitive* and *incorrect recall handwriting infinitive*. These participants correct recall the infinitive verb forms when they type. However, these differences cannot be accounted to the method of writing; rather, they offer evidence that in this group of participants exists a natural and developmental learning of the English verbs, although this learning process is not the result of the use of handwriting or typing as methods of writing.

This chapter presented a detailed account of the analyses of the data elicited through recognition, distractor and recall tasks. In the present research study, there is no evidence of the influence of handwriting and typing to better recall Irregular English verbs; a small number of participants can be a reason. However, the group of participants in this research indicate a pattern of learning irregular English verbs as a consequence of the exposition to these verbs during regular English classes or other

ways of acquisition The interpretation and discussion of these trends is at the centre of the next chapter.

CHAPTER V
CONCLUSIONS, RECOMMENDATIONS, BIBLIOGRAPHY AND ANNEXES

5.1. Conclusions

Based on research and the application of three instruments, this study aimed to investigate the influence of handwriting and typing methods to acquire irregular English verbs in young Spanish speakers. The following conclusions were extracted:

Apparently, typing appeared to be more effective (89,47%) to acquire irregular English verbs by young Spanish speakers. However, despite the large frequency, it is not significantly different when compared with the frequency of the correct recall of the handwritten verbs. This result is opposed to previous findings (Aberšek et al., 2008; Kiefer and Trumpp, 2012; Longcamp et al., 2005) where the results stated that participants who typed words did not provide enough information to the brain and as consequence, participants wrote few accurate words. The results of this study are also opposed to the previous research findings (Guan et al., 2011) where it was stated recall is only enhanced when writing by hand. This study performed by young Spanish speakers demonstrated that participants may have a preference for typing but that difference is not significant as the participants could have been exposed to these verbs during regular classes. According to the results of this study, typing stimulated the motivation of participants and the quality and quantity of written words because participants recalled a high frequency of infinitive verbs written by typing method. These findings were similar to those found in other investigations (Lyu et al., 2021) where similar benefits of typing were stated.

It seems to be possible that handwriting can be effective to acquire irregular English verbs by young Spanish speakers since the highest frequency obtained (74,36%). However, these results do not match to the results of previous studies (Guan et al., 2011; Longcamp et al., 2008; Mendwell, 2009; Mangen et al., 2015) as those findings show that handwriting influences on accurate recognition and memorization of letters and words due to the sensory-motor integration produced by hands, eyes,

and brain. The use of senses promoted participants to work efficiently because of the complex relation produced with hands during handwriting. Additionally, the results of this study demonstrated that participants seem to recall whole words by handwriting but it is not significant different than typing; therefore, I cannot conclude that this study shows similar results than Smoker et al., (2009) as I applied their same protocols for the data collection. In the present study, it was noticeable that handwriting seems to play an important role but there is no significant difference than typing participants could have known the verbs from previous exposure to the target verbs.

This study does not show any evidence that handwriting is more effective than typing to acquire irregular English verbs by young Spanish speakers. However, when comparing correct recall typing infinitive and incorrect recall typing infinitive, there is a statically significant difference between the correctness of recall. This result is opposed to previous findings (Aberšek et al., 2008; Kiefer and Trumpp, 2012; Longcamp et al., 2005), these studies were focused on Slovenian and English languages, participants were about 3 to 11 years old and the instruments applied were pre-tests and post tests, unlike the present study that applied a recognition task, a distractor task and a recall task, as the results of the mentioned studies stated that participants who typed words wrote fewer accurate words in comparison with the number of words written by hand. Besides this study showed that handwriting is not more effective to recall words, which is opposed to the previous research findings (Guan et al., 2011) where it was stated that complex processes enhance memorization when writing by hand. The results of this t-test demonstrate the participants displayed a good understanding of irregular English verbs, which can be attributed to the different activities they need to perform in English classes at school.

5.1. Recommendations

Typing should be included in early instruction to activate different skills, neural patterns, and sensory motor skills, which promotes recall. It will be helpful to develop effective software that includes a variety of activities that include authentic communication and real contexts to use irregular English verbs using both writing

methods typing and handwriting; thus, learners will find it interesting to work with these methods by using technology and will be engaged with learning a foreign language.

