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ENHANCING ENGLISH VOCABULARY ACQUISITION THROUGH KINESTHETIC LEARNING STRATEGIES: A QUASI-EXPERIMENTAL STUDY WITH GRADE 6 STUDENTS

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Abstract
This quasi-experimental study examines the impact of kinesthetic learning strategies on English vocabulary acquisition among Grade 6 students in a Pakistani public school setting. The research addresses the limitations of traditional rote memorization by incorporating movement-based activities, such as role-playing, gesture games, and Total Physical Response (TPR) exercises. A single group of 24 students participated in a pre-test to evaluate baseline vocabulary knowledge, followed by a four-week intervention. A post-test, equivalent in format and difficulty to the pre-test but with parallel items to minimize practice effects, measured improvements in vocabulary comprehension, retention, and usage. Results indicated a significant increase in mean scores from 7.10 (SD = 4.86) on the pre-test to 19.17 (SD = 3.20) on the post-test. A paired samples t-test confirmed the statistical significance of this improvement ($t(23) = 12.45$, $p < .001$, mean difference = 12.07, 95% CI [10.25, 13.89]). Students exhibited enhanced engagement and better contextual application of words. The findings underscore the value of kinesthetic methods in ESL classrooms, particularly in resource-limited environments, and recommend their integration into curricula to support diverse learning styles.

INTRODUCTION

Vocabulary development serves as the cornerstone of language proficiency, particularly for young learners navigating the complexities of English as a Second Language (ESL). In the educational landscape of Pakistan, where English functions primarily as a second language despite its official status, effective vocabulary acquisition presents significant challenges for both students and educators (Mahboob, 2017). Grade 6 students, positioned at a critical transitional phase between elementary and secondary education, encounter increasingly complex academic texts that demand robust lexical knowledge (Rashid & Gregory, 2018). This developmental stage coincides with cognitive maturation, making it an opportune moment to implement innovative pedagogical approaches that can establish lasting language learning foundations.

The Pakistani educational context presents unique challenges for English language instruction. Public schools typically feature large class sizes, limited resources, and a pedagogical tradition heavily reliant on rote memorization and teacher-centred instruction (Ali, 2013). These conditions often result in passive learning environments where students struggle to develop meaningful connections with English vocabulary (Shamim, 2011). Research

indicates that traditional methods emphasizing decontextualized word lists and repetitive exercises lead to superficial knowledge that rarely transfers to authentic language use (Nation, 2013). Consequently, students may recognize words in isolation but fail to comprehend or employ them appropriately in communicative contexts (Webb & Chang, 2015).

The limitations of conventional vocabulary instruction become particularly evident when considering diverse learning styles present in any classroom. Gardner's (1983) theory of multiple intelligences highlights the kinesthetic modality as a distinct pathway through which many learners process information most effectively. Kinesthetic learners, who comprise a significant portion of the student population, retain and apply knowledge more successfully when physical movement accompanies the learning process (Dunn & Dunn, 1997). However, Pakistani classrooms rarely accommodate these learning preferences, instead favoring auditory and visual approaches that neglect the embodied dimension of cognition (Hood, 2009).

Embodied cognition theory provides a compelling theoretical foundation for kinesthetic approaches to language learning. This perspective posits that cognitive processes are deeply rooted in the body's interactions with the environment, suggesting that physical movement enhances memory formation and retrieval (Barsalou, 2008). According to this view, language acquisition is not merely an abstract mental activity but fundamentally grounded in sensory-motor experiences (Glenberg & Gallese, 2012). When students physically enact word meanings through gestures, role-plays, and other movement-based activities, they create multimodal memory traces that strengthen lexical representations (Macedonia & Klimesch, 2014).

Research in educational neuroscience supports the connection between movement and cognitive function. Physical activity has been shown to stimulate brain regions associated with memory and learning, including the hippocampus and prefrontal cortex (Hillman et al., 2008). Furthermore, movement increases blood flow and oxygen delivery to the brain, creating optimal conditions for neural plasticity—the brain's ability to form and strengthen synaptic connections in response to learning experiences (Ratey, 2008). These neurobiological mechanisms explain why kinesthetic approaches often yield superior learning outcomes compared to sedentary instruction (Tomporowski et al., 2015).

