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## The Effectiveness of Instagram Reels and Flashcards for Vocabulary Learning: A Mixed-Methods Study with Sri Lankan ESL Undergraduates

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### ABSTRACT

*This mixed-methods study examined the effectiveness of Instagram Reels and traditional flashcards as vocabulary learning interventions for teaching vocabulary to first-year English as a Second Language (ESL) undergraduates at a Sri Lankan state university. Grounded in Cognitive Load Theory, Dual Coding Theory, and Multimedia Learning Theory, the research employed a quasi-experimental design with 66 students divided into an experimental group (n=33) using Instagram Reels and a control group (n=33) using flashcards. Both groups received a ten-week intervention and completed pre- and post-tests measuring vocabulary recognition and recall, while questionnaires captured learner perceptions. The study was guided by two questions: (1) To what extent do short-term vocabulary learning interventions using Instagram Reels and Flashcards produce measurable learning gains among ESL undergraduates? and (2) What are students' perceptions of learning vocabulary through Instagram Reels? Quantitative results showed no statistically significant improvements in vocabulary acquisition for either group. These findings contradict the results of previous studies that reported positive outcomes from both flashcard repetition and Instagram-based learning. However, qualitative findings highlighted contrasting learner perceptions. Students found Instagram Reels engaging, motivating, and aligned with their social media practices, yet some reported cognitive overload and distractions. Flashcards were valued for simplicity, portability, and reinforcement through repetition, though often regarded as monotonous. Learners viewed the two tools as complementary: Reels generated interest, while flashcards aided retention. The study's limited intervention duration, small sample size, and focus on recognition and recall likely constrained measurable gains. Overall, the findings highlight the distinction between engagement and measurable learning outcomes. Although neither method produced significant vocabulary gains within ten weeks, both fostered positive learner attitudes. The study suggests that blended instructional approaches integrating social media engagement with structured reinforcement may support vocabulary learning more effectively in Sri Lankan higher education.*

**KEYWORDS:** *Instagram Reels, vocabulary learning, ESL instruction, flashcards, digital tools, Sri Lankan higher education*

## **1 INTRODUCTION**

Technology plays a vital role, influencing and changing education constantly. Digital tools such as ChatGPT, YouTube, WhatsApp, and Instagram have started to allow learners to access content in fast, flexible, and engaging formats, often outside traditional classroom environments. As mentioned by Agustin and Ayu (2021), among these tools, Instagram Reels, which are considered short-form videos combining visuals, sound, and text, have gained the attention of learners. Flashcards are typically used to help learn vocabulary because they are very simple to use, can easily be carried around, and aid in memorizing & remembering information. Even though both methods serve the same goal, which is reinforcing vocabulary, there is little empirical research on the comparison of their impact or potential outcomes in structured academic contexts, especially in Sri Lanka and South Asia. This study does not try to determine which method for teaching vocabulary is better or worse, but rather which method produces a measurable gain in learning in an English as a second language class in a university setting.

In second language learning, vocabulary acquisition is considered the foundation, especially for students who are studying English as a second language (ESL) or English as a foreign language (EFL). Research in applied linguistics conducted by Nation (2001) and Webb (2008) shows that Flashcards improve memory through repetition and recall, which aligns with how people learn according to cognitive learning theories. However,

through social media platforms such as Instagram Reels, modern learners often gravitate toward more engaging, fast-paced, and multimodal content. Instagram Reels combine texts, visuals, sound, and movements with real-life scenarios, enhancing learner engagement. Studies by Teng et al. (2022) and Zalani and Yousofi (2024) have exposed EFL learners to Instagram-based grammar and vocabulary content in the classroom to prove how Instagram Reels increase students' grammar and vocabulary knowledge and motivation. Moreover, the study done by Fadhilillah et al. (2024) also highlighted that visual and circumstantial delivery of Reels retains vocabulary effectively. These findings highlight the potential of Instagram Reels to serve as a valuable instructional tool more than entertainment.

In Sri Lanka, even though the classrooms mainly focus on exam preparation and are largely teacher-centered, English is taught at multiple levels in higher education. The actual use of digital tools in English instruction remains low despite the national education policy reforms that promote student-centered and technology-integrated instruction (Ministry of Education 2020). Although digital tools are seldom integrated into formal teaching, students' digital literacy appears to be steadily improving. The researchers aimed to investigate how effective short-term vocabulary teaching methods which use Instagram Reels and traditional flashcards function for teaching English as a second language to undergraduate students. The study assesses two teaching methods to determine

which one helps students achieve vocabulary development in academic settings while they assess the methods' effectiveness. The distinction matters because students who become active participants in learning activities do not always achieve successful learning results.

Sri Lankan university ESL classrooms provide a meaningful context for examining technology-supported vocabulary learning because students increasingly engage with digital platforms in their daily lives while formal instruction often remains traditional and teacher-centered. The difference between students' digital activities outside school and their classroom learning creates a learning gap which needs assessment to determine whether Instagram Reels help students acquire vocabulary skills within higher education environments.

### **1.1 Literature Review**

Vocabulary development is considered a foundational aspect of second language acquisition (SLA). Learners find it difficult to communicate, comprehend texts, or express their ideas effectively without sufficient knowledge of vocabulary (Laufer 1997; Nation 2001). Even though the traditional vocabulary teaching methods, such as Flashcards, have long been used to support retention, the rise of digital technologies has brought new opportunities among tech-savvy Gen Z learners. Among these technologies, social media, which refers to online platforms where users share and connect with virtual communities, is popular in modern society.

Social media, especially short content like Instagram Reels, which are popular especially among Gen Z, is becoming a vital tool for vocabulary learning (Berkup 2014; Hernández-de-Menéndez et al. 2020). This literature review evaluates the use of traditional Flashcards and Instagram Reels as tools for vocabulary acquisition, supported by theoretical perspectives and empirical findings, with a particular focus on their relevance and application in the Sri Lankan higher education system.

### **1.2 The Role of Vocabulary in Second Language Acquisition**

As Nation (2001) said, Vocabulary is one of the most critical components of learning a language. All four language skills, including listening, speaking, reading, and writing, are shaped by a strong vocabulary base, which enables learners to function effectively in real-life and academic situations (Webb 2008). Vocabulary is categorized into two categories, namely receptive, which is recognizing words, and productive, which is using words. Schmitt (2008) stated that learners usually have more receptive words than productive words. To achieve communicative competence, it is crucial to bridge this gap (Schmitt 2008).

