

AN ASSESSMENT OF DEVELOPING ENGLISH VOCABULARY AMONG THE ELEMENTARY LEVEL STUDENTS

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Abstract

The present study aims to explore the online vocabulary learning strategies that are used by the learners at elementary level. It is an assessment of online and traditional methods of vocabulary learning which can help in the development of vocabulary. It further shows through the summative assessment that online method of vocabulary learning gives better outcomes. The study also shows the vocabulary learning strategies explicitly used by high achievers and low achievers. Strategy Inventory Language Learning (SILL) by Oxford (1990; 2017) is used as a framework and quantitative methods (t-tests, ANOVA) to analyze the data. The data is collected from randomly selected 120 elementary level students of diverse backgrounds from the private and public schools of Sargodha city. Pre-tests and post-tests are conducted to assess the efficacy of two methods of vocabulary learning after dividing learners into experimental group and control group students who are exposed to the traditional ways of vocabulary learning whereas experimental group students are exposed with online ways of vocabulary learning. The data obtained after post-tests was compared with pre-tests through paired samples t-test by using SPSS. The research reveals that online strategies are more effective than traditional strategies of vocabulary learning and both high achievers and low achievers benefited more from online strategies. The implications of this study suggest that an integration of online tools in vocabulary learning is very effective.

Keywords: *Vocabulary, Strategies, Traditional, Online, Development, Assessment.*

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1.Introduction

Effective language learning strategies are very crucial to gain proficiency in a language. Both language learning and vocabulary learning strategies are related to one another. While explaining vocabulary, Schmitt (2014) made a distinction between vocabulary size and depth of knowledge. Vocabulary size refers to the quantity or amount of words known by a person while vocabulary knowledge means how well the words are known by a person. It becomes challenging to read, write, speak and listen anything if there is lack of knowledge about vocabulary and someone does not know the sufficient words. Vocabulary plays its role not only in communication but also in academic success and shows learner's knowledge about it. Schmitt (2000) held a belief that vocabulary is not acquired instantaneously, rather it is learned with increasing exposure. Words can be learned either receptively or productively. Receptive vocabulary, according to Schmitt (2000) is a form of vocabulary that is only understood by an individual when an individual reads or listens and it is not widely used by him/her whenever an individual wants to talk or write anything. It is also called a passive vocabulary of a person. Productive vocabulary is used actively by an individual when he wants to speak or write anything. It is also referred to as active vocabulary. Vocabulary development plays vital role in cognitive development. If a person knows more vocabulary, he can better understand whatever he listens or reads. Effective expression of ideas also requires rich vocabulary. It creates fluency in speaking and accuracy in writing. Vocabulary also plays significant role in critical or logical thinking and analytical skills. It helps individuals to be more analytic.

Vocabulary is a changing entity which keeps on changing by addition of new words in a language, using the words that already exist in different ways and not using the words correctly in different contexts. Vocabulary indicates the knowledge of learner about language. Schmitt and Clapham (2001) believed that vocabulary is an integral part of a language that indicates that how much knowledge about language a person possesses and uses that knowledge while performing language related tasks. Development of vocabulary is important from both theoretical and practical viewpoints. Folse (2003, 2004), Lewis (1993, 1997); Willis (1990); Willis and Willis (1989) highlighted that communication can still take place when grammar and syntax are not perfect, but it seems impossible without vocabulary. Folse (2003) also states that absence of correct syntax just obscures and makes the meaning unclear, but absence of vocabulary completely prevents the meaning which cannot be understood. Students often cannot explain what they think without appropriate collection of words of vocabulary. Chastain (1988) explains that if there is lack of knowledge about the words and one does not know the sufficient words of language then

it leads towards the failure of saying what one thinks and wants to express. So, this lack of vocabulary cannot let students explain their point of view or solve their queries.

Researches have shown that those students who possess more words of a language are seen performing better and show higher level of academic achievement. Vocabulary development can take place through different modes. Traditional modes of vocabulary learning have lasted impact for so long and are still influential and dominant in many countries. Rise in technology has now replaced the traditional ways of vocabulary learning. Although there is availability of online tools for learning vocabulary in Pakistan after Covid-19 but it is seen that the technology is not used in an appropriate manner which could help students in learning and improvement in knowledge. Study by Majeed and Hussain (2024) shows that students in institutions lack vocabulary size and knowledge which makes it challenging for them to have communication skills and restricts them to understand and use the English vocabulary at broader level because traditional methods are still dominant and some are not suitable for all students.

2.Literature Review

Huge amount of vocabulary can be learnt informally through indirect or incidental learning. Sternberg (1987) suggested that most of the vocabulary is learnt by learners through incidental learning. Nagy, Herman and Anderson (1985) hold a view that reading and learning are considered very significant when learning takes place in a specific context. Nation (1990) argues that it is more efficient to use strategies of (i) guessing from context (ii) using mnemonics technique and word parts (iii) using vocabulary cards to remember foreign language – first language pairs.