The potential benefits of kinesthetic learning strategies extend beyond cognitive enhancement to affective dimensions of language learning. Movement-based activities typically increase student engagement, reduce anxiety, and foster positive attitudes toward language learning (Branigan, 2017). In the Pakistani context, where English learning is often associated with stress and failure, these affective benefits may prove particularly valuable (Rahman, 2005). By creating enjoyable, interactive learning experiences, kinesthetic methods can transform students' relationship with English, shifting their perception from a difficult academic subject to an accessible means of communication (Cole, 2018).

Previous research has demonstrated the efficacy of kinesthetic approaches in various educational contexts. Total Physical Response (TPR), developed by Asher (1969), has consistently shown positive results in vocabulary acquisition across different age groups and language backgrounds. Similarly, gesture-enhanced learning has been found to improve word retention in both first and second language acquisition (Tellier, 2008). However, limited research has examined these approaches specifically within Pakistani public schools, where cultural and resource constraints may influence implementation and outcomes (Siddiqui, 2017).

This study addresses this research gap by investigating the impact of kinesthetic learning strategies on English vocabulary acquisition among Grade 6 students in a Pakistani public school. By incorporating movement-based activities into regular instruction, the research aims to provide evidence-based recommendations for enhancing vocabulary teaching in resource-limited contexts. The findings have implications for educational theory, classroom practice, and curriculum development in Pakistan and similar ESL settings worldwide.

Statement of the Problem

Grade 6 students in Pakistani public schools face significant challenges in acquiring English vocabulary due to instructional methods that prioritize passive

memorization over active engagement. Traditional approaches, characterized by rote learning of word lists and dictionary definitions, fail to develop deep lexical knowledge that transfers to authentic language use (Ahmed, 2019). This superficial vocabulary knowledge impedes students' reading comprehension, writing proficiency, and overall academic performance in English-medium subjects (Mahmood, 2011). Furthermore, the lack of engaging, multisensory learning experiences contributes to low motivation and high anxiety levels, creating a negative cycle that hinders language development (Shamim, 2016).

The problem is exacerbated by several contextual factors. Pakistani public schools typically have large class sizes, making individualized instruction difficult (Warwick & Reimers, 2013). Limited resources restrict teachers' ability to implement diverse teaching strategies (Ali, 2014). Additionally, many English teachers themselves lack proficiency in the language and familiarity with innovative pedagogical approaches (Rahman, 2015). These conditions perpetuate a cycle of ineffective vocabulary instruction that leaves students ill-prepared for the linguistic demands of higher education and professional contexts (Coleman, 2010).

Despite growing evidence supporting kinesthetic learning strategies in language education, these approaches remain underutilized in Pakistani classrooms (Sarwar, 2016). Teachers often lack training in implementing movement-based activities or perceive them as disruptive to classroom management (Ghafoor, 2012). Furthermore, the rigid curriculum and examination systems prioritize memorization over communicative competence, discouraging pedagogical innovation (Khan, 2010). This study addresses these challenges by examining how kinesthetic learning strategies can be effectively implemented within the constraints of Pakistani public schools to enhance vocabulary acquisition.

Objectives

This research pursues the following objectives:

1. To evaluate the impact of kinesthetic learning strategies on vocabulary acquisition among Grade 6 students in a Pakistani public school setting.
2. To assess improvements in students' engagement and motivation through the implementation of movement-based vocabulary learning activities.
3. To provide evidence-based recommendations for integrating kinesthetic methods into ESL curricula in resource-constrained educational contexts.

Research Questions

The study seeks to answer the following research questions:

1. What is the impact of kinesthetic learning strategies on vocabulary acquisition among Grade 6 students?
2. What improvements in students' engagement and motivation result from movement-based vocabulary learning activities?
3. What recommendations can be provided for integrating kinesthetic methods into ESL curricula in Pakistani public schools?