Research by Alqahtani (2015) highlights vocabulary as a strong predictor of learners' academic success, where specialized vocabulary is often required, especially in higher education. Due to various issues such as lack of context, overload of word lists, or ineffective teaching strategies, many learners frequently encounter difficulties in learning

new vocabulary (Ashcroft & Imrie 2014). These challenges have motivated many scholars to explore innovative, learner-friendly methods that make learning vocabulary easier and meaningful. According to recent studies by Suwantarathip and Orawiwatnakul (2015) and Teng et al. (2022), using multimodal and technology-supported methods offers an alternative approach to vocabulary learning.

### **1.3 Theoretical Framework**

The key learning theories are useful in understanding the effectiveness of both traditional and digital vocabulary tools. Cognitive Load Theory by Sweller (1988) is one of the frameworks that reveals that learners have limited working memory. Instructional materials, therefore, must minimize extraneous load and maximize germane cognitive processing. Flashcards promote focused attention and reduce distraction by isolating a word and its meaning. Additionally, Flashcards also use retrieval practice, which is recalling information and strengthening memory repeatedly (Roediger and Butler 2011).

In contrast, Dual Coding Theory (Paivio 1986) suggests that digital tools align with the idea that learning improves when information is presented through visual and verbal cues. Digital tools, including Instagram Reels, combine visuals, text, and sound to activate different cognitive pathways for stronger memory. This is supported by Multimedia Learning Theory by Mayer (2009), who reveals that combining visuals, text overlays, and sounds is useful in understanding meaning. Moreover, Reels often show words used in real-

life contexts, allowing learners to grasp the meaning in context. Together, these theories suggest that while multimodal tools like Instagram Reels can engage multiple cognitive channels, their success depends on pacing, repetition, and reduced cognitive overload—factors often overlooked in short-term studies.

### **1.4 Traditional Flashcards in Vocabulary Instruction**

Flashcards are simple yet powerful tools for vocabulary learning due to their accessibility and alignment with cognitive principles. They are considered effective since they use spaced repetition, a technique that is used to review words over time to optimize memory retention (Nakata 2011; Nation 2001). Retrieval practice, which strengthens neural pathways by encouraging learners to actively recall information rather than passively re-read it, is also influenced through the use of Flashcards (Webb and Nation, 2017).

Evidence-based research supports the use of Flashcards in both ESL and EFL educational settings. For instance, Iranian EFL learners who used Flashcards showed significant vocabulary gains compared to those using traditional note-taking, according to Komachali and Khodareza (2012). Flashcards with various visuals are also useful, especially for low-proficiency learners, as mentioned by Baleghizadeh and Ashoori (2011), because Flashcards allow learners to study at their own speed.

However, according to some critics such as Mondria and Mondria-De Vries (1994), rote memorization and the lack of meaningful

context are promoted by the use of Flashcards, which create difficulties in using the words learned through Flashcards in real-life contexts. Moreover, digital natives who prefer interactive digital content in classrooms must find Flashcards monotonous and old-fashioned (Prensky 2001; Seemiller and Grace 2016). However, despite the limitations, Flashcards remain a valuable tool to use with other teaching strategies.

### **1.5 Digital Media and Vocabulary Learning**

Through the rise of mobile-assisted language learning (MALL), many innovative and interactive tools such as Quizlet, Memrise, and Anki were introduced. They have converted traditional Flashcards into modernized Flashcards with audio, images, gamification, and tracking features (Dizon 2016). These features make learning interactive and engaging while motivating learners to spend more time practicing (Loewen et al. 2020). Research by Ishaq et al. (2020) shows that gamified Flashcard tools also improve learner motivation and vocabulary.

There is empirical evidence that social media platforms such as YouTube and WhatsApp are also popular for informal vocabulary learning. Research done by Suwantarathip and Orawiwatnakul (2015) found that watching English-language YouTube content helps learners to understand and use vocabulary in context. Furthermore, Pratiwi and Ayu (2020) observed that informal exposure to digital media helps learners internalize vocabulary used in authentic settings.

However, concerns exist regarding the reliability and appropriateness of content, especially when students use these tools without teacher guidance (Alnujaidi 2017). Informal language, slang, and inconsistent quality can hinder structured learning, which underscores the need for pedagogically informed integration of digital tools into ESL classrooms.

### **1.6 Instagram Reels for Vocabulary Development**

Instagram Reels are short videos that last around 30 seconds and are well-suited for micro-learning, where learning happens in brief and focused chunks (Naser et al. 2023). The multimodal format that combines text, sound, visuals, and motion in Instagram Reels offers rich contextual learning that aligns with Mayer's (2009) multimedia learning principles.

A study conducted by Agustin and Ayu (2021) in Indonesian classrooms has found that using Reels improves learners' vocabulary retention and listening skills. Similarly, another study by Fadhlillah et al. (2024) reported that students performed better on the vocabulary post-test after they were taught using Instagram Reels. These findings suggest that information presented through both verbal and visual modes is retained more effectively, aligning with Paivio's (1986) dual coding theory.

Instagram's algorithm also supports spaced repetition by showing learners content repeatedly. Moreover, Instagram Reels often provide authentic and situational context using vocabulary in real-life scenarios such as

cooking, shopping, or emotional expressions. As mentioned by Dörnyei's (2005) motivational theory, the entertaining and relevant nature of content may also boost learners' intrinsic motivation, which is done by Instagram Reels.

Despite these advantages, Instagram lacks educational curation since it is not designed for education, and learners may be exposed to non-standard or informal language through the content due to inappropriate use of social media. Therefore, educators or teachers must guide students in selecting appropriate content or using curated Reels as instructional tools.

### **1.7 Comparative Studies about Reels vs. Flashcards**

Studies have been conducted to explore the effectiveness of Instagram Reels versus traditional Flashcards comparatively. Fadhlillah et al. (2024) found that students who were exposed to Reel-based learning have a better short- and long-term vocabulary retention compared to those who were exposed to learning using Flashcards. Similarly, Zalani and Yousofi (2024) reported that vocabulary instruction and critical thinking skills have improved through Instagram-based learning among Iranian EFL students. Flashcards often lack context and limit deeper understanding even though Flashcards rely heavily on retrieval practice and repetition. Meanwhile, Reels support rich semantic processing, providing contextual, visual, and social learning environments that align with Mayer's multimedia learning theory and Paivio's dual coding theory.