Development of vocabulary highly depends on the learners' motivation for learning vocabulary. Jamson (1976) suggests that the vocabulary of non-natives grows as much as the native speakers but the initial gap which occurs between two does not fill. Milton and Meara (1995) examined that significant vocabulary growth can take place if learning is done in the second language environment. They studied growth of vocabulary in study abroad program and found out from European learners of advanced proficiency that the development in their vocabulary increased significantly up to 2,500 words in just six months.

Vocabulary development plays vital role in learning of language and it impacts fluency and communication skills. Many studies explored the approaches for development of vocabulary which can be developed through explicit instruction, contextual learning, repetition, morphological analysis, task based learning, and thematic learning. Learners can explicitly learn vocabulary by directly learning new words. This method involves

learning vocabulary by looking at the meaning of word, pronunciation, by taking visual aid, and solving exercises. Researchers suggest that explicit learning is helpful for the beginners who can easily learn new vocabulary from structured lessons. Nation (2001) argues that incidental learning is a powerful method of vocabulary learning. Contextual learning aids in better understanding of meaning and usage of words. Reading, listening and conversation with others facilitates contextual learning. Nation (2001) identified principles for learning vocabulary through using words in speaking and writing. Repetition has also been considered an important way for learning vocabulary for many years. This method of vocabulary acquisition is grounded in cognitive psychology. In this method, vocabulary impacts the cognition for long time. Schmitt (2000) emphasized the role of repetition which is necessary until the vocabulary is fully acquired. Schmitt (2000) has also highlighted the importance of learning vocabulary through active learning of vocabulary by recalling the meaning of words from memory rather than passive use of it.

Since vocabulary is an essential and core part of a language, therefore no language can be acquired without it. The methods that are adopted to learn a language are the same as those applied for learning vocabulary. Effective vocabulary learning helps in knowing the meanings of a word from multiple perspectives. Many researchers have defined strategies differently. Oxford (2002) defined strategies as ways which contribute in self direction while learning in order to develop communication skills. Strategies are actually techniques that are helpful in vocabulary development.

Vocabulary can be learnt in formal or informal ways. Different learners adopt different strategies according to their choice and interest. Appropriate choice of strategies lead towards the improvement in skills in (Oxford *et al.*, 1993; Thompson & Rubin, 1993). Brown (1980) described strategies as the processes that contribute directly to learning. Rubin (1975) called strategies the processes that contribute directly or indirectly to learning.

Wendon (1987) stated that strategies are the operations that are used by learners that make learning comprehensible. Furthermore, researchers have attempted to explain the factors that influence the choice of strategies. Oxford (1990) suggested that the affective and social factors contribute to the choice of strategies. She observed that learners with more emotional engagement tend to adopt more strategies. Females are more interested in using strategies than males. Cultural background is another factor that is prevalent among students while choosing strategies. Oxford found out that rote memorization and other related strategies for learning are more common among Asian learners.

Attitudes and beliefs have also profound impact on choice of strategies. It has been observed that positive attitude often results in more strategies use whereas negative attitude results in poor strategy use. In pursuance to find out strategies used by learners Oxford (2002) observed that observational strategy does not suit this purpose because many of strategies that are used to learn are internal and invisible to observers. She also added that skilled L2 learners select those strategies that are more reliable, beneficial and are according to requirements of learners. All the actions that are taken to learn vocabulary help to make learning more, effective, self-directed and engaging. Strategies serve as facilitators to learn vocabulary successfully. In short, strategies are the steps, procedures, or behaviors that enhance the development of vocabulary and language.

Researchers have classified strategies according to factors that influence learning. O' Malley and Chamot (1990) have classified strategies under three categories i.e. cognitive, meta- cognitive and socio- affective strategies. Cognitive strategies involve repeating, reasoning and analyzing. They believed that learners apply specific techniques to the particular tasks. Meta cognitive strategies include organization, planning, and monitoring of whatever is learnt by learners. Socio-affective strategies include socialization. In these strategies, learning takes place by cooperating with peers and getting involved in conversation with others. O'Malley and Chamot (1993) shared a belief that those learners who are interested in adoption of approaches and strategies learn more rapidly and effectively than those individuals who do not to adopt strategies.

Oxford (1990) classified strategies to learn language into two broad categories of direct and indirect strategies. Oxford further classified direct strategies into memory strategies, cognitive strategies, and compensation strategies. Memory strategies are the strategies in which learning takes place when image of anything is created in one's mind and then those images are applied to minds, reviewing well what is being learnt, and employing action. Cognitive strategies allow to practice what is being learnt. Cognitive strategies also include analyzing and reasoning as well as creating structures and bringing learnt material into practice. Compensation strategies are those which involve learning by guessing the meanings. Indirect strategies of learning are classified into Meta cognitive, affective, and social strategies. Meta cognitive strategies work by arrangement and planning of learning as well as by evaluation of learning. Affective strategies are those which include motivation for learning, lowering anxieties, and encouraging oneself for learning. Social strategies contribute indirectly to learning in which learners ask questions from others, cooperates with others and get engaged in conversation with others.