Similarly, handwriting should be maintained during instruction as the movements produced by hand result in better concentration and memorization. Handwriting should not be forgotten and substituted by typing; rather, the use of both methods will benefit students to acquire irregular English verbs.

Different activities for handwriting and typing include authentic use of language in a real context. Irregular English verbs should be daily included in regular classes. The alternation of the writing method will activate different patterns and senses, and authentic use will enhance learning and recall as learners do not only focus on repetition but also on the real use of each word in effective communication. Therefore, words should be repeated 10 times to become significant (Peters, 2014) as consequence large effect recall will be fostered, and fluent communication in L2 could be enhanced by recalling more words to increase vocabulary.

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5.3 Anexos

Annex 1. Recognition task for Handwriting

RECOGNITION TASK-HANDWRITING

Date:..

Answer the following questions:

Here you are presented 2 questions to respond to in order to complete the task. Please think of them very carefully before answering. This activity is individual. Please, do not speak until your classmates have finished the activity.

1. How many times do you write by hand every day?

………………………………………………………………………

2. Do you like to write by hand?

………………………………………………………………………

Instructions:

You are presented with a sheet of paper and you see a list of verbs on the left side of the paper, copy the words by hand using a blue pen, one time each, on the right side of the paper, use the table below. This is an individual activity, take as much time as you need. Please, do not speak until your classmates have finished the activity.

IRREGULAR ENGLISH VERBS			HANDWRITING		
Infinitive verb	Past simple tense	Past participle	Infinitive verb	Past simple tense	Past participle

Bring	brought	brought			
Catch	caught	caught			
Forgive	forgave	forgiven			
Hear	heard	heard			
Learn	learnt	learnt			
Say	said	said			
Shake	shook	shaken			
Sing	sang	sung			
Teach	taught	taught			

Annex 2. Recognition task for Typing

RECOGNITION TASK-TYPING

Date:………………………………….

Answer the following questions:
Here you are presented 3 questions to respond to in order to complete the task. Please think of them very carefully before answering. This activity is individual. Please, do not speak until your classmates have finished the activity.
1. How many times do you use a cellphone every day?
…………………………………………………………………………..
2. Do you use instant messaging daily?
………………………………………………………………………….
3. How many hours do you text messaging every day?
………………………………………………………………………….

Instructions:
You are presented with a computer and you see a list of verbs on the left side of the screen, copy the words by typing, one time each, on the right side of the screen, use the table below. This is an individual activity, take as much time as you need. Please, do not speak until your classmates have finished the activity.

IRREGULAR ENGLISH VERBS			TYPING		
Infinitive verb	Past simple tense	Past participle	Infinitive verb	Past simple tense	Past participle
Break	broke	broken			
Choose	Chose	chosen			
Do	did	done			
Find	found	found			

Grow	grew	grown			
Know	knew	known			
Make	made	made			
Run	ran	run			
Sell	sold	sold			
Understand	Understood	Understood			

Annex 3. Distractor task

DISTRACTOR TASK

Date:…………………………………….

Instructions:

Here, you are presented 10 additions, solve them without using a calculator, instead, use a pencil, and do it by yourself. This is an individual activity, take as much time as you need. Please, do not speak until your classmates have finished the activity.

345 +201	263 +187	901 + 46	176 +287	274 +501
745 +290	476 +389	201 +185	625 +278	306 +427

Annex 4. Recall task

Date:…………………………………….

Instructions:

Now, think of all the irregular English verbs you typed and handwritten

minutes ago and write by hand as many irregular English verbs as you

remember in legible letter using a blue pen, use the table below. This is an

individual activity, take as much time as you need. Please, do not speak until

your classmates have finished the activity.

NUMBER	IRREGULAR ENGLISH VERBS		
	Infinitive verb	**Past simple tense**	**Past participle**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

CHAPTER VI
PROPOSAL

6.1. Informative data

Topic: Compendium of activities for recalling irregular verbs using handwriting and typing methods.

Name of the institution: Escuela de Educación Básica Fiscal "Riobamba".