### **1.8 Learner Motivation and Gen Z Preferences**

Most students in universities in modern days belong to Generation Z, and they are known as digital natives who are more responsive to interactive, visual, and bite-sized content like Instagram Reels. L2 Motivational Self System by Dörnyei (2005) suggests that learners work effectively when learning tools align with their goals and interests. Hence, there is a higher tendency for Reels to become popular vocabulary tools among the new generation in higher education institutes.

Sri Lankan studies by Weerathna et al. (2023) and Jayashanka, Hettiarachchi, and Hewagamage (2022) reveal that the involvement of technology in education improves the motivation of Sri Lankan undergraduates in learning. However, they also highlight the gap in pedagogical alignment through the disparity between digital preferences and actual classroom practices.

### **1.9 Relevance and Research Gap in the Sri Lankan Context**

While many global studies on digital vocabulary tools are growing, Sri Lankan-specific research remains limited. This is because most studies focus on general digital literacy or university access, rather than on specific comparisons between informal digital tools such as Instagram and traditional methods like Flashcards (Piratheeban 2023). With the increasing use of smartphones and social media among undergraduates, it is crucial to examine the effectiveness of Instagram Reels as a vocabulary learning tool within this context.

This study aims to address that gap by exploring whether either method can produce measurable learning gains.

#### Research questions

- To what extent do short-term vocabulary learning interventions using Instagram Reels and Flashcards contribute to vocabulary recognition and recall among ESL undergraduates?
- What are students' perceptions of learning vocabulary through Instagram Reels and Flashcards?

The objectives of the study are as follows:

#### Objectives of the study

- To examine the effectiveness of Instagram Reels and Flashcards in supporting vocabulary recognition and recall.
- To explore learners' perceptions of using Instagram Reels and Flashcards for vocabulary learning.

Given the quantitative nature of the research and the comparative structure of the intervention, hypotheses are also formulated:

- Alternative Hypothesis ( $H_1$ ): Vocabulary learning interventions using Instagram Reels and Flashcards will produce measurable improvements in learners' vocabulary recognition and recall.
- Null Hypothesis ( $H_0$ ): Vocabulary learning interventions using Instagram Reels and Flashcards will not produce measurable

improvements in learners' vocabulary recognition and recall.

This study is significant for several reasons. Mainly, new knowledge to the field of English language teaching will be contributed through empirical data on the use of social media as a teaching tool in formal education. This information is valuable for educators who work with diverse student groups in the 21<sup>st</sup> Century.

The scope of this study is limited to teaching vocabulary in English to first-year undergraduates in a state university in Sri Lanka. Moreover, other academic skills, including reading, writing, and speaking, are not examined in this study. Since the study focuses solely on vocabulary and employs a controlled quasi experimental design, the data collection process will be both reliable and straightforward. Consequently, the findings are expected to provide valuable insights into vocabulary acquisition, offering practical guidance for teaching practices in this context.

## **2 RESEARCH METHODOLOGY**

### **2.1 Research Design**

This study used a mixed-methods approach combining both qualitative and quantitative methods. The goal of incorporating this method is to examine the comparative potential and impact of Instagram Reels compared to traditional Flashcards for vocabulary learning. A mixed-methods approach was used to measure learners' vocabulary gains and also to understand subjective experiences such as learners' opinions, motivation, and engagement. The study employed a quasi-

experimental design to compare vocabulary outcomes between two groups: an experimental group that learned new words via Instagram Reels and a control group that used traditional Flashcards. Alongside the experimental comparison, through questionnaires, qualitative data were collected to explore perceptions of students to get a deeper understanding of students' perceptions regarding the use of Instagram Reels and Flashcards in vocabulary learning. A mixed-methods approach was used to measure learning results while investigating how students experience the educational program, which enabled researchers to evaluate program effectiveness through a more complete assessment method.

## **2.2 Research Setting and Participants**

The study was conducted at a state university in Sri Lanka. The study focused on undergraduates who enrolled in an English language course in their first year. Two intact classes were selected purposively because they were accessible and relevant to the aims of the study. Moreover, purposive and non-random sampling were used due to classroom constraints and ethical considerations. The experimental group consisted of 33 students who received selected vocabulary lessons through Instagram Reels and in-class vocabulary activities. Meanwhile, the control group consisted of 33 students who learnt the same set of vocabulary items through traditional Flashcards and teaching methods. The students in both groups were between the ages of 19 and 23 and had similar academic and socio-economic backgrounds.

## **2.3 Instruments**

### **2.3.1 Vocabulary Pre-Test and Post-Test**

A vocabulary pre-test with 20 academic vocabulary items that align with CEFR A2-B1 levels was designed and administered. To assess the recognition and production skills of learners, the test was designed with multiple-choice and fill-in-the-blank questions. The same test was given before and after the intervention to test the improvement, with some changes to ensure the validity and reliability of the test. These changes involved reordering and rewording a subset of items while keeping the vocabulary content identical to maintain test equivalence. However, the order of the questions was randomized in order to ensure that students do not remember answers from the first test.

### **2.3.2 Instagram Reels**

Instagram Reels, a short-form video feature introduced by Meta, allows users to create and share brief multimedia content integrating audio, visuals, and text overlays (Meta, 2023). Ten Instagram Reels (see Appendix A) were selected and designed for the experimental group to introduce new vocabulary items. These Reels featured targeted vocabulary embedded in real-life contexts and presented through multimodal formats, including text, audio, and images. The Reels were shared with the experimental group, and to reinforce learning through active engagement and repetition, weekly vocabulary activities such as brainstorming, matching, and fill-in-the-blank exercises were conducted. The Instagram Reels were viewed during scheduled instructional sessions as part of the lesson segment dedicated

to vocabulary learning. Each session lasted approximately 15 to 20 minutes and included guided viewing which students followed by completing short reinforcement activities. Students were also encouraged to revisit the shared Reels outside class for additional exposure.

### **2.3.3 Traditional Flashcards**

The control group, in contrast, used printed Flashcards (Appendix B) containing the same set of targeted vocabulary items, their definitions, and corresponding images. The regular class teacher introduced new vocabulary daily over a ten-week period. The classroom teaching used flashcards which students studied through activities that teachers led which included repetition and matching tasks and recall exercises. The students had to study the flashcards on their own after school. Each session lasted approximately 15–20 minutes which provided students with equal exposure time to the experimental group. The research required both groups to receive identical vocabulary sets and research material for their weekly studies which maintained equivalent learning conditions between the two groups. The teachers delivered the research interventions as structured lessons during regular class times throughout the duration of the study.