Oxford (2017) made addition in classification of strategies by making the strategies more up to date. In her most updated edition, she emphasised on the new developments in the field of vocabulary learning and included in it the role of technology and digital

tools which influence learning strategies. Her focus is on technology and its role and she has explained that this digital age has become technology mediated. She addressed the use of language learning apps, online dictionaries, and other digital platforms that enhance vocabulary acquisition. The basic classification of strategies is the same in her new edition but she refined the classification of strategies that were given by her in previous edition of 1990. She gave more importance to interconnectedness of cognitive, Meta cognitive, and social strategies and recognized that strategies are often employed dynamically.

Traditional methods of vocabulary development have been used for centuries as it was teacher oriented activity. Traditional methods have also been useful for the learners. Using flash cards, reading books, newspapers and articles are also considered useful in development of vocabulary. Students can also learn vocabulary by making a word list. Sentence formation, writing exercises, writing essays also help in development of vocabulary. Mnemonics and memory aids are also helpful according to researches which enable learners to learn new vocabulary. Translation, morphological analysis and using bilingual dictionary have also been beneficial in development of vocabulary.

All the traditional methods of vocabulary learning have been effective for the learners. These all methods help to learn vocabulary in an organized and orderly manner. The use of technology for learning vocabulary has been increased after COVID-19 in all over the world. Digital tools have taken place of traditional methods. Different mobile apps, online games and social media forums are used as tools for learning vocabulary. Theories and methodologies for vocabulary learning continue to evolve but all the methods of vocabulary development require exposure and use of words. All the methods of vocabulary development enhance language proficiency of learners and help them to communicate better.

Thiendathong and Sukying (2021) studied vocabulary learning strategies used by high school across three disciplines. Most frequently used strategies according to this study were determination strategies. Least used strategies by students were those that involve repetition (memory strategies). It showed that educational setting and learning environment significantly influence the use of vocabulary learning strategies. Evidence provided by findings showed that the strategies that need time to be practiced are not used by all learners. Rahmawati and Utami (2019) investigated the usefulness of flashcards in improving vocabulary of students in Indonesia. The results showed that flashcards are very helpful to improve vocabulary mastery of students. They concluded that students were very happy and excited to learn vocabulary using flash cards. Students actively learnt vocabulary and were highly motivated. Hence, use of flash cards help to improve vocabulary mastery of students. Fu (2021) studied the nature of vocabulary learning strategies (VLSs) used by students at Chinese English major at University level. The

researcher investigated the factors that influence the use of strategies by EFL students. This study found out that the most often used strategies by Chinese EFL learners are determination and cognitive strategies such as repetition, memorization, spellings and sounds. Moreover, bilingual dictionaries are the most preferred resources to learn vocabulary. Meta-cognitive and strategies related to learning through mnemonics, repetition, and association are least used strategies and use of vocabulary learning strategies depend on learning environment and Chinese culture which emphasizes effort and perseverance. Mahdi (2018) conducted meta-analysis in order to investigate the effectiveness of using mobile devices for vocabulary learning. The researcher compared conventional methods of vocabulary learning with learning vocabulary through mobile devices. The study concluded that using mobile devices is effective for adult learners who benefit from them more than young learners. Moreover, these devices have moderate effect sizes on receptive and productive vocabulary. Huei *et al.*, (2021) investigated the effectiveness of Quizzes (an online learning tool) in improving English vocabulary and how can Quizzes be utilized to enhance vocabulary learning among ESL students. Findings of this research showed a positive perception of students towards Quizzes which helped to enhance vocabulary achievement. Quizzes was considered helpful because it uses a vocabulary theory that focuses on acquisition of new words in the context. A quiz is a very engaging as it has multimedia features. It was found that Quizzes also help in vocabulary retention. Shamsan *et al.*, (2021) explored online Vocabulary Learning Strategies (VLSs) used by students during COVID-19. The researchers aimed to explore strategies which students utilized during pandemic in order to learn new words as well as revise the already learnt words. Results revealed that English majors used more online vocabulary learning strategies as compared to non-English majors. Due to social distancing during Corona pandemic, learners rarely asked meanings from their teachers, friends and class mates and preferred to search new vocabulary and meanings by using online resources. Self-learning prevailed among students due to online learning and it also changed the learning habits, strategies and learning behavior of students. Ng *et al.*, (2022) studied the impact of a game (MMORPG) on vocabulary learning techniques of ESL players. Online games helped students a lot in learning new vocabulary. Real life communication was also encouraged by playing games. Game's story lines developed interest among players and students learned vocabulary by interacting with other players. It was concluded that playing games could be very beneficial in learning vocabulary. Liu *et al.*, (2014) examined the impact of the Technology-Enhanced Strategy Use (TESU) system on young learner's vocabulary learning. TESU encouraged students to practice useful strategies. Moreover, students preferred using the practice strategy e. g writing or saying a word repeatedly. The TESU system proved to be a good mean of learning new vocabulary. Kilickaya and Krajka (2010) assessed online and traditional methods of