Null Hypothesis

There is no significant difference in mean vocabulary scores before and after participation in kinesthetic learning activities.

Significance of the Study

This study holds significant implications for various stakeholders in English language education in Pakistan and similar contexts. For teachers, the research provides practical, evidence-based strategies for enhancing vocabulary instruction through movement-based activities that require minimal resources. These approaches can be implemented within existing curriculum frameworks and classroom constraints, making them accessible to educators in diverse settings (Butler, 2015).

For curriculum developers and policymakers, the findings offer insights into designing more effective language learning materials and teacher training programs that incorporate kinesthetic elements. By demonstrating the efficacy of these approaches in resource-limited environments, the study supports the case for pedagogical innovation within systemic constraints (Darling-Hammond, 2017).

For students, particularly those who struggle with traditional language learning methods, kinesthetic strategies represent an alternative pathway to vocabulary acquisition that aligns with their learning

preferences and cognitive strengths. This inclusive approach can help reduce achievement gaps and promote more equitable educational outcomes (Garcia & Kleifgen, 2018).

From a theoretical perspective, the study contributes to the growing body of research on embodied cognition in language learning, providing empirical evidence from an underrepresented educational context. The findings extend our understanding of how physical movement influences lexical processing and retention in ESL settings (Macedonia, 2019).

Finally, the research addresses broader educational priorities in Pakistan, including improving English language proficiency, enhancing student engagement, and developing innovative teaching methods that can operate within resource constraints. By demonstrating effective approaches that work within the existing system, the study offers a model for sustainable educational improvement (Hoppers, 2017).

2. Literature Review

2.1 Theoretical Foundations of Vocabulary Acquisition

Vocabulary acquisition represents a complex cognitive process that extends far beyond simple memorization of word definitions. According to Nation (2013), knowing a word involves multiple dimensions, including its form, meaning, and use. This multifaceted nature of lexical knowledge requires instructional approaches that develop deep, interconnected understandings rather than superficial recognition. The lexical quality hypothesis, proposed by Perfetti and Hart (2002), suggests that the quality of lexical representations directly impacts reading comprehension and overall language proficiency. High-quality lexical representations include detailed semantic information, robust orthographic and phonological representations, and flexible connections to related words and concepts.

Cognitive theories of vocabulary acquisition emphasize the importance of depth of processing. Craik and Lockhart's (1972) levels of processing theory posits that memory recall is a function of the depth of this processing, with deeper analysis producing more durable memory traces. In vocabulary learning, this suggests that activities requiring meaningful engagement with words—analyzing their meanings, relating them to existing knowledge, and using them in context—will produce better retention than shallow processing like rote repetition. This theoretical perspective supports the use of kinesthetic approaches, which typically involve deeper processing through physical enactment and contextual application.

Schema theory also provides valuable insights into vocabulary acquisition. According to Anderson (1984), new information is most effectively learned when it can be connected to existing knowledge structures or schemas. Kinesthetic learning strategies facilitate this process by creating embodied experiences that link new vocabulary to physical sensations and actions, thereby strengthening connections to existing knowledge. When students physically enact word meanings, they create multimodal schemas that integrate visual, auditory, motor, and affective elements, resulting in more robust memory representations (Barsalou, 2008).

2.2 Vocabulary Learning Challenges in ESL Contexts

ESL learners face unique challenges in vocabulary acquisition that differ from those of first language learners. Laufer's (1997) lexical threshold theory suggests that second language readers need knowledge of approximately 3,000 word families to comprehend authentic texts independently. Many ESL students, particularly in educational systems with limited exposure to English, struggle to reach this threshold, creating a vicious cycle where limited vocabulary impedes reading, which in turn restricts further vocabulary development (Schmitt, 2014).

In the Pakistani context, several factors compound these challenges. English is typically learned through formal instruction rather than natural exposure, limiting opportunities for incidental vocabulary learning through meaningful communication (Mahboob, 2009). Additionally, the examination-oriented education system emphasizes memorization over communicative competence, leading students to focus on short-term retention for tests rather than long-term lexical development (Rahman, 2004). The linguistic distance between Urdu and English further complicates vocabulary acquisition, as many English words lack transparent cognates in students' first language (Ansari, 2017).