### **2.3.4 Perception Questionnaire and Qualitative Data Collection**

A questionnaire was given to the participants of both groups after the post-test to gather their perceptions regarding the use of Instagram Reels and Flashcards to learn new vocabulary.

It combined with Likert-scale questions and open-ended questions to address motivation, engagement, and opinions of participants. To ensure the reliability and validity of the questionnaire, it was developed and designed based on the literature review and pilot tests.

## **2.4 Data Analysis**

### **2.4.1 Quantitative Analysis**

The scores of the pre-test and post-test were entered into SPSS version 26, and a paired sample t-test was run to assess if the experimental group showed a statistically significant improvement compared to the control group.

### **2.4.2 Qualitative Analysis**

Thematic analysis, following Braun and Clarke's (2006) method, was used to analyze the responses of the participants gathered through open-ended questionnaire responses and focus group interviews. Next, the data were coded and categorized into themes such as "engagement," "motivation," "memorability," and "ease of use."

### **2.4.3 Ethical Considerations**

All participants were informed about the purpose and the process of the study and invited to attend the study on a voluntary basis. Before the data collection, written consent was obtained. The personal information of participants, including their names and other personal details, was kept confidential. They were allowed to withdraw at any time from the study. Moreover, to protect privacy, the selected Instagram Reels were only shared in a closed group. Furthermore, given that

Instagram is a commercial platform, steps were taken to minimize exposure to unrelated content. Future research should consider ethical implications such as data privacy, addictive design, and informed consent when integrating social media into language learning.

#### **2.4.4 Limitations of the Study**

Although the ten-week intervention provided a longer exposure period than in many previous studies, it may still have been insufficient to assess long-term vocabulary retention. The sample size ( $N = 66$ ) limited statistical power, reducing the likelihood of detecting small effect sizes. Furthermore, the research focused on short-term recognition and recall but did not consider whether learners could actively use the vocabulary in conversation or writing. Recognition and recall were chosen as the initial two stages in the process of learning vocabulary; however, future studies should also look at how productive vocabulary is used in talking and writing so that a complete evaluation of what was acquired can be assessed. Then, the Instagram Reels were selected and curated by the researcher; different content, pacing, or learner-generated Reels could have different effects. Finally, since the study was conducted at a single Sri Lankan university, its findings are not generalizable to other settings.

### **3 RESULTS & DISCUSSION**

#### **3.1 Results of Research Question 1: To what extent do short-term vocabulary learning interventions using Instagram Reels and Flashcards produce measurable learning gains among ESL undergraduates?**

The aim of the first research question of this study was to determine whether Instagram Reels are more effective than traditional Flashcards in teaching vocabulary to undergraduates learning English as a Second Language (ESL). To demonstrate this, a quasi-experimental design was used with two intact groups: an experimental group that received vocabulary instruction via Instagram Reels, and a control group that studied the same vocabulary using Flashcards. Both groups took a pre-test and a post-test, and their scores were analyzed using SPSS version 26.

There are two main hypotheses, as mentioned below:

- **Alternative Hypothesis ( $H_1$ ):** Learners using Instagram Reels will show greater vocabulary retention than those using Flashcards.
- **Null Hypothesis ( $H_0$ ):** Learners using Instagram Reels will not show greater vocabulary retention than those using Flashcards.

The following section indicates the results beginning with descriptive statistics and followed by inferential statistical tests and correlation analyses.

### 3.1.1 Descriptive Statistics

Descriptive statistics indicate a general overview of the vocabulary test performance before and after the intervention. Table 1 displays the mean, standard deviation, and range of scores for both groups.

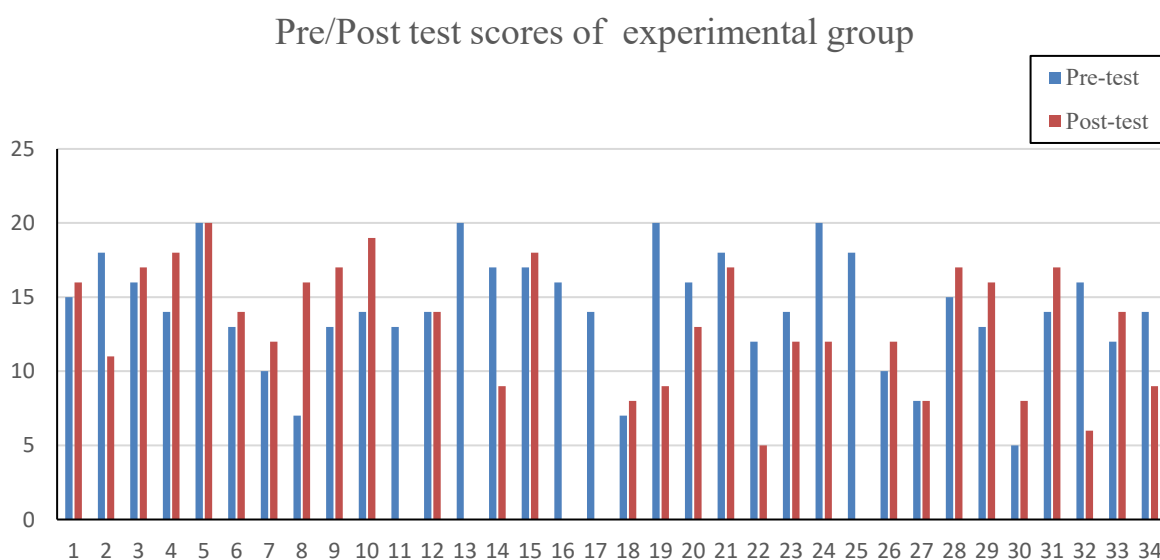
**Table 1.** Statistics: The separate individual analysis of the experimental and control groups

	Pre_Test_Experimental	Post_Test_Experimental	Pre_Test_Control	Post_Test_Control
N Valid	30	30	30	30
N Missing	0	0	0	0
<b>Mean</b>	14.23	13.80	16.80	16.13
<b>Std. Error of Mean</b>	0.741	0.718	0.568	0.639
<b>Median</b>	14.00	14.00	18.00	17.00
<b>Mode</b>	14	12	20	20
<b>Std. Deviation</b>	4.057	3.934	3.112	3.501
<b>Variance</b>	16.461	15.476	9.683	12.257
<b>Range</b>	15	15	10	11
<b>Minimum</b>	5	5	10	9
<b>Maximum</b>	20	20	20	20
<b>Sum</b>	427	414	504	484

According to Table 1, the experimental group started with a mean score of 14.23 on the pre-test and obtained a mean of 13.80 on the post-test. The range of scores remained the same (5–20), but the slight decline of 0.43 points indicates that, on average, students did not improve after using Instagram Reels.

