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The Impact of the Waterfall Technique on Spelling Accuracy and Vocabulary Retention among Primary EFL Learners

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Abstract:

Vocabulary and spelling are fundamental components in developing language proficiency; especially at the elementary stages of learning. Therefore, EFL teachers should adopt the most effective ways for teaching these skills. This study investigates the effectiveness of the Waterfall Technique in enhancing spelling accuracy and vocabulary retention among fifth-grade students. The research was conducted at a randomly selected school in the Karkh district of Baghdad and involved 60 students, equally divided into experimental and control groups. The experimental group was taught using the waterfall technique, while the control group followed traditional methods. Results showed that the experimental group outperformed the control group in terms of performance, engagement, and motivation, confirming the technique's effectiveness in teaching spelling and vocabulary.

Keywords: Waterfall Technique, EFL learners , vocabulary retention, spelling accuracy, primary education

.Introduction:

1.1 Problem of the study and it Significance:

Mastery of spelling and vocabulary is fundamental in the early stages of English language acquisition, as it lays the groundwork for learners' future development in reading, writing, and communication. At this stage, young EFL learners begin forming essential connections between sounds, letters, and meanings, which are critical for building literacy skills (Ehri, 2000; Cameron, 2001).Vocabulary is central to comprehension and expression; without sufficient lexical knowledge, learners struggle to understand language or use it meaningfully(Cameron,2001;Nation,2001).Likewise, accurate spelling supports reading development by helping learners decode and encode words through sound-letter associations (Ehri, 2005).

Given the fundamental role that spelling and vocabulary play in language acquisition, it is concerning that these two essential skills are often marginalized in actual classroom practice. In many EFL contexts, vocabulary is presented merely as a list of words to be memorized, rather than being actively taught through structured and meaningful instruction (Schmitt, 2000; Nation, 2001). Graham,etal (2000) add that spelling is often taught

superficially with insufficient attention on the orthographic rules that reinforce long-term retention.

In the Iraqi EFL context teaching vocabulary and spelling commonly relies on rote memorization, as a result, EFL primary pupils struggle to spell words and recall meaning effectively as research indicates (Hassan 2020).Such difficulties stem from limited exposure to meaningful contexts and the absence of explicit or effective teaching ,the same matter asserted by (Al-Azzawi ,2019).Consequently, traditional classroom methods often lack interactive, engaging elements, which impede mastering these basic skills.

Teachers must avoid relying solely on traditional rote memorization, which often fails to support long-term learning. Instead, contemporary techniques that integrate repetition with learner engagement such as the waterfall technique offer a promising alternative. This technique allows repeated exposure to target words while maintaining motivation and active involvement, thus addressing the dual needs of reinforcement and interest. The waterfall offers a structured, step-by-step approach that encourage active learning and gradual skill development making it particularly suitable for young EFL learners who require guided, scaffold instruction. Furthermore. Adaptability of waterfall technique makes it suitable for various classroom contexts, .i.e. it can be implemented with or without technological resources. Accordingly, the present study aims to provide practical and applicable solutions to the challenges Iraqi pupils face in mastering these skills by using waterfall technique in teaching these skills. Ultimately, the findings seek to improve teaching practices by promoting the adoption of innovative strategies that enhance vocabulary retention, spelling accuracy, and overall language proficiency.

1.2 Aims of the Study:

The present study seeks to find out the following:

1. The impact of the waterfall technique on students' spelling accuracy.
2. The impact of the waterfall technique on students' vocabulary retention.

1.3 Hypotheses of the Study:

It is hypothesised that:

1. There are no statistically significant differences between the post-test mean scores of the control group, taught using the conventional method, and the experimental group, taught using the Waterfall Technique, in terms of vocabulary retention and spelling accuracy achievement.
2. There are no statistically significant differences between the pre-test and post-test mean scores of the experimental group in both vocabulary retention and spelling accuracy.