Beneficiaries: 18 students from 10th level C from Escuela de Educación Básica Fiscal "Riobamba".

Location: Escuela de Educación Básica Fiscal "Riobamba" is located in Southern Quito. A low socioeconomic level is predominant in families of this school. This school offers pre-kindergarten to the tenth level of elementary education in its morning and evening sections.

Estimated time for the execution: These activities will be developed in 4 weeks through the application of 1 activity per day, alternating typing and handwriting.

Person in charge:
Researcher: Licenciada Teresa Chiliquinga

Cost: $10,00

6.2. Background of the proposal

Memorization plays an important role to recall and use irregular English verbs when learning English. These verbs can be acquired through using them in real contexts and in both methods, handwriting, and typing. The use of a list of verbs can be beneficial for students since it presents correct spelling and the different forms of each (Pliatsikas & Marinis, 2013). However, it is significant to mention that

memorization depends on the different skills that each person has developed during life.

Frequent exposition to irregular English verbs promotes the correct recall and use of this kind of verbs; thus, a variety of activities involving both methods handwriting and typing are likely to promote the correct memorization of irregular verbs as regular verbs are more frequent in regular speech and are more easily acquired than irregular ones.

Handwriting and vocabulary acquisition

The process of writing by hand involves different aspects related to the cognitive and motor development of human beings since many regions of the brain start working due to the concentration to produce movements with the hand (Longcamp et al., 2005). Through handwriting, the memorization and orthography of new words tend to be accurate and lost-lasting. Whole-word recognition is possible by using handwriting as the effort and time involved are important.

Handwriting demands different processes in our brain. Through writing by hand, the brain activates neural patterns; additionally, sensory motor skills are developed and a high concentration is required to promote hand movement. Due to the level of concentration, multi-tasking would not be possible when handwriting (Ose et al., 2020).

Cognitive processes, neural patterns, and sensory motor skills are activated and developed during handwriting, these processes and patterns are likely to enhance the recognition and memorization of irregular English verbs for further learning of English and the accurate communication of ideas in L2 (Kiefer et al., 2015).

Handwriting versus Typing

Handwriting and typing are two strongly distinct ways of writing from a sensory-motor point of view with different central processes and vast mechanical differences (Mangen & Velay, 2010). Handwriting involves the use of one hand, in contrast,

typing involves the use of both hands. Movements in both methods are different since for typing repetitive movements are produced but for handwriting, complex movements are required. Besides, typing is less consuming than handwriting but handwriting involves graphomotor components such as shaping of letters.

During handwriting visual and motor connections are produced and it enhances the memorization and recall of words. On the other hand, typing does not promote cognitive processes, typing only requires visual connections instead handwriting requires more concentration (Kiefer and Trumpp, 2012).

Both writing methods have benefits. Through typing learners tend to write more words and sentences; however, through handwriting accuracy is higher than in typing. By using a keyboard, the accuracy in words is not promoted, hence, spelling and accurate memorization is not promoted but a great number of words are typed.

Taking into account the results from the present study, participants can acquire irregular English verbs through repetition and exposition of these terms. It is noticeable that both writing methods are likely helpful for the irregular English verbs acquisition and memorization, mostly to recall infinitive forms. However, it is remarkable the possibility to acquire the different tenses of the verbs by practicing and using them in real contexts.

6.3. Justification

This proposal is meaningful as through the compendium will help to produce a better recall of new vocabulary with enough linguistic information to create sentences by handwriting and typing. In consequence, young English learners will acquire new words to extend their vocabulary, and thus, confident and accurate communication will be produced by using new words in real contexts.

This proposal has a direct relation with the existing problem regarding the acquisition of irregular verbs as learners find them more difficult to learn and apply. This proposal sets a variety of activities linked to real contexts and authentic use of words provided through a compendium using both handwriting and typing methods

to enhance the acquisition of irregular English verbs to assure the accuracy of spelling, orthography and use of the context of each verb so that learners will improve learners' struggles when learning vocabulary, which may have an impact when expressing their ideas in an L2.