vocabulary learning instruction to reveal the better mode of instruction while teaching students of Advanced-intermediate English. Findings of this research revealed that those students who learnt vocabulary through online tool performed well as compared to those students who utilized conventional methods. Online method of vocabulary learning also promoted autonomy and motivated learners to learn vocabulary on their own. Nejati *et al.*, (2018) studied the outcomes and impact of computer-assisted language learning (CALL) on vocabulary learning of EFL learners. The researchers compared the effectiveness of computer-assisted language learning (CALL) with traditional techniques of vocabulary learning. CALL instruction left good impact on vocabulary learning. CALL instruction proved to be the best tool for vocabulary acquisition. Using computers helped students a lot and motivated them to learn from their mistakes. Azabdaftari and Mozaheb (2012) compared two modes of vocabulary learning such as flashcards and mobile learning. Using mobile phones for learning vocabulary was the best strategy for learning vocabulary as compared to traditional method of vocabulary learning by using flash cards. Mobile phones helped to access different resources to learn vocabulary. Students increased interaction with other learners and teachers. The study concluded that mobile phones are powerful tools for vocabulary learning. It gave advantage of learning vocabulary anywhere and anytime. Using mobile phones were also beneficial for improving pronunciation and understanding meanings in different contexts. Basoglu and Akdemir (2010) examined impact of using mobile phones on learning English vocabulary. The study concluded that using mobile phones for learning vocabulary is better than using traditional methods of vocabulary learning. Students got an opportunity to learn new things and vocabulary by using multiple apps, games and social media platforms. The study revealed that mobile phones are an effective tools which can facilitate vocabulary and language learning especially English vocabulary or language learning. Students also learnt vocabulary by using flash cards but modern way of learning vocabulary by using mobile phones was found more attractive by them. Li (2009) studied how technology based support can aid students in vocabulary learning and could be beneficial for ESL learners. Difference in vocabulary learning strategies used by L2 learners with and without technology based support was explored in this research. The study revealed that technology-enhanced methods offer more effective learning of vocabulary. Technology-enhanced instructions and learning can assist students in developing potential for effective vocabulary acquisition.

3. Research Methodology

The research methodology for this study is designed to investigate the efficacy and learner outcomes of online vocabulary learning strategies among elementary-level

students in Sargodha. The central aim is to determine the comparative effectiveness of online versus traditional vocabulary learning strategies and to examine the patterns of strategy use across learner achievement levels.

The quantitative research utilizes a quasi-experimental design using a non-equivalent control group and an experimental group with Pre-test/post-test structure used in this design which is particularly suited for educational settings. Existing knowledge of students was assessed through pretests which were taken from both the groups. Control group learned vocabulary through traditional instruction for four weeks while experimental group learned through online instruction for the same period. Posttests were taken from both the groups after instruction where each of the tests contained 10 items which involved words /meanings, synonyms/antonyms, contextual inference and productive recall. Performance was categorized across five levels ranging from poor to excellent. Group comparisons were done to infer online vocabulary learning strategies used by students at elementary level. The researcher attempted to find differential outcomes based on students' use of specific strategies derived from the SILL taxonomy. Data are segmented to analyze strategy use and performance outcomes between high and low achievers, offering insights into differential strategy effectiveness.

The population targeted in this study comprises students enrolled at the elementary level (Grades 6–8) in both government and non-government schools within the urban jurisdiction of Sargodha. The sampling frame consisted of a list of two elementary schools—one public and one private—ensuring equal representation across socioeconomic and institutional types. The study randomly selected participants through stratified sampling. From the broader frame, 120 students were selected—65 male and 55 female—with an equal split between public ($n = 60$) and private ($n = 60$) institutions. Participants were classified as high achievers ($\text{pretest} > 12$) and low achievers ($\text{pretest} \leq 12$) based on median split of pre test scores.