The control group, which studied with Flashcards, had a higher starting point, with a mean pre-test score of 16.80, decreasing slightly to 16.13 in the post-test. The range of scores narrowed slightly, with the lowest score being 9 and the highest remaining at 20 (see Table 1). The decline of 0.67 points suggests a small reduction in performance. Anyhow, overall, this group managed to maintain higher averages than the experimental group.

The distribution of scores for both groups was visually inspected using histograms. The plots show roughly normal distributions for both pre-test and post-test data, without extreme outliers that could bias the results.



**Figure 1.** Pre-test and Post-test Scores of the experimental group

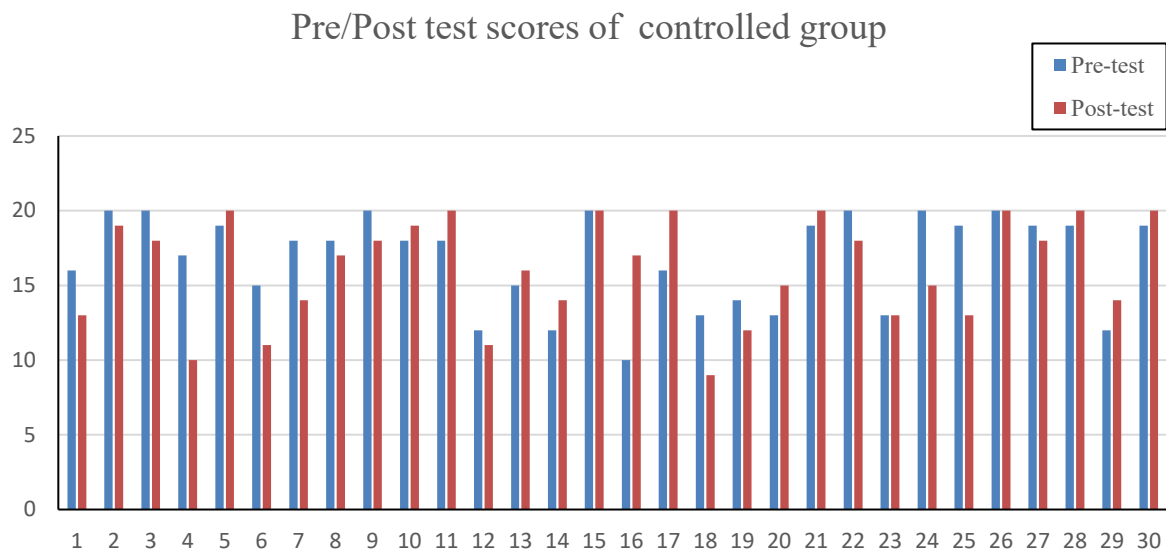


Figure 2. Pre-test and Post-test Scores of the controlled group

### 3.1.2 Frequency Distributions of Post-test Scores

To obtain a clearer picture of performance levels, frequency distributions of post-test scores were examined.

In the experimental group, scores were divided across the full spectrum as shown in Table 2.

Table 2. Frequency Distribution of Post-test Scores of the experimental group

Post_Test_Experimental					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	5	1	3.3	3.3	3.3
	8	3	10.0	10.0	13.3
	9	2	6.7	6.7	20.0
	11	1	3.3	3.3	23.3
	12	5	16.7	16.7	40.0
	13	1	3.3	3.3	43.3
	14	4	13.3	13.3	56.7
	16	4	13.3	13.3	70.0
	17	4	13.3	13.3	83.3
	18	2	6.7	6.7	90.0
	19	1	3.3	3.3	93.3
20	2	6.7	6.7	100.0	
Total	30	100.0	100.0		

The most common scores were 12, 14, 16, and 17, each achieved by 13.3% of participants. Two students achieved the maximum score of 20 while one scored as low as 5, indicating substantial variation in learning outcomes.

In the control group, scores were concentrated toward the upper end as presented in Table 3.

Table 3. Frequency Distribution of Post-test Scores of the control group

Post_Test_Control						
	Frequency	Percent	Valid Percent	Cumulative Percent		
Valid	9	1	3.3	3.3	3.3	
	10	1	3.3	3.3	6.7	
	11	2	6.7	6.7	13.3	
	12	1	3.3	3.3	16.7	
	13	3	10.0	10.0	26.7	
	14	3	10.0	10.0	36.7	
	15	2	6.7	6.7	43.3	
	16	1	3.3	3.3	46.7	
	17	2	6.7	6.7	53.3	
	18	4	13.3	13.3	66.7	
	19	2	6.7	6.7	73.3	
	20	8	26.7	26.7	100.0	
	Total	30	100.0	100.0		

Over a quarter of students (26.7%) fulfilled the maximum score of 20, while a further 13.3% scored 18. Only one participant scored under 10, and most students scored between 15 and 20. This distribution shows that the Flashcard group not only had higher mean performance but also showed less variability than the Instagram Reels group.

### 3.1.3 Paired Samples t-Test for Within-Group Differences

As mentioned in Table 4, the Paired samples t-tests were conducted to determine whether differences between pre-test and post-test scores were statistically significant within each group.

For the experimental group, the test generated  $t(29) = 0.538, p = 0.595$ . Since the p-value

**Table 4.** Paired Samples t-test Results

		Paired Samples Test					t	df	Sig. (2-tailed)
		Paired Differences			95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error	Lower	Upper			
Pair 1	Pre_Test_Experimental - Post_Test_Experimental	.433	4.415	.806	-1.215	2.082	.538	29	.595
Pair 2	Pre_Test_Control - Post_Test_Control	.667	2.998	.547	-.453	1.786	1.218	29	.233

exceeds 0.05, the difference is not statistically significant, indicating that Instagram Reels did not lead to measurable growth in vocabulary retention. For the control group, the test resulted in  $t(29) = 1.218, p = 0.233$ . Again, the indication of exceeding the p-value of 0.05 proves that using Flashcards did not lead to a statistically significant improvement over the ten weeks.

The results show that the Instagram Reels group and the Flashcard group did not show statistically significant gains over the ten-week period. While the control group maintained slightly higher average scores, the differences were small and could be attributed to the statistical noise in the data. Overall, the short-term results imply that neither method caused

any measurable growth in vocabulary in this study.