Each English learner will be a beneficiary as the proposed activities will promote writing, spelling, and recall of 10 irregular English verbs that take place in communication frequently. Activities will be understandable and easy to be completed by students from 8th to 10th grades with A2 level.

The results will be promoted through a workshop with English teachers to explain the importance and promotion of the use of both writing methods to acquire English verbs and expand students' vocabulary to enhance correct vocabulary. However, teachers cannot only expand the use of these methods to acquire irregular English verbs but also to acquire adjectives, nouns, or any term that are part of students' lexical.

6.4. Objectives

6.4.1. General

- To improve the acquisition of irregular English verbs by elementary learners using handwriting and typing activities.

6.4.2. Specific

- To plan activities for both handwriting and typing using accessible resources for the elementary level.
- To create activities in different formats, printed for handwriting and online for typing.
- To apply the activities in both methods handwriting and typing to students at the elementary level.

6.5. Feasibility analysis

Technical

This proposal is feasible because a revision of communicative activities to produce repetition, recognition, and repetition was previously performed. Each activity was meticulously created to include handwriting and typing in regular instruction to enhance the acquisition of irregular English verbs.

Technological

This proposal is feasible because computers, cell phones, and the internet are available to design activities to promote the use of handwriting and typing. Activities for handwriting were created on a computer and printed, on the other hand, activities for typing were created online using the internet.

Economic-financial

This proposal is feasible as the materials and resources are not expensive. The researcher has access to a computer, a printer, and the internet connection. The necessary photocopies do not represent a high cost.

6.6. Theoretical foundation

Nasrollahi-Mouziraji and Nasrollahi-Mouziraji (2015) propose that memorization has been underestimated since it is not based on repeating words as a parrot or simply replicating letters, rather it promotes the development of patterns that are repeated in different situations and contexts, besides it could be a complementary tool in order to acquire new knowledge. It means memorization is a useful strategy to promote the acquisition of new words, this strategy should be promoted by authentic use of the language.

Memorization has some benefits since learners are going to focus on the terms they are repeating and it promotes concentration and activation of neural patterns. These neural patterns enhance the long-lasting memory and promote the memorization of new words when using them in real contexts that helps to improve recall.

Nasrollahi-Mouziraji and Nasrollahi-Mouziraji (2015) state that repetition is a good strategy to practice new words, and expressions and acquire a second language. Learners are forced to set a space in their memories to keep new knowledge acquired through consented repetition. Repetition promotes concentration and engagement with specific content to be acquired using a variety of activities that promote authentic use of the language.

Hintzman (2010) noticed that people are not only focused on repeating, instead, they are focused on what they repeat and why they repeated it. It is important to notice that spaced repetition is more likely to be beneficial. Activities with different contexts and at different times enhance repetition. Consequently, they promote the recall of new words as meaningful memorization was developed.

Peters (2013) states that according to the activities presented and times words are repeated there is a large effect of recall on single words. The number of repetitions are significant and it was demonstrated that 10 repetitions are beneficial for new word learning. Frequency of repetition influences the significance and acquisition of new words when they are provided through real contexts.

The activities designed in the compendium will be developed considering this theoretical foundation to promote meaningful repetition, long-lasting memorization and authentic use of the language in real contexts.

6.7. Methodology

Phase 1: Ten useful verbs will be selected by revising the needs and preferences of students from 8th to 10th grades and these verbs will be used during the application of

the proposal by matching the topics that will be part of the instruction during the present period.

Phase 2: Participants to be benefited are selected and orally informed that they will be part of this research and the materials they will need to be part of this proposal and work on the activities effectively.

Phase 3: Activities are created and divided to be worked on a day-by-day fashion. Consequently, the verbs will be useful for students to enhance fluency and confidence when using them.

Phase 4: Activities are applied day by day alternating typing and handwriting through presentation, practice, and production method (P.P.P. method). Handwriting activities will be developed during classes; however, due to poor internet connection at school, typing activities will be developed after classes as homework, the link to work on these activities will be provided through a WhatsApp group.

Phase 5: Printed and online activities will be checked and graded by each one of the teachers.