1.4 Limits of the Study:

The study is limited to fifth-grade pupils at Imam Al-Muntather Primary School, under the Directorate of Education – Baghdad Al-Karkh III, during the second semester of the 2024–2025 academic year.

2.Theoretical Background:

2.1 Spelling and vocabulary in Language learning:

In the process of learning English as a foreign language (EFL), both spelling accuracy and vocabulary retention play a fundamental role in building learners' overall language proficiency. Spelling is not merely the act of arranging letters in the correct order; it reflects learners' understanding of phoneme-grapheme correspondence, reinforces reading and writing skills, and

contributes to their confidence in written communication (Ehri, 2000; Graham & Santangelo, 2014). Accurate spelling allows learners to express their ideas clearly and avoid misunderstandings in both academic and real-world contexts.

Equally important is vocabulary retention, which refers to learners' ability to remember and recall the meanings of words over time. A rich and well-retained vocabulary is essential for reading comprehension, oral communication, and writing development (Nation, 2001; Schmitt, 2008). Without solid vocabulary knowledge, learners may struggle to understand texts or participate effectively in conversations.

Spelling accuracy and vocabulary retention are essential skills for all EFL learners, but their importance is even greater at the early stages of learning, particularly in primary education (Cameron, 2001; Pinter, 2006). At this foundational level, learners begin forming the basic building blocks of the language, and these two skills play a central role in their overall language development. Strong spelling skills enable young learners to write with clarity and confidence, while a well-retained vocabulary helps them understand texts, express ideas, and engage in meaningful communication (Graham & Santangelo, 2014; Schmitt, 2008). At the primary level, children's cognitive flexibility and memory capacity allow them to absorb and retain language input more effectively (Cameron, 2001; Pinter, 2006). Moreover, early mastery of these skills reduces the risk of future learning difficulties and supports long-term academic success. For this reason, educators must prioritize strategies that enhance spelling and vocabulary retention in ways that are age-appropriate, engaging, and consistent with young learners' developmental needs (Nation, 2001; Brewster,et al. 2002)

2.2.Challenges Faced by Primary EFL Learners in Spelling and Vocabulary Retention:

Primary EFL learners often encounter significant challenges in spelling and vocabulary retention due to the complex nature of English orthography, limited phonological awareness, and insufficient language exposure. English spelling is notoriously irregular, with many exceptions to phonetic rules, making it difficult for learners to form consistent patterns. Harmer (2015: 134) explains that such inconsistencies frequently lead to confusion and errors, particularly with words that contain silent letters or irregular structures (Snow, 2010). Phonological awareness is another key factor influencing both spelling and retention. Learners

who struggle to identify sound patterns within words may fail to associate them with correct spelling forms. Goswami (2011) highlights that the variability of English sound-letter correspondences—such as in "though" and "through"—poses a significant challenge for accurate recall and usage.

Furthermore, limited reinforcement through reading and writing reduces the likelihood of long-term vocabulary retention. Learning new words requires repeated encounters with them in diverse contexts for establishing the words in memory because without adequate exposure ,learners probably forget new words which leads to poor spelling (Nation ,2001).

The above issues can overcome through regular phonics teaching, explicit instruction and systematic use in meaningful context such structured support can reinforce learners' spelling accuracy and words retention (The National Reading Panel ,2000).

2.3 The Role of Teachers in Supporting Spelling and Retention:

Teachers can adopt various methods and strategies in teaching vocabulary and spelling. scaffolding and formative assessments can be effective in developing these skills. Such methods help learners to improve the skills gradually by breaking down complicated words into parts and presenting continuous feedback (Wood et al, 1976), Moreover, it is found that formative assessments assist teachers to recognize spelling and retention difficulties, adjust teaching and give timely feedback (Black & William, 1998).

Additionally, it is important for teachers to incorporate spaced repetition, a strategy that involves revisiting words at increasing intervals as it is proved its effectiveness in improving long-term memory retention and preventing words from fading from memory(Bahrick,2000),.