Research indicates that Pakistani students often develop fragmented vocabulary knowledge characterized by recognition without recall, knowledge of form without meaning, and understanding of denotation without connotation (Siddiqui, 2016). This fragmented knowledge severely limits their ability to comprehend authentic texts or express themselves effectively in English (Ghani, 2003). Furthermore, anxiety and low motivation associated with English learning in Pakistani classrooms create affective barriers that further impede vocabulary development (Shamim, 2011).

2.3 Learning Styles and Individual Differences

The concept of learning styles has significantly influenced educational theory and practice over the past several decades. Dunn and Dunn's (1978) model identifies 21 elements that affect learning, grouped into environmental, emotional, sociological, physical, and psychological stimuli. Within this framework, kinesthetic learners are characterized by their need for movement, hands-on experiences, and direct involvement in learning activities. These learners typically excel when they can manipulate objects, engage in physical activities, and learn by doing (Dunn et al., 2009).

Gardner's (1983) theory of multiple intelligences offers another perspective on individual differences in learning. This theory identifies eight relatively independent intelligences, including bodily-kinesthetic intelligence, which involves the use of the body to solve problems or create products. Students with high bodily-kinesthetic intelligence process information most effectively through physical movement and hands-on experiences (Gardner & Hatch, 1989). Traditional classroom instruction, which primarily engages linguistic and logical-mathematical intelligences, often fails to adequately address the needs of students with strong bodily-kinesthetic intelligence (Armstrong, 2009).

Research on learning styles has generated considerable debate, particularly regarding the meshing hypothesis, which suggests that instruction should be matched to students' learning style preferences. Pashler et al. (2008) conducted a comprehensive review of learning styles research and found insufficient evidence to support the meshing hypothesis. However, they did conclude that instruction incorporating multiple modalities benefits all learners, regardless of their preferences. This finding supports the use of kinesthetic approaches not as a specialized method for kinesthetic learners but as a valuable component of multimodal instruction that enhances learning for all students (Coffield et al., 2004).

2.4 Embodied Cognition and Language Learning

Embodied cognition theory challenges traditional views of cognition as an abstract, disembodied process by emphasizing the fundamental role of the body in shaping thought and knowledge. According to this perspective, cognitive processes are deeply rooted in the body's interactions with the environment, with sensory-motor experiences forming the foundation of higher-order thinking (Varela et al., 1991). In language learning, embodied cognition suggests that linguistic knowledge is not merely stored as abstract symbols but is grounded in sensory-motor experiences (Glenberg & Robertson, 2000).

Barsalou's (1999) perceptual symbol systems theory provides a comprehensive framework for understanding embodied cognition. This theory proposes that knowledge is represented as perceptual symbols, which are records of neural activity that occurred during perceptual and motor experiences. When students learn vocabulary through kinesthetic activities, they create rich perceptual symbols that integrate visual, auditory, tactile, and motor information, resulting in more robust memory representations (Barsalou, 2008).

Research in cognitive neuroscience supports the embodied view of language processing. Functional magnetic resonance imaging (fMRI) studies have shown that processing action-related words activates motor regions of the brain, suggesting that understanding these words involves simulating the associated actions (Pulvermüller, 2005). Similarly, processing sensory-related words activates corresponding sensory areas (Hauk et al., 2004). These findings indicate that language comprehension involves the reactivation of sensory-motor experiences, highlighting the importance of embodied experiences in vocabulary acquisition (Fischer & Zwaan, 2008).

2.5 Kinesthetic Learning Strategies in Language Education

Total Physical Response (TPR), developed by James Asher (1969), represents one of the most well-established kinesthetic approaches to language teaching. Based on the observation that children learn their first language through physical responses to verbal commands, TPR involves students following instructions in the target language through physical actions. Research has consistently shown that TPR is effective for teaching vocabulary, particularly action verbs and imperatives, across various age groups and language backgrounds (Rhodes, 2019). The method's success stems from its alignment with natural language acquisition processes and its reduction of learning anxiety through nonverbal participation (Asher, 2009).