### 3.1.4. Correlation between Pre-test and Post-test Scores

Paired sample correlations were estimated to evaluate the reliability of learner performance between the two tests. Results are provided in Table 5.

**Table 5.** Correlations between Pre-test and Post-test Scores

		N	Correlation	Sig.
Pair 1	Pre_Test_Experimental & Post_Test_Experimental	30	.390	.033
Pair 2	Pre_Test_Control & Post_Test_Control	30	.594	.001

Both groups showed mostly positive correlations. When it comes to the experimental group, the correlation of  $r = 0.390$  ( $p = 0.033$ ) shows a moderate relationship: students who performed well initially continued to perform well again, despite the lack of group-wise improvement. On the other hand, the control group showed a stronger correlation of  $r = 0.594$  ( $p = 0.001$ ), suggesting more stable performance, with learners' post-test results closely representing their pre-test outcomes.

Future studies could further strengthen interpretation by including a comparison group receiving no specific vocabulary intervention to determine the independent impact of structured vocabulary instruction.

### **3.2 Results of Research Question 2: What are students' perceptions of learning vocabulary through Instagram Reels?**

The qualitative data collected for this study showed that students had extensive knowledge about Instagram and all social media platforms which they used in their daily activities. The students also mentioned their previous experience with flashcard learning methods which they encountered in educational settings. Qualitative data provide valuable insights into how learners experience these tools in terms of motivation, engagement, memorability, and practical application. Numerous key themes emerged from the analysis, including overall attitudes, attention and motivation, comprehension and memorability, transfer to real-life use, ease of use, language support, challenges, and comparative preferences.

#### **3.2.1 Positive Reactions to Both Methods**

When it comes to Instagram Reels and Flashcards, most students show positive reactions. While Reels received the terms 'Enjoyable, Catchy, and Easy,' Flashcards were identified as 'Simple, Functional, and Motivating.' There were many comments stating that these techniques of vocabulary building are much more enjoyable than the usual methods. For instance, a participant stated, 'The Instagram Reels provide vocabulary lessons that are pleasant to watch because the short videos are enjoyable and simple to follow.' Another stated, 'The images and repeated exposure in the flash cards enabled me to pick up new words quickly.' Another learner said that repeated exposure increased her interest, while another added that flash cards are very good, highly effective. As shown by these viewpoints, both tools were welcomed and considered effective.

#### **3.2.2 Attention, Motivation, and Engagement**

The majority of students highlighted that Instagram Reels captured their attention strongly and motivated them to learn. Most importantly, the short, visually engaging format significantly reduced boredom and encouraged repeated exposure. One commented, "It is a really attractive way to learn English, so it helps me to learn English without laziness." Reels also fitted easily into learners' daily routines since they were already familiar with social media.

When it comes to flashcards, it was quite different from the Reels. Several students

compared them to a game, noting that flashcards encouraged the learners to look for and learn new words. A student remarked, “Flashcard learning keeps us motivated and encourages us to find new words.” Furthermore, a minority of students admitted that flashcards could feel “boring” if used too repetitively or without regular review. This clearly shows that Reels are more interesting while flashcards help maintain learning through structured practice.

### **3.2.3 Comprehension and Memorability**

Most of the students have stated that Instagram Reels are useful in learning new vocabulary. As they mentioned, the combination of visuals, text, and audio created multiple channels for learning in Instagram Reels, making the meanings of the words clearer and easier to recall whenever they need them, as stated by one of the participants, “The Reels give some pictures about the targeted word. Therefore, it helps learners understand the right meaning of the word.” The role of pronunciation was also valued and highlighted. For instance, one participant stated, “Actually, for me, it's a very good method; I remember it well, and since the pronunciation is provided, it is stored in the mind from the first time.”

On the other hand, flashcards were particularly valued, with the students stating how flashcards are useful for long-term memory. Learners repeatedly said that the visuals and the use of repetition made remembering the vocabulary easier, as mentioned by participants. For instance, one participant stated that “By photos and the direct definition,” and “Flashcard

pictures are very helpful.” This illustrates how learners relied on visual cues to recall words. Several students also pointed out that starting with simpler vocabulary on Flashcards built confidence and prepared them for learning more difficult terms. Overall, Reels helped words “click” through context and pronunciation, while Flashcards helped them “stick” through repetition.

### **3.2.4 Transfer to Real-Life Use**

Most of the participants have reported using the new vocabulary they have learned in their day-to-day life for academic, professional, and personal purposes, such as essays, class presentations, interviews, and assessments, as mentioned by them, “I used the new words in my essays that I write on Fridays,” and “Used during the assessment presentation.”

Likewise, some have stated how they use this newly learned vocabulary in everyday applications. For instance, a student shared, “I went to the dentist... he told me that I have a cavity... I got that without any explanation because I learned that word from flashcards.” Such comments demonstrate that vocabulary learned through these methods was not confined to the classroom but transferred to authentic situations, deepening its value.

Examples of words students recalled include “cavity,” “chipped tooth,” “hay fever,” “ladder,” and “smashed.” The ability to deploy these words spontaneously in different contexts signals a movement from passive recognition to active usage—a core goal in vocabulary instruction.

### **3.2.5 Ease of Use and Fit with Daily Life**

Both methods were considered easy to use and very convenient. Reels were seen as natural since students were already familiar with social media. As one learner said, “We are so familiar with social media and videos.” On the other hand, Flashcards were valued for being portable and simple. Almost all the students mentioned using them while travelling, though some noted that they required regular effort to be effective. Learners also requested more classroom opportunities to actively use the vocabulary, such as games and group tasks.

### **3.2.6 Language Support and Bilingual Needs**

Students not only appreciated the pronunciation support in Instagram Reels but also found that hearing the word made learning easier. However, when it comes to flashcards, they were seen as needing more support. Most of the learners suggested adding example sentences and Sinhala meanings. One commented, “It would be better if the back of the flashcard contains instances of using the word.” This illustrates the importance of and the need for scaffolding in both methods to make vocabulary learning more accessible.

### **3.2.7 Challenges and limitations**

Another significant topic that emerged from the participants' perceptions is challenges and limitations, as they reported encountering difficulties when utilizing both technologies, namely Instagram Reels and flashcards. The majority of them have expressed dissatisfaction with Instagram Reels, claiming that the rapid-fire pace of the Reels makes it hard to comprehend the words. As one of them

suggested, “the fast speed makes remembering words challenging,” it is clear that cognitive overload occurs when videos move fast. A few also have noticed that there are some distracting features, such as acting or performance, which sometimes shift focus away from learning the words.