Teachers can also employ active vocabulary usage by motivating learners to apply new words in oral and written contexts. Research indicated that , noting that the more a student engages with a word, the more likely they are to remember it (Stahl and Fairbanks ,1986)

Ultimately , teachers who use a combination of structured learning strategies mentioned above can significantly enhance their students' spelling abilities and word retention, thereby help learners to establish a strong foundation for long-term literacy development.

2.4 Theoretical Underpinnings of the Waterfall Technique:

The waterfall technique is a teaching strategy that focuses on structured, step-by-step progression in the learning process, it emphasizes completing one stage fully before moving to the next, ensuring that learners build a strong foundation at each step (Clark and Mayer ,2011).

Harmer (2015) states that the waterfall technique incorporates step-by-step repetition with peer collaboration, helps improve memory retention and promotes more effective vocabulary use in students .

The Waterfall Technique is grounded in several theoretical frameworks that focus on structured, sequential, and learner-centered approaches. According to Cognitive Load Theory (Sweller, 1988), the technique breaks down complex information into smaller parts, allowing learners to focus on one aspect at a time. It also aligns with Constructivist Theory (Vygotsky, 1978), which emphasizes building knowledge step-by-step, offering necessary support at each stage. In line with Vygotsky's Zone of Proximal Development, the technique gradually increases complexity based on learners' capabilities. The Behaviorist Approach (Skinner, 1957) supports repetition and reinforcement, encouraging continuous practice to strengthen understanding. Finally, Active Learning Principles (Dewey, 1938) are applied by engaging students in interactive tasks, fostering real-world vocabulary usage and active participation.

2.5 Types of Waterfall Technique in Education:

Linear Waterfall Technique :This type follows a strict, step-by-step sequence where each phase must be fully completed before moving to the next i.e. learners master must one stage before progressing, which builds a strong basis for word recall.(Harmer (2015).

Interactive Waterfall Technique:This technique aims at emphasizing learner interaction at every stage and involves activities that actively engage students in the vocabulary acquisition process like (collaborative tasks ,group discussions, , and feedback loops) Brown and Green (2019) .Flexible Waterfall Technique:Harris and Melinze (2015) highlight that this approach allows some overlap

between stages, enabling learners to revisit previous steps when necessary. This flexibility supports diverse learner paces and individual needs.

Contextual Waterfall Technique:Jones and Carter (2017) stress the importance of embedding vocabulary learning within meaningful real-life contexts. Each stage focuses on applying new words to practical scenarios, improving understanding and usage.

Feedback-Driven Waterfall Technique:Lou et al. (2020) present this approach as integrating continuous feedback at every phase. This helps learners correct mistakes and progressively strengthen their knowledge, aligning closely with educational scaffolding principles.

Noteworthy, the researcher selected to implement the Flexible, Interactive, and Feedback-Driven types of the Waterfall Technique in this study, as these types best correspond to the nature of the study, the learners' proficiency level, the available instructional time, and the specific educational context of primary schools in Iraq.

2.6 Steps to Apply the Waterfall Technique (Teacher-Centered Instructions):

To apply this technique, the teacher follows the following steps

1. Preparation Stage. The teacher introduces the new word clearly and provides a simple explanation of its meaning using relevant examples. The teacher also uses visual aids or real objects to help students understand the word in context (Smith et al., 2018).

2. Presentation Stage. The teacher presents the word slowly and carefully, breaking it down into syllables or letters to facilitate pronunciation and spelling. The teacher shows the correct spelling and explains the connection between the word's sound, meaning, and written form (Brown & Green, 2019; Harmer, 2015).

3. Practice Stage. The teacher encourages students to repeat the word aloud to practice pronunciation. The teacher guides students through spelling practice activities such as writing the word on the board or in their notebooks. The teacher also facilitates sentence construction or matching activities to help students use the word meaningfully (Jones & Carter, 2017).

4. Feedback and Correction Stage . The teacher provides immediate, positive feedback on pronunciation and spelling errors. The teacher corrects mistakes clearly and constructively to build students' confidence and avoid fossilization (Harris & Melinze, 2015).