6.8. Operational model

Table 5

Operational Model

Stages	Objetives	Activities	Resources	People in charge	Time
Planning	To plan activities for both handwriting and typing using accessible resources for the elementary	• To identify the main verbs to be used with students. • To research about communicative activities to promote	1. List of verbs 2. Internet 3. Laptop 4. Pens	Researcher	2 days

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		level.	repetition.			
Creation	To create activities in different formats, printed for handwriting and online for typing.	• To type and create 10 worksheets with different communicative activities to be part of the compendium where repetition of irregular English verbs through handwriting and typing are fostered.	1. Computer 2. Internet 3. Printer 4. Pens	Researcher	1 week
Application	To apply the activities in both methods handwriting and typing to students of elementary level.	• To schedule specific times in class to apply the handwriting activities. • To send the drive links of typing activities to the WhatsApp group and control the accomplishment of them.	1. Photocopies 2. Internet 3. Pens 4. Cellphones/computers	Researcher	4 weeks

ACTIVITIES FOR HANDWRITING AND TYPING

Activity One :	

This activity encourages students to remember irregular English verbs in past.

SKILLS:	Writing, reading
AIM:	To promote the acquisition of the different tenses of irregular English verbs.
MATERIALS NEEDED:	Cards, scissors, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at each rectangle and read the verbs, next cut each rectangle, put it face down and write the missing forms of the verbs.

FACE UP

Infinitive form	Simple past	Past participle	Infinitive form	Simple past	Past participle
Think	Thought	Thought	Build	Built	Built

Infinitive form	Simple past	Past participle	Infinitive form	Simple past	Past participle
Drive	Drove	Driven	Eat	Ate	Eaten

Infinitive form	Simple past	Past participle	Infinitive form	Simple past	Past participle
Fly	Flew	Flown	Keep	Kept	Kept

Infinitive	Simple	Past	Infinitive form	Simple past	Past participle

form	past	participle
Run	Ran	Run

See	Saw	Seen

Infinitive form	Simple past	Past participle
Speak	Spoke	Spoken

Infinitive form	Simple past	Past participle
Win	Won	Won

FACE DOWN

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

Infinitive form	Simple past	Past participle

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Infinitive form	Simple past	Past participle		Infinitive form	Simple past	Past participle

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Activity Two :

This activity encourages students to remember and spell irregular English verbs in past.

SKILLS:	Writing, reading
AIM:	To promote the correct spelling of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.

Look at the provided chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Now, unscramble the verbs below.
1. olfnw: …………………………
2. lubit:……………………………..
3. ktep:………………………………
4. kspea:………………………………
5. ndierv:………………………
6. nwo:………………………….
7. knthi:……………………………
8. rdevo:………………………….
9. pkee:………………………
10. nteae:……………………….

This activity encourages students to remember and write irregular English verbs in past.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the different tenses of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Use the word box and complete the following chart:

WORDBOX

Flew, Drive, Won, Built, Keep, Ate, Saw, Thought,

Infinitive form	Simple past	Past participle
Build	Built	……………
……………	Drove	Driven
Eat	……………	Eaten
Fly	……………..	Flown
……………	Kept	Kept
Run	………..	Run
See	…………..	Seen
…………..	Spoke	Spoken
Think	…………..	Thought
Win	Won	……………

This activity encourages students to remember and write the simple past form of irregular English verbs.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the simple past of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.

Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Complete the simple past of each verb in the following chart:

Infinitive form	Simple past	Past participle
Build		Built
Drive		Driven
Eat		Eaten
Fly		Flown
Keep		Kept
Run		Run
See		Seen
Speak		Spoken
Think		Thought
Win		won

This activity encourages students to remember and write the past participle form of irregular English verbs.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the past participle of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.

Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Complete the past participle of each verb in the following chart:

Infinitive form	Simple past	Past participle
Build	Built	
Drive	Drove	
Eat	Ate	
Fly	Flew	
Keep	Kept	
Run	Ran	
See	Saw	
Speak	Spoke	
Think	Thought	
Win	Won	

This activity encourages students to remember and write the infinitive form of irregular English verbs.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the infinitive form of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Look at the pictures and write the correct infinitive form for each irregular English verb, use the chart provided.

……………………
……………………

……………………

……………………
……………………

……………………

…………………….
…………………….