Instructional interventions continued for four weeks after ethical clearance and consent. Control group received vocabulary instruction using conventional classroom-based strategies, which included repetition and rote memorization, dictionary-based learning, synonym-antonym lists, contextual word guessing through printed reading materials, morphological strategies (e.g., learning affixes). Experimental group was introduced to a curated suite of technology-enhanced vocabulary learning tools, designed to promote autonomy, motivation, and interactive learning. These included Mobile Apps (Duolingo, Quizlet), Online Quizzes (Kahoot, Wordwall), Video-based Input (Educational YouTube channels and British Council Kids), Digital Flashcards (Memrise, Anki), Vocabulary Puzzles and Games (Crossword Labs, Word Search Creator), Social Engagement Platforms (Google Docs peer quizzes, classroom chat forums). Data were

analyzed using IBM SPSS Statistics (Version 26). Descriptive statistics were used to summarize general trends in the data, providing frequencies, grouped descriptive tables, gain scores and graphical representations. Pre-test and post-test scores for the control and experimental group of students ($n = 120$) were compared. Median split of pretest scores and Two- way ANOVA was used and gain scores between high achievers and low achievers were taken.

4.Data Analysis

The statistical techniques combined in the analysis include the analysis of descriptive statistics, paired t-test and independent samples t-test, two-way analysis of variance, and correlation tests, with frequency distribution of data and bar graphs used to display the trends. These techniques make it possible to conduct a meaningful comparison of the mean scores, gain scores, rate of improvement and moderating factors like gender status, grade level, school type and level of achievement. An important aspect in this analysis is the determination of the strategy use by high and low achievers where achievement is characterized by a median split of pretest scores. The qualitative information, deduced based on performance trends, supplements the quantitative data, however, particular courses of action are still an object of additional research since no direct accountants can be provided based on the current statistics. These results indicate striking variations in the performance patterns and online plans prove to have possible benefits in developing vocabulary acquisition skills, especially among under-achievers.

Table 4.1: Pre Test and Post Test Scores of Control and Experimental Groups

		Pretest Control Group Score	Pretest Experimental Group Score	Posttest Control Group Score	Posttest Experimental Group Score
N	Valid	120	120	120	120
	Missing	0	0	0	0
Mean		12.2167	13.1833	25.0333	37.2833
Std. Error of Mean		.39961	.54810	.25709	.69795
Median		12.0000 ^a	12.2000 ^a	24.8750 ^a	37.2500 ^a
Mode		8.00	9.00	22.00 ^b	48.00
Std. Deviation		4.37753	6.00418	2.81632	7.64571
Variance		19.163	36.050	7.932	58.457
Minimum		5.00	5.00	20.00	25.00
Maximum		20.00	25.00	30.00	50.00

a. Calculated from grouped data.

b. Multiple modes exist. The smallest value is shown

The distribution of pretest and posttest scores of control (traditional strategies) and experimental (online strategies) groups is summarized and compared using descriptive statistics to establish a basis of the difference in performance.

The table 4.1 includes the figures of 120 students of each group. The difference in the means of the pretest to the posttest score of the control group was 12.22 (SD = 4.38) to 25.03 (SD = 2.82), and the experimental group was 13.18 (SD = 6.00) to 37.28 (SD = 7.65). The experimental condition has a bigger increase (24.10 vs. 12.81 points) and increase in variability (range 25- 50 vs. 20- 30), and maximum score (50 vs. 30), which means higher performance potential with online strategies (see Table 4.1.).

The data shows that online strategies can be even more effective than traditional strategies, since the posttest mean of the experimental group is larger and its gain is higher: 37.28 and 25.03 respective. Nevertheless, the exact methods employed by the high and low performers (e.g., the top posttest scorers and bottom scorers) remain unknown and more information is needed that will correlate performance with such functionalities as interactive tool (online) or rote learning (traditional) which is unattainable at the moment.

Table 4.2: Paired Samples Statistics of Control and Experimental Groups

		Mean	N	Std. Deviation	Std. Mean	Error
Pair 1	Pretest Control Group Score	12.2167	60	4.39604	.56753	
	Posttest Control Group Score	25.0333	60	2.82823	.36512	
Pair 2	Pretest Experimental Group Score	13.1833	60	6.02956	.77841	
	Posttest Experimental Group Score	37.2833	60	7.67804	.99123	

The paired samples statistics given in the table 4.2 evaluate performance differences on paired samples of pretest and posttest scores of two groups of the control (traditional strategies) and experimental (online strategies) comprising of 60 students each.

In the pretest measurement of the control group, its mean score is 12.22 (SD = 4.40, SE = 0.57) and it improves as seen in the posttest with mean of 25.03 (SD = 2.83, SE = 0.37) signifying an impressive enhancement. The experimental contains a pretest of 13.18 (SD = 6.03, SE = 0.78) to posttest of 37.28 (SD = 7.68, SE = 0.99) which expresses a bigger increase. The greater posttest mean and the stronger variation might indicate that online strategies can improve the performance more profoundly in the experimental group.

The information indicates that online measures can have a better outcome compared to traditional measures since the mean score of the experimental group is higher

than the control group (37.28 vs. 25.03). Nevertheless, there is a need to conduct additional t-tests analysis to determine statistical significance.