5. Application Stage. The teacher encourages students to use the new vocabulary in real-life or simulated situations, such as simple conversations or writing sentences. The teacher assigns tasks that promote independent use of the words in context (Lou et al., 2020: 98).

6. Review and Reinforcement Stage. The teacher regularly reviews previously learned vocabulary using engaging activities such as quizzes, flashcards, or games. The teacher ensures spaced repetition to help students consolidate vocabulary in long-term memory (Sweller,1988:).

3.Procedures:

3.1 Population and Sample of the study:

The population and sample of the study consisted of fifth-grade male and female pupils for the academic year 2024–2025, during the second semester. Imam Al-Muntather Primary School, located under the supervision of the Al-Karkh III Directorate in Baghdad, was randomly selected. A total of 64 pupils had already been distributed alphabetically into two sections. Section A was randomly assigned as the control group and consisted of 33 pupils, while Section B was designated as the

experimental group with 30 pupils. Three pupils from Section A were excluded from the sample because they were accelerated students, in order to avoid any influence on the accuracy of the research findings. Although they remained in their original class during the experiment, their scores were excluded from the statistical analysis. Thus, the final sample consisted of 60 pupils, with 30 in each group.

3.2 Equalization of the Subjects:

To achieve matching or equalization between the two groups, the following variables are controlled for both groups: the age in months see appendix (A),and the grades in English in the Mid –year examination see appendix (B) and their performance on vocabulary and spelling pretest ,see Table (C).Data analysis revealed that there is no significant difference among the groups according to these variables i.e. In other words, the two groups are approximately equal in terms of age, grades on the mid-year exam and pretest performance, see tables (1,2and 3)

Table (1): Group Equivalence in the Age

Group	N	Mean	SD	Computed- T value	Tabled t value	DF	Level of significance
Control	30	135	2.68	0.654	2.00	58	0.05
Experimental	30	134.7	2.48				

Table (2): Group Equivalence in the mid- year exam

Group	N	Mean	SD	Computed- T value	Tabled t value	DF	Level of significance
Control	30	69.17	267.52	0.49	2.00	58	0.05
Experimental	30	71.23	273.98				

Table (3): Group Equivalence in the Spelling and Vocabulary Pretest

Skill	Group	N	Mean	SD	Computed-T value	Tabled-T value	DF	Level of sig.
Spelling	Control	30	11.20	**3.20**	0.324	2.00	58	0.05
	Experiment	30	10.40	3.02				
Vocabulary	Control	30	10.83	3.47	1.000	2.00	58	0.05
	Experiment	30	10.83	3.02				

3.3 Instruments of the Study:

The study employed two main tools: a pretest and a posttest, both developed by the researcher in accordance with the fifth-grade English textbook. The two tests were constructed to be equivalent in terms of, number of items, and level of difficulty. The pretest was constructed from unit (5) ,see Appendix(D) .The post-test was from units (6 and 7) and is applied to measure their the achievement of the pupils in vocabulary and spelling after using waterfall technique, see Appendix (E).Each test included four questions: two focused on spelling and two on vocabulary .The total score allocated for each test was 40 marks, with two points assigned to each item.

3.4 Validity and Reliability of the Tests:

In this study, face validity for both the pretest and posttest was established by presenting the tests to 20 EFL primary-stage teachers from various schools, who affirmed their suitability for the pupils' proficiency level. For the purpose of test reliability, the pre-test was examined using the split-half method, yielding a Pearson correlation coefficient of 0.82. After applying the Spearman-Brown formula, the estimated reliability of the full 40-mark pre-test reached 0.90, indicating a high level of consistency .Considering that the pre-test and post-test were similar in terms of difficulty and number of items, it is reasonable to assume that the post-test demonstrates a comparable degree of reliability.