On the other hand, consistency was the primary challenge of using flashcards. One participant said, “The only challenge was staying consistent with practice.” Moreover, some have said that flashcards are “sometimes boring,” due to the lack of variation. These limitations highlight the need for careful design: slowing down Reels or encouraging re-watching, and diversifying flashcard use with games and group practice.

### **3.2.8 Comparative Preferences**

It is interesting to see that, although both tools were appreciated, the students' preferences showed varying expectations. Many appreciated Reels over the ‘usual ways of learning vocabulary’, saying they were ‘more useful than usual ways’ and ‘a very good method... increases interest.’ Flashcards, on the other hand, were also liked over the ‘usual methods,’ especially for ‘better than usual methods,’ for their structure and reliability.

This reveals that the participants view these tools as partners rather than distracting tools. Reels introduced something fresh and captured the students' attention, whereas flashcards supported practice and memorization. The integration of both supported the students in every aspect of new vocabulary acquisition.

### **3.3 Discussion**

As mentioned before, there were two objectives of this study, which were to compare the effectiveness of Instagram Reels and traditional Flashcards in teaching vocabulary to ESL undergraduates in Sri Lanka and to explore students' perceptions of learning vocabulary through Instagram Reels and flashcards. Given that neither group demonstrated statistically significant vocabulary improvement, this discussion interprets the results in terms of what they reveal about exposure time, learner engagement, and theoretical alignment rather than comparing "effectiveness" in a strict sense.

The results of the study revealed that neither Instagram Reels nor flashcards produced statistically significant improvements in vocabulary retention during the ten-week intervention. Both groups showed slight drops in mean scores between pre-test and post-test, with small effect sizes indicating insignificant learning gains. According to the descriptive statistics, the flashcard group had higher average scores and more stable performance compared to the experimental group, though these differences were not statistically significant.

Research Question 2 focused on students' opinions of Instagram Reels as a learning tool. The findings displayed that students valued Reels for their engagement, motivation, contextual learning, and support for pronunciation, but they also noted challenges such as cognitive overload due to the rapid pace of videos. On the other hand, participants have praised flashcards due to their simple, portable,

and repetition-based reinforcement, though some students found them dull or less engaging. While most of the participants have shown positive attitudes toward both tools, some have stated that Instagram Reels are not only "enjoyable" but also "catchy". Likewise, some have described flashcards as "functional" and "motivating."

The lack of significant vocabulary gains in both groups contrasts with several prior studies. For instance, Nation (2001) and Webb (2008) focus on the role of flashcards in improving memory through repetition and retrieval practice, while researchers like Teng et al. (2022) and Zalani and Yousofi (2024) found that Instagram-based learning is useful in improving vocabulary retention. A study parallel in context is that of Fadhilillah et al. (2024), which found that learners taught with the use of Reels showed better post-test performance. With this study, however, the limitations are concerning in the intervention's short-lived duration and a somewhat small sample size, for whichever reason may have limited the measurable impact of the two teaching methods.

Three interrelated theories—Cognitive Load Theory, Dual Coding Theory, and Multimedia Learning Theory—can help clarify these differing results and both the affordances and constraints of multimodal learning resources like Instagram Reels. Cognitive Load Theory (Sweller, 1988) purports that learners have limited working memory, which means that fast-paced and visually rich materials may exceed cognitive resources for processing. This finding was consistent with some students'

remarks about how some of the Reels moved "too fast" for them to remember vocabulary. Alternatively, Dual Coding Theory (Paivio 1986) and Multimedia Learning Theory (Mayer 2009) suggest that better learning occurs when words are delivered with complementary verbal and visual channels. Thinking about the findings through these lenses suggests that the motivation afforded through the multimodal nature of the Reels was beneficial for engagement and initial memory, but engagement and recall did not co-occur, and pacing and repetition appear important to the overall success of multimodal learning experiences.

The comparatively stronger performance of the flashcard group is in agreement with Nakata (2011) and Webb and Nation (2017), who asserted the importance of the virtues of spaced repetition and retrieval practice. Saying that the flashcards are uncomplicated makes sense, given that they should not serve as extraneous cognitive load, enabling learners to focus on linking form and meaning. However, student feedback also reflected concerns identified by Mondria and Mondria-De Vries (1994), suggesting that flashcards may encourage rote memorization when learning occurs without meaningful contextualization. The qualitative findings hence support recent studies that emphasize digital tools' critical role in fostering motivation and engagement. The students in this study said the Instagram Reels were "attractive" and "pleasant," somewhat echoing Dörnyei's (2005) framework for motivation, which speaks of the compatibility between learners' interests and instructional tools; they

confirm Suwantarathip and Orawiwanakul's (2015) perception that multimodality and technology-based approaches stimulate learner interest. On the other hand, the results stress the trade-off between motivation and gain in demonstrable learning: While students liked Reels, this enjoyment did not, in turn, translate into statistically significant improvement. This pattern highlights the well-known gap between engagement and measurable learning outcomes. While students' enjoyment of Reels confirms their motivational appeal, motivation alone does not guarantee cognitive retention. The Reels functioned as affective and attentional triggers but lacked the repetitive retrieval practice that Flashcards inherently provide.

### **3.3.1 Implications**

These findings have several implications for ESL instruction in higher education. First, while Instagram Reels did not overcome flashcards statistically, students' strong preference for Reels highlights the importance of learner-centered pedagogy that aligns with Gen Z's digital habits. Integrating Reels into classroom practice may improve connection and natural motivation, even if measurable gains require longer action.

Second, the results suggest that combining tools may be most effective. Reels could be used to introduce vocabulary in authentic, engaging contexts, while Flashcards could support learning through repetition and retrieval practice. This complementary approach reflects the students' view that each method offered unique benefits.

Third, in the Sri Lankan context, where classrooms often remain teacher-centered despite reforms (Weerarathna et al. 2023), these findings highlight the capacity of combining digital media alongside traditional techniques. This integration could bridge the gap between students' informal digital learning practices and formal academic instruction.

#### **4 CONCLUSION & RECOMMENDATIONS**

This study aimed to explore the comparative impact of Instagram Reels and Flashcards in teaching vocabulary to ESL undergraduates in Sri Lanka while also exploring students' opinions of using Instagram Reels and flashcards as vocabulary learning tools. Grounded in theories such as Cognitive Load Theory, Dual Coding Theory, and Multimedia Learning Theory, the research compares two methods representing conventional memorization-support strategies and modern multimodal learning environments.