Table 4.3: Paired Samples Correlations of Control and Experimental Groups

	N	Correlation	Sig.
Pair 1 Pretest Control Group Score & Posttest Control Group Score	60	-.187	.152
Pair 2 Pretest Experimental Group Score & Posttest Experimental Group Score	60	-.310	.016

In the table 4.3 there are correlations of 60 students in each group. A negative correlation between pretest and posttest is weak, as both degrees of correlations are negative with degrees equal to -0.187 and p equal to 0.152, which does not indicate any significant relations between the control group (traditional strategies) N the levels of pre and post-tests. Experimental group (online strategies) has a moderate negative correlation of -0.310 ($p = 0.016$) which implies an adverse significant correlation with lower pretest results which can be hypothesized to influence higher posttest gains. It means that online strategies could be more useful in facilitating enhancement at the initial levels of performance. The high rate of correlation in the experimental group indicates that online strategies can be more effective, since they allow us to achieve more posttest gains, whereas this trend is not found in the control group.

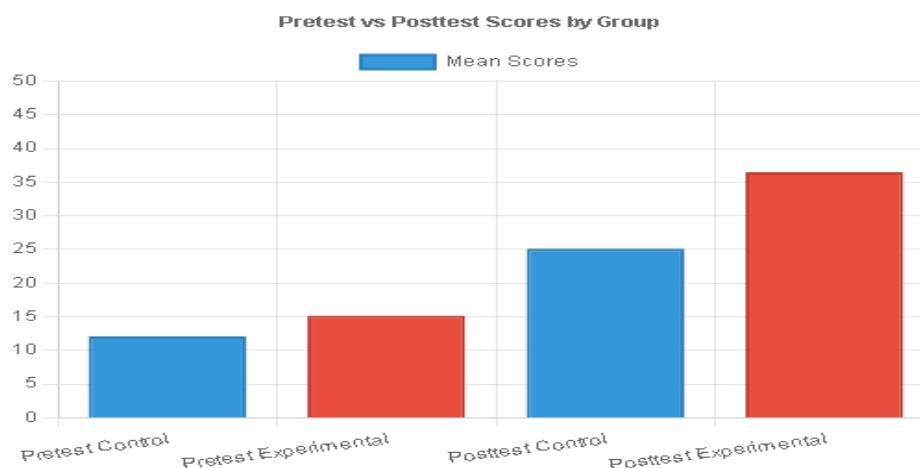


Figure 4.1: Bar Graph for Pretest and Posttest Score Comparison

The bar graph in Figure 4.1 shows data comparing means control (traditional strategies) and experimental (online strategies) group scores prior and after the administration of the test.

Table 4.4: Classification Based on Median Split of Pretest Scores

Achievement Level	Group	Pretest		Posttest		Gain Score	
		Mean	SD	Mean	SD	Mean	SD
Low Achievers (Pretest ≤ 12)	Control	8.94	2.15	24.76	3.12	15.82	4.23
	Experimental	9.73	1.95	37.27	6.84	27.54	7.12
High Achievers (Pretest > 12)	Control	16.47	2.58	25.89	2.47	9.42	3.67
	Experimental	19.73	3.24	35.73	6.15	16.00	5.89

The table 4.4 shows a high vs. low achiever analysis of pretest scores across a median split to compare control and experimental groups on pretest, posttest and gain scores ($n = 120$ in each group).

The pretest means of low achievers (pretest = 12 and below) was 8.94 (SD = 2.15) in the control group which rose to 24.76 (SD = 3.12) posttest with a gain of 15.82 (SD = 4.23). The low achievers in the experimental group began with 9.73 (SD = 1.95), and they went up to 37.27 (SD = 6.84) and the gain was 27.54 (SD = 7.12), showing a bigger improvement using online strategies. The mean on the pretest of the high achievers (pretest > 12) of the control group was 16.47 (SD = 2.58), 25.89 (SD = 2.47) on the posttest, and 9.42 (SD = 3.67) on the gain as well as the experimental group which came as 19.73 (SD = 3.24), 35.73 (SD = 6.15) and 16.00 (SD = 5

The results show that online strategies could also be more successful than the conventional ones, especially in the event of low achievers (a gain score of 27.54 against 15.82) and high achievers (16.00 against 9.42). Nevertheless, particular strategies applied by high and low performers are not defined.