3.5 Implementation of the Experiment:

The experiment was carried out over 12 weeks, starting on February 10, 2025, and concluding on April 30, 2025. Initially, a pre-test was administered to both the experimental and control groups to ensure their equivalence and confirm that no statistically significant differences existed between them prior to the experiment's commencement (see Appendix C).Subsequently, instruction was provided five days a week to both groups. All students received equal learning opportunities under identical conditions, with the sole exception of the application of the waterfall technique in the experimental group. At the end of the experimental period, both groups were given the post-test to evaluate the effect of the technique on their performance in spelling and vocabulary.

4.Results, Conclusions, Recommendations, and Suggestions

4.1.Presentation of Results:

By applying the t-test formula for independent samples on the students' posttest scores (see appendix F), the computed value for the post test was 2.02, while the tabulated t-value at the 0.05 level of significance with 58 degrees of freedom was 2.00. This indicates a statistically significant difference between the groups favoring the experimental group (see Table 4).

The t-test formula was then reapplied separately to calculate the statistical significance of the vocabulary and spelling scores. The computed t-value for the vocabulary test was 2.69, and for the spelling test, it was 2.68. Both values exceed the tabulated t-value of 2.00, confirming a significant difference in favor of the experimental group (see Tables 5 and 6).

Table(4) T-Value of the Overall Posttest

Group	N	Mean	SD	Computed- T value	Tabled t value	DF	Level of significance
Control	30	27.13	6.44	2.02	2.00	58	0.05
Experimental	30	30.53	6.57				

Table (5) T-Value of the Spelling Posttest

Group	N	Mean	SD	Computed-T value	Tabled-T value	DF	Level of sig.
Control	30	12.77	3.55	2.68	2.00	58	0.05
Experimental	30	15.10	3.16				

Table (6) T-Value of the Vocabulary Posttest

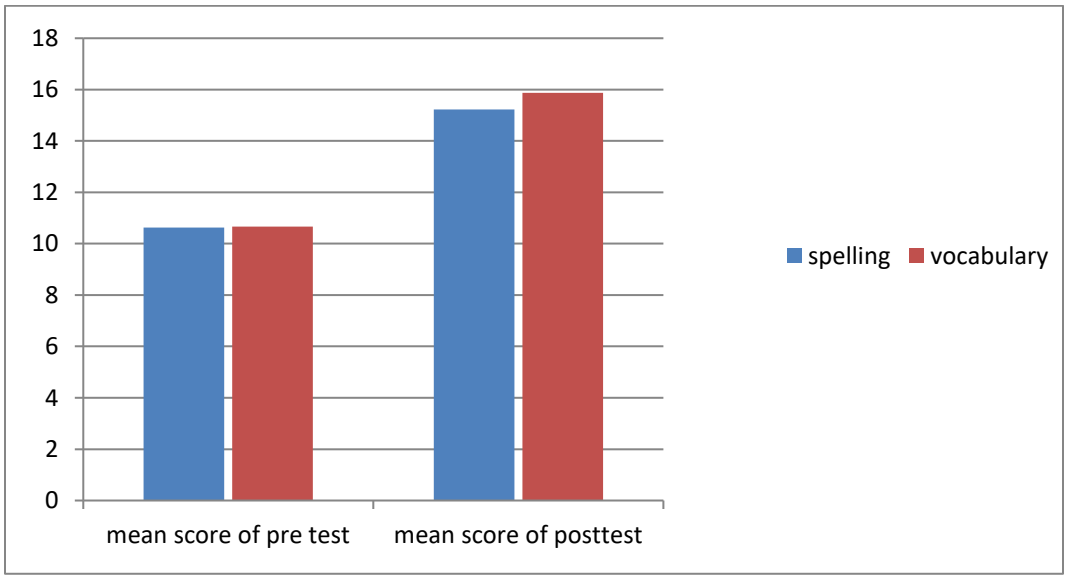
Group	N	Mean	SD	Computed-T value	Tabled-T value	DF	Level of sig.
Control	30	13.63	3.38	2.69	2.00	58	0.05
Experimental	30	15.87	3.06				

In order to achieve more precise results and assess the impact of the technique on the experimental group, a t-test was conducted on the scores obtained from the pretest and posttests in both spelling and vocabulary of the group. The analysis revealed a computed value of 6.54 for vocabulary and 5.72 for spelling, which indicates a statistically significant difference in the pretest and posttest scores. This suggests that the technique had a positive and significant effect on improving students' achievement in both areas.See Table (7).