…………………….

…………….

Activity Seven:

This activity encourages students to remember and write the simple past form of irregular English verbs in context.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the simple past form of irregular English verbs in authentic language.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Read the sentences below, write the simple past tense of each verb.
1. My father ……………. (run) as fast as he could.
2. Susan ………………(keep) many tomatoes in her fridge.
3. Ecuadorian people …………….(speak) Quechua many years ago.

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4. The best project ……………(win) a golden trophy.
5. The architect ……………(build) an amazing skyscrapper.
6. Last night we …………..(eat) french fries and pizza.
7. The fireflies ……………(fly) all night.
8. My sisters and brothers ……………(see) a blue shell.
9. Erika and Peter …………….. (drive) in silence since they were mad.
10. We …………..(think) it was a good idea.

Activity Eight:

This activity encourages students to remember and write the past participle form of irregular English verbs in context.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the past participle form of irregular English verbs in authentic language.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Read the sentences below, write the past participle of each verb.
1. My mother has …………… (drive) for 6 hours.
2. We have been ………………(speak) English during 1 year.
3. I have not ………………(eat) for 9 hours.
4. This hospital was ……………..(build) by my cousin.
5. She has ………… (win) this championship many times.
6. Medicines and supplies were ………….. (fly) to Africa.
7. They have not ………………(think) about it yet.
8. My pets have not …………..(see) this toy.
9. She should have …………(run) faster.
10. My instruments were ………..(keep) by my teacher.

This activity encourages students to remember and write the different forms of irregular English verbs in context.

SKILLS:	Writing, reading
AIM:	To promote the correct writing of the different forms of irregular English verbs in authentic language.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Choose the verb form that makes the most sense:
1. It was the most delicious dessert I ever ……………
  a) eat   b)ate   c)eaten
2. Every day I ………… carefully.
 a) drive   b)drove   c)driven
3. We ………… that game, but we did not get a trophy.
a) win   b)won   c)won
4. These foreign women ………… French.
 a) speak   b) spoke   c)spoken
5. Michael had never ……….. a giraffe before.
 a) see   b)saw   c)seen
6. These drugs …………… my dog alive.
 a) keep   b)kept   c)kept
7. The lion …………… all the time.
 a)run   b) ran   c)run
8. Teachers want to …………… new schoolrooms.
 a)build   b)built   c)built
9. My family …………… from Ecuador to Japan.
a) fly   b)flew   c)flown
10. I ……………. she was very smart.
  a)think   b)thought c)thought

This activity encourages students to remember and write the simple past form of irregular English verbs.

| SKILLS:	Writing, reading
AIM:	To promote the correct writing of the simple past form of irregular English verbs.
MATERIALS NEEDED:	Worksheet, pens, internet, google drive, cellphone.

INSTRUCTIONS FOR USING THIS ACTIVITY.
Look at the chart, check the writing.

Infinitive form	Simple past	Past participle
Build	Built	Built
Drive	Drove	Driven
Eat	Ate	Eaten
Fly	Flew	Flown
Keep	Kept	Kept
Run	Ran	Run
See	Saw	Seen
Speak	Spoke	Spoken
Think	Thought	Thought
Win	Won	won

Fill in the crossword with the simple past of the verbs:
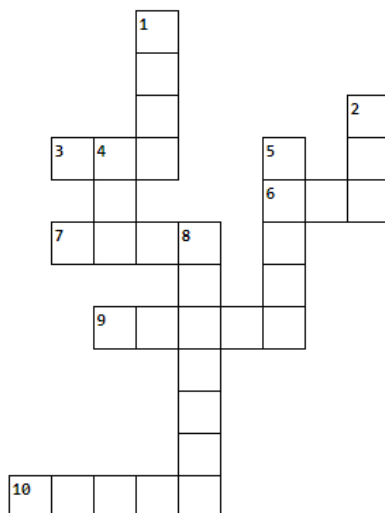
ACROSS

3. SEE
6. RUN
7. KEEP
9. SPEAK
10. BUILD

DOWN

1. FLY
2. WIN
4. EAT
5. DRIVE
8. THINK