The numerical findings revealed that neither method produced statistically significant improvements in vocabulary memory within the ten-week intervention. Both the experimental group (Instagram Reels) and the control group (flashcards) showed slight declines in post-test scores, with flashcards producing marginally higher averages and more stable performance. These results contrast with earlier studies that have reported positive vocabulary gains from both flashcard-based repetition (Nation 2001; Webb 2008) and Instagram-based instruction (Teng et al. 2022; Fadhlillah et al. 2024).

The lack of notable improvement in this study can largely be linked to limitations such as the short intervention period, small sample size, and the fact that vocabulary usage was only tested through recognition and recall, rather than long-term memory or productive use in speech and writing. Another limitation in educational research, including the present one, is the difficulty in controlling confounding variables such as learners' exposure to the targeted vocabulary outside the classroom which may influence the outcomes. The qualitative findings, however, offered valuable insights into students' attitudes and preferences. Most learners described Instagram Reels as captivating, motivating, and enjoyable, appreciating their contextual use of vocabulary, pronunciation support, and compatibility with daily social media habits. At the same time, students recognized challenges such as the fast pace of Reels and possible interferences. Flashcards, by contrast, were viewed as trustworthy, portable, and effective for memorization, though intermittently monotonous. Importantly, students saw the two tools as enhancing rather than competing, with Reels sparking initial interest and flashcards reinforcing retention.

Overall, the ten-week intervention revealed that neither Instagram Reels nor Flashcards produced statistically significant improvements in vocabulary learning. However, qualitative findings demonstrated that students were motivated by the engaging, contextual nature of Reels and valued Flashcards for their structured reinforcement and repetition. These findings suggest that while Instagram Reels enhance

learner motivation, Flashcards may better support long-term retention, and that the two tools can be complementary when integrated thoughtfully.

The study's significance lies in highlighting the gap between engagement and cognitive learning outcomes in digital vocabulary instruction. Within the Sri Lankan higher education context, this implies that digital media should not replace traditional methods but rather enrich them. Longer interventions, productive vocabulary assessments, and ethically managed integration of commercial social media platforms are recommended for future research. By documenting null findings transparently, this study contributes to ongoing debates about the pedagogical use of social media, offering valuable insights into how student motivation interacts with instructional design.

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### APPENDIX A: Selected Instagram Reels

1. <https://www.instagram.com/reel/DGvImH Ho7xU/?igsh=MW9zOHUzdnE5ZjBqaQ %3D%3D>
2. <https://www.instagram.com/reel/DHBNVI yICIV/?igsh=MTB4dG9pYTlwMTA2eg% 3D%3D>
3. <https://www.instagram.com/reel/DHGQHi rI1WQ/?igsh=MXhwMjJodmJzNnF6>
4. <https://www.instagram.com/reel/DHLZoB 6IdTJ/?igsh=aHd4cGR2bHRwZnVx>
5. <https://www.instagram.com/reel/DJ6QOE xI8sF/?igsh=MWRnNTk1Y2FmZDM3Zg %3D%3D>
6. <https://www.instagram.com/reel/DK9SGu zICmP/?igsh=MWprdHVsenVianN0>
7. <https://www.instagram.com/reel/DLXCED vo0p6/?igsh=MXZpZzRlbHZucnVhdA%3 D>
8. <https://www.instagram.com/reel/DL4rXX UoDcG/?igsh=MXczMDh5emNqaWY0O Q%3D%3D>
9. <https://www.instagram.com/reel/CzJafFzo OfL/?igsh=cmhsdW43eTRobmpq>


10. <https://www.instagram.com/reel/C76ZLxI Yyl/?igsh=MWJydWkzaXg3ZGdwcA%3 D%3D>

### APPENDIX B: Flashcards


	<p><b>Cavity</b> <b>Definition:</b> A hollow space, especially in a tooth caused by decay.</p>
	<p><b>Noticeable</b> <b>Definition:</b> Easy to observe; attracting attention.</p>
	<p><b>Exquisite</b> <b>Definition:</b> Extremely beautiful and delicate.</p>
	<p><b>Chipped</b> <b>Definition:</b> Having a small piece broken off the edge or surface.</p>
	<p><b>Organs</b> <b>Definition:</b> A part of an animal or plant that performs a specific vital function (e.g., heart, lungs, liver).</p>
	<p><b>Stale</b> <b>Definition:</b> No longer fresh or pleasant to eat; not new and interesting.</p>
	<p><b>Ladder</b> <b>Definition:</b> A structure consisting of a series of rungs or steps between two uprights, used for climbing up or down.</p>
	<p><b>Unbearable</b> <b>Definition:</b> Not able to be endured or tolerated; extremely unpleasant or painful.</p>
	<p><b>Hysterical</b> <b>Definition:</b> Deriving from or characterized by uncontrolled emotion, such as extreme laughter or crying.</p>




**Outstanding**  
**Definition:** Exceptionally good; clearly superb.




**Infuriated**  
**Definition:** Extremely angry; enraged.




**Idle**  
**Definition:** Not active or in use; lazy or not working.




**Smashed**  
**Definition:** Violently broken into pieces; crushed or flattened by impact.




**Suitor**  
**Definition:** A man who pursues a relationship with a woman, with a view to marriage.




**Deceptive**  
**Definition:** Giving a misleading impression; misleading.



**Magnificent**  
**Definition:** Extremely impressive or beautiful.



**Appalled**  
**Definition:** Greatly dismayed or horrified.



**Plaque**  
**Definition:** A sticky film on teeth containing bacteria; or a flat piece of metal or stone used for commemoration.




**Hay fever**  
**Definition:** An allergic reaction to pollen or dust, causing sneezing, runny nose, and watery eyes.




**Sneeze**  
**Definition:** A sneeze is a sudden, involuntary, and forceful expulsion of air through the nose and mouth.




**Runny nose**  
**Definition:** A condition in which excess mucus is produced by the nasal passages, resulting in a continuous discharge.



**Shattered**  
**Definition:** Broken into many pieces; severely damaged or destroyed.



**Cracked**  
**Definition:** Having a line or lines on its surface where it has broken but not separated.



**Scratched**  
**Definition:** Marked with a long, thin, shallow cut or mark.



**On the card**  
**Definition (Idiom):** Expected or likely to happen; a planned or scheduled event.