Table (7).t-test Values for Pretest and Posttest Scores of the Experimental Group

Area	Test	Mean	SD	Computed-T value	Tabled-T value	DF	Level of sig.
Spelling	pretest	10.63	3.02	5.72	2.00	58	0.05
	posttest	15.23	3.11				
Vocabulary	Pretest	10.67	2.89	6.54	2.00	58	0.05
	posttest	15.87	3.02				

Chart (1) Performance Progress of the Experimental Group



4.1.2 Interpretation of the Results:

The statistical analysis revealed that the computed t-values exceeded the critical values, indicating that the applied technique had a statistically significant positive effect on the performance of students in the experimental group. Consequently, the null hypotheses, which assumed no effect of the technique, were rejected.

In addition to academic gains, the technique also positively influenced affective factors such as students' confidence and willingness to participate. Learners in the experimental group showed noticeably greater enthusiasm and engagement, likely due to the interactive and enjoyable nature of the technique, which fostered a positive and motivating learning environment.

Approximately half of these findings are in line with previous research by Al-Mashhadi (2018), who found that the waterfall technique significantly enhances vocabulary retention. The study also echoes Hussain and Al-Khafaji (2022), who reported increased student participation and motivation when using the technique.

A noteworthy contribution of this study lies in its investigation of the technique's effect on spelling achievement—an area previously underexplored. While earlier studies emphasized vocabulary acquisition, the current research demonstrates that the repetitive and structured nature of the Waterfall Technique also supports spelling development. This insight expands the pedagogical relevance of the technique in EFL instruction and offers a novel direction for future research.

4.2 Conclusions:

The following points are concluded from the results of this study:

Implementing the Waterfall technique significantly enhanced vocabulary attention among primary-stage EFL pupils, helping them better recognize, understand, and retain new vocabulary items.

The technique led to clear improvements in students' spelling accuracy, indicating notable development in their ability to spell words correctly and confidently.

The use of the Waterfall technique created more opportunities for active student participation in classroom activities, fostering a more engaging and interactive learning process.

The method also promoted a positive and motivating learning environment, which encouraged sustained student involvement and maintained their interest throughout the lessons.

4.3 Recommendations:

Depending on the results of this study , the following recommendations are presented

1.It is recommended by using the waterfall technique in teaching vocabulary and spelling .

2.There is a mass need to use more interactive ways in teaching vocabulary and spelling because development of these skills is essential for the pupils to learn EFL or any other language .

3. EFL teachers at the primary stage are advised to employ teaching methods and techniques grounded in repetition, since primary-stage learners are still developing foundational language skills that require ample reinforcement through repeated practice.

4. It is recommended that English language teachers regularly attend professional development courses and workshops—endorsed by the Ministry of Education or local education directorates—to become acquainted with and implement contemporary pedagogical methods.

5.The study calls for allocating sufficient space and time for the meaningful and structured instruction of these skills during classroom practice.

4.4 Suggestions for Further studies:

Based on the findings of this study, the following studies are suggested:

1.A similar study to examine the impact of using waterfall technique on other language skills and areas.

2. Investigate the Impact of the Waterfall Technique on Reading Comprehension
3. A study to investigate the teachers' perceptions of the Waterfall Technique, identifying barriers and enablers to its sustained use in everyday classroom practice.