Table 4.5: Two-Way ANOVA Results

Source	Sum Squares	df	Mean Square	F	p-value	η^2
Group (Online vs. Traditional)	2847.23	1	2847.23	78.42	<0.001***	0.412
Achievement Level	645.12	1	645.12	17.78	<0.001***	0.093

Source	Sum of Squares	df	Mean Square	F	p-value	η^2
Group Achievement ×	234.67	1	234.67	6.47	0.013*	0.034
Error	2032.45	56	36.29	-	-	-

The significance of both the main and interactive effect of two independent variables, a two-way ANOVA would be initiated based on the influence of the two independent variables, namely online vs. traditional strategies and high vs. low on the achievement level, on a dependent variable, in this case gain scores, and an analysis on the significance of the independent association of the independent variable(group) and achievement level (gain scores) and its interactive effects on gain scores would be analyzed. The technique takes into consideration the several factors together and it gives a strong analysis of an effect of intervention on subgroups.

The table 4.15 gives ANOVA findings on gain scores (n = 120) based on two-way ANOVA. The group effect is also of significance ($F = 78.42$, $p < 0.001$, $\eta^2 = 0.412$) because the online strategies are more helpful and better than the traditional strategies. The level of achievement also indicates a significant difference ($F = 17.78$, $p < 0.001$, $\eta^2 = 0.0932$), which implies that high achievers will come out benefitting more. It is probable that a bigger effect resulted in the interaction ($F = 6.47$, $p = 0.013$, $\eta^2 = 0.034$), and this means that the effect of group may differ across the levels of achievement, and the online strategies have a more positive impact on low achievers.

The results verify that online strategies produce more returns as compared to traditional strategies, and that the interaction effect selects low-achievers. Nevertheless, certain measures applied by high and low performers are not described; additional qualitative research providing a correlation between performance and introducing specific measures needs to be conducted to determine their approach.

Table 4.6: Comparison of Online Strategies by Gender Type

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Meta Cognitive Strategies	Male	65	3.0308	1.24962	.15500
	Female	55	3.0000	1.21716	.16412
Affective Strategies	Male	65	2.8769	1.20556	.14953
	Female	55	3.2727	1.16197	.15668
Social Strategies	Male	65	3.0308	1.19856	.14866
	Female	55	2.8727	1.32014	.17801

Memory Strategies	Male	65	2.9231	1.10832	.13747
	Female	55	3.0364	1.21661	.16405
Cognitive strategies	Male	65	3.0000	1.17260	.14544
	Female	55	2.8545	1.33913	.18057
Compensatory strategies	Male	65	2.8615	1.23588	.15329
	Female	55	3.5273	1.05153	.14179

The given table 4.6 displays the utilization of different online learning strategies among elementary school learners in Sargodha, Punjab with the breaking of gender category. The strategies involve metacognitive, affective, social, memory, cognitive and compensatory strategies with the means, standard deviations, and mean standard error of male (n=65) and female (n=55) students. Metacognitive skills that entail learning planning, supervision, and assessment are equally used by both the gender groups with the almost equivalent recipient mean of 3.03 and 3.00 in males and females respectively. Conversely, placebo is a gender difference in affective strategies, which relate to dealing with emotions and motivation. The total engagement of female students (M = 3.27, SD = 1.16) is higher than that of males (M = 2.88, SD = 1.21), and this tendency indicates that females could focus on regulating their emotional reactions to achieve better online learning.

Male students show more tendency towards social strategies than female students that involve collaboration and peer interaction (M 3.03, SD 1.20) and (M 2.87, SD 1.32) respectively. Memory strategies are slightly more applied by females (M = 3.04, SD = 1.22) than males (M = 2.92, SD = 1.11). Equally, the thinnest preference is on the cognitive strategies involving the use of analysis and synthesis where the preference is slightly in favor of the males (M = 3.00, SD = 1.17) over the females (M = 2.85, SD = 1.34). The greatest difference is observed in compensatory strategies as females (M = 3.53, SD = 1.05) excel over males (M = 2.86, SD = 1.24), which implies heavier use of compensatory strategies like guessing.

Table 4.7: Group Statistics of Public and Private School Students

		Type of School	N	Mean	Std. Deviation	Std. Error Mean
Meta Strategies	Cognitive	Public	68	3.0735	1.29656	.15723
		Private	52	2.9423	1.14470	.15874
Affective Strategies		Public	68	3.2500	1.23838	.15018
		Private	52	2.8077	1.10327	.15300
Social Strategies		Public	68	2.8088	1.22483	.14853
		Private	52	3.1538	1.27394	.17666
Memory Strategies		Public	68	2.9118	1.08910	.13207
		Private	52	3.0577	1.24323	.17241
Cognitive strategies		Public	68	2.9853	1.32138	.16024
		Private	52	2.8654	1.15519	.16020

Compensatory strategies	Public	68	3.2647	1.07367	.13020
	Private	52	3.0385	1.34254	.18618

The students of the public schools demonstrate an overall increase in metacognitive (M = 3.07, SD = 1.30), affective (M = 3.25, SD = 1.24) and compensatory strategies (M = 3.26, SD = 1.07) with a higher level of mean scores, which can be a consideration of increased involvement in the planning, emotional management, and gap-filling skills. High-energy means of those students of private schools in social (M = 3.15, SD = 1.27) and memory strategies (M = 3.06, SD = 1.24) classes reveal a tendency towards interaction with each other in the course of studies and memory strategies. Similarities in the use of cognitive strategies include the use of cognitive strategies between two groups (public M = 2.99, SD = 1.32; private M = 2.87, SD = 1.16), involving parallel analytical involvement.