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Appendices

Appendix (A)The Ages of the Students (Measured in Months)

Experimental Group		Control Group	
No.	Age	No.	Age
1.	132	1.	134
2.	134	2.	132
3.	132	3.	136
4.	133	4.	137
5.	135	5.	139
6.	136	6.	132
7.	133	7.	132
8.	135	8.	133
9.	138	9.	139
10.	139	10.	138
11.	132	11.	137
12.	134	12.	132
13.	132	13.	133
14.	135	14.	140
15.	132	15.	137
16.	134	16.	138
17.	136	17.	132
18.	133	18.	133
19.	139	19.	139
20.	139	20.	132
21.	133	21.	134
22.	140	22.	132

23.	132	23.	136
24.	134	24.	133
25.	136	25.	133
26.	137	26.	134
27.	133	27.	137
28.	132	28.	135
29.	134	29.	133
30.	137	30.	138

Appendix B

The Students' Scores in English in the Mid –year Exam

Experimental Group		**Control Group**	
No.	Scores	No.	Scores
1.	78	1.	93
2.	74	2.	65
3.	96	3.	100
4.	71	4.	69
5.	52	5.	52
6.	59	6.	55
7.	63	7.	98
8.	67	8.	93
9.	78	9.	93
10.	47	10.	67
11.	100	11.	82
12.	72	12.	70
13.	98	13.	50
14.	81	14.	65
15.	93	15.	67
16.	80	16.	50
17.	100	17.	56
18.	56	18.	81
19.	98	19.	71
20.	58	20.	50
21.	52	21.	59
22.	71	22.	60
23.	72	23.	50
24.	50	24.	100
25.	50	25.	71
26.	74	26.	59
27.	54	27.	63
28.	61	28.	76
29.	75	29.	60
30.	57	30.	50

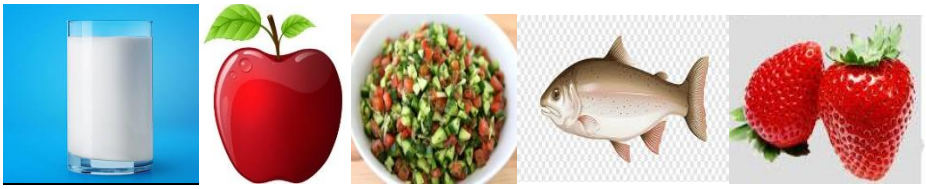
Appendix(C)
Students' Scores in the Pre test

The Experimental Group				The Control Group			
No.	Spelling (20)	Vocabulary (20)	Total	No.	Spelling (20)	Vocabulary (20)	Total
1	10	12	22	1	13	11	24
2	15	7	22	2	9	14	23
3	15	10	25	3	8	16	24
4	11	10	21	4	15	7	22
5	6	10	16	5	12	6	18
6	6	11	17	6	12	7	19
7	7	13	20	7	9	13	22
8	12	6	18	8	7	14	21
9	12	11	23	9	14	10	24
10	9	7	16	10	9	9	18
11	8	19	27	11	9	17	26
12	15	7	22	12	11	12	23
13	17	9	26	13	8	16	24
14	10	15	25	14	17	9	26
15	13	15	28	15	17	11	28
16	13	8	21	16	14	6	20
17	12	16	28	17	12	15	27
18	9	9	18	18	9	9	18
19	12	14	26	19	14	12	26
20	8	11	19	20	7	13	20
21	9	7	16	21	12	6	18
22	8	14	22	22	14	9	23
23	9	12	21	23	15	7	22
24	8	9	17	24	13	6	19
25	8	9	17	25	10	8	18
26	14	10	24	26	16	8	24
27	7	11	18	27	7	13	20
28	11	10	21	28	8	14	22
29	12	11	23	29	7	16	23
30	6	12	18	30	8	11	19

Appendix (D)

The Pre-Test in Spelling and Vocabulary Administered to the Experimental and Control Groups

Q1: Look at the pictures and write the names of these words:



1 2 3 4 5

1 .---------- 2.---------- 3 .---------- 4.---------- 5.---------

Q2: Rewrite the names of the souvenirs by correcting the spelling:

1. rgbrue → b ---- ----g ---- -----
2. totoam → t___m___o___
3. topota → p---- ---- ---- ------- o
4. c i h k e n c → c___k___n
5. c i e r → r___c___

Q3/ Choose the correct answer between brackets

1. Where can you buy fruits? (bakery - fruit stall - pharmacy)
2. Which food is countable? (rice - meat - bananas)
3. Which is healthy food : (sweets – chips-cherries)
4. We drink water from a: (box - bottle - bag)
5. What do you use to make a sandwich? (bread - juice – fruit)

Q4/Match each word in Column A with the most suitable phrase in Column B.

A	B
1 .sticks	a. ---------- food
2. unpack	b.---------- picnic
3 . lovely	c. ---------- a fish
4. delicious	d. ---------- a bag
5. catch	c. collect----------

Appendix (E)

The Post Test in Spelling and Vocabulary Administered to the Experimental and Control

Q1: Look at the pictures and write the names of these words:

1 2 3 4 5

1 .---------- 2.---------- 3 .---------- 4.---------- 5.------

Q2: Rewrite the names of the souvenirs by correcting the spelling:

1. g a d e b a → **____a___ g____**
2. r e s o t → __ o ___t___ r
3. l c o k c → **___ _____ ____ ck**
4. m o f a s u → f__ m____ ____ s
5. m i a g a n z → **a ____ ____ z ___ ____**
6. b s r w r e y a t r → **s___ r__ wb____ r____y**

Q3/ Choose the correct answer between brackets

1. Where can you get meat from (bank- butcher- toy shop)
2. We buy bread from the (pharmacy- clothes shop - bakery)
3. Which one is fruit (fish- tomato-orange) .
4. What does a doctor do (builds houses- treats patients- teaches pupils)
5. (Whose - How - Who) are you going with?

Q4/ Fill in the blanks with suitable words between brackets

1.It is hot and dry in -------- (spring –summer)
2. We are going to eat the food ------ (under the water- under the tree)
3. The opposite of "left" is …… (new- right)
4. We eat with our …… (eyes - mouth)
5.What do you---------- (doll- do) in France?

Appendix (F)

Students' Scores in the Post Test

The Experimental Group				The Control Group			
No.	*Spelling Score*	*Vocabulary score*	*Total score*	*N.*	*Spelling Score*	*Vocabulary score*	*Total Score*
1.	18	18	36	1.	15	16	31
2.	17	16	33	2.	14	16	30
3.	16	19	35	3.	19	20	39
4.	15	13	28	4.	16	16	32
5.	13	14	27	5.	10	10	20
6.	10	11	21	6.	11	11	22
7.	18	17	35	7.	19	18	37
8.	19	19	38	8.	19	19	38
9.	16	16	32	9.	14	16	30
10	15	17	32	10.	14	14	28
1.	20	20	40	11.	16	18	34
1.	14	17	31	12.	14	14	28
13	18	22	40	13.	6	7	13
14	15	18	33	14.	11	11	22
15	17	17	34	15.	15	18	33
16	16	17	33	16.	10	10	20
1.	19	21	40	17.	13	15	28
18	18	18	36	18.	16	18	34
1.	19	18	37	19.	12	12	24
20	10	11	21	20.	10	10	20
21	13	14	27	21.	12	12	24
22	14	14	28	22.	10	10	20
23	11	12	23	23.	9	9	18
24	20	20	40	24.	20	19	39
25	10	10	20	25.	12	13	25
26	12	12	24	26.	12	12	24
27	15	16	31	27.	14	15	29
28	14	13	27	28.	12	13	25
2.	15	16	31	29.	9	9	18
30	13	14	27	30.	10	11	21

Conflicts of Interest Statement

Manuscript title: (The Impact of the Waterfall Technique on Spelling Accuracy and Vocabulary Retention among Primary EFL Learners)

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Author names:

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Author's name (typed)	**Author's signature**	**Date**
Afrah Munshid Lahad		**9-6-2025**