Table 4.8: Group Statistics of Grade 6 and Grade 8 Students

	Grade	N	Mean	Std. Deviation	Std. Mean	Error
Meta Cognitive Strategies	Grade 6	62	2.9839	1.28665	.16340	
	Grade 8	58	3.0517	1.17611	.15443	
Affective Strategies	Grade 6	62	2.8226	1.18078	.14996	
	Grade 8	58	3.3103	1.17289	.15401	
Social Strategies	Grade 6	62	3.0645	1.21292	.15404	
	Grade 8	58	2.8448	1.29509	.17005	
Memory Strategies	Grade 6	62	3.0000	1.15942	.14725	
	Grade 8	58	2.9483	1.16110	.15246	
Cognitive strategies	Grade 6	62	3.1129	1.26886	.16114	
	Grade 8	58	2.7414	1.20758	.15856	
Compensatory strategies	Grade 6	62	3.2903	1.17887	.14972	
	Grade 8	58	3.0345	1.21346	.15933	

Mean scores in metacognitive and affective strategies reflect higher ratings of the Grade 8 students (M = 3.05, SD = 1.18; M = 3.31, SD = 1.17) than students in Grade 6 (M = 2.98, SD = 1.29; M = 2.82, SD = 1.18), indicating that students in Grade 8 engage more in the process of self-regulation and emotional control than students in Grade 6. Students in grade 6 have higher means in social (M = 3.06, SD = 1.21), cognitive (M = 3.11, SD = 1.27) and compensatory strategies (M = 3.29; SD = 1.18) and prefer peer interaction, analysis and gap-filling techniques. Similar is the use of memory strategy (Grade 6 M = 3.00, SD = 1.16; Grade 8 M = 2.95, SD = 1.16), where consistent retention practices are observed.

5. Conclusion

The study showed the tendency of males and females towards use of vocabulary learning strategies and it was found that self-regulatory strategies (memory, cognitive,

metacognitive strategies) are equally used by the male and female students at elementary level in Sargodha, Punjab. It implies that groups of both the genders actively participate in self-regulation of learning during internet environment. Females use affective strategies and compensatory strategies more often than males while males use social strategies more frequently due to increased social interactions and social involvement. Females focus on regulating their emotional reactions when learning online to achieve better outcomes. The students of public schools show increased use of metacognitive, affective, and compensatory strategies while students in private schools show more use of social and memory strategies. It means that students in public schools show more involvement in planning, emotional management and gap-filling skills while learning online. On the other hands, students in private schools show tendency towards interaction with one another during studies. Cognitive strategies are used equally by students in both school types. Analysis reflects that Grade 8 students show more use of metacognitive and affective strategies than Grade 6 students who prefer social, cognitive and compensatory strategies. Grade 8 students learn vocabulary through proper planning and their interaction also increases due to increase in achievement level while Grade 6 students learn vocabulary through peer interaction and gap filling skills. In use of memory strategies, consistent retention practices are observed.

The study assessed two methods and their outcomes and concludes that online ways of vocabulary learning are more effective than traditional ways of vocabulary learning. Although, those students in control group (using traditional strategies) showed improvement in post test results but experimental group (using online strategies) showed significant difference in scores gained in posttest. This finding is in line with previous study by Nath (2022), which highlighted that both traditional and online ways of vocabulary learning are effective and should be combined to achieve better outcomes but online ways seem more effective than traditional methods. In the pretest measurement of control group, its mean score was 12.22 which improved in posttest with means of 25.03. It implies that an improvement took place in control group. Similarly, in experimental group, pretest gave mean score of 13.18 which increased in posttest with mean score 37.28. Hence, the greater posttest means and the stronger variation indicates that the online strategies can improve performance more profoundly than traditional strategies.

Analysis was done on the performance of low achievers and high achievers. Low achievers in the experimental group showed outstanding performance which they may exploit to improve their vocabulary. Low achievers benefited more from online strategies. Low achievers in control group gained 15.82 points whereas high achievers gained 9.42 points which indicated that they depend on instructions given by teacher which does not seem to work well with advanced learners.

The study shows the online strategies used by students at elementary level and the results indicate that students show more inclination towards online tools to enhance their vocabulary, adopting such ways which seem more attractive to them and increase motivation towards learning English vocabulary. So, it can be concluded that integration of online tools in Pakistani schools at elementary level could be beneficial as well as it will create inspiring and engaging environment to learn English vocabulary yielding better outcomes.

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