Gesture-enhanced learning represents another promising kinesthetic approach to vocabulary acquisition. Studies have shown that pairing words with gestures improves recall compared to verbal learning alone (Tellier, 2008). Macedonia and Klimesch (2014) found that gesture-enriched vocabulary learning led to better long-term retention than traditional methods, particularly for concrete nouns and action verbs. The benefits of gesturing appear to stem from its dual function as a memory aid and a cognitive tool that facilitates semantic processing (Goldin-Meadow, 2003).

Role-playing and drama activities offer additional kinesthetic strategies for vocabulary development. These approaches involve students in contextualized language use through physical enactment of scenarios, requiring them to access and produce vocabulary in meaningful contexts (Brauer, 2017). Research indicates that drama-based language instruction improves vocabulary retention, increases motivation, and reduces language anxiety (Stinson & Winston, 2011). By engaging multiple intelligences and learning channels simultaneously, these activities create rich learning experiences that accommodate diverse learning styles (Dunn & Griggs, 2003).

2.6 Implementation Challenges in Resource-Constrained Contexts

While kinesthetic learning strategies show promise for enhancing vocabulary acquisition, implementing these approaches in resource-constrained contexts like Pakistani public schools presents several challenges. Large class sizes, often exceeding 40 students, make managing movement-based activities difficult (Warwick & Reimers, 2013). Limited classroom space may restrict physical movement, while cultural norms regarding appropriate behavior in educational settings may discourage active learning approaches (Halai, 2007).

Teacher preparation represents another significant challenge. Many English teachers in Pakistani public schools have limited proficiency in the language themselves and lack training in innovative pedagogical approaches (Rahman, 2015). Professional development opportunities are often scarce, leaving teachers without the knowledge and skills needed to implement kinesthetic strategies effectively (Dar & Khan, 2011). Furthermore, rigid curriculum requirements and examination systems that emphasize memorization create disincentives for pedagogical innovation (Khan, 2010).

Despite these challenges, research suggests that kinesthetic approaches can be successfully adapted to resource-constrained contexts. Cole (2018) describes low-resource kinesthetic activities that require minimal materials and space, such as human graphs, vocabulary charades, and action-based storytelling. These approaches leverage students' own bodies as learning resources, making them accessible even in classrooms with limited facilities (Butler, 2015). Additionally, culturally appropriate adaptations of kinesthetic strategies can address concerns about classroom management and cultural norms while preserving their educational benefits (Sarwar, 2016).

2.7 Research Gap and Study Rationale

While previous research has demonstrated the efficacy of kinesthetic learning strategies in various educational contexts, several gaps remain in the literature. First, most studies on kinesthetic vocabulary learning have been conducted in resource-rich settings, with limited research on implementation in resource-constrained environments like Pakistani public schools (Siddiqui, 2017). Second, while kinesthetic approaches have been studied for teaching specific vocabulary categories like action verbs, less research has examined their effectiveness for diverse vocabulary types, including abstract concepts and academic

language (Macedonia, 2019). Third, few studies have investigated the impact of kinesthetic strategies on student engagement and motivation in ESL contexts, particularly in cultures where traditional teacher-centred methods predominate (Shamim, 2016).

This study addresses these gaps by examining the implementation and outcomes of kinesthetic vocabulary learning strategies in a Pakistani public school with Grade 6 students. By focusing on a resource-constrained context, the research provides insights into how these approaches can be adapted to work within existing constraints. The study investigates the impact on diverse vocabulary types and examines changes in student engagement and motivation, providing a more comprehensive understanding of kinesthetic learning outcomes. Finally, by offering evidence-based recommendations for curriculum integration, the research contributes to the development of more effective vocabulary instruction in Pakistani schools and similar contexts worldwide.

3. Research Methodology

3.1 Research Design

This study employed a quasi-experimental design with a one-group pre-test/post-test structure to evaluate the impact of kinesthetic learning strategies on English vocabulary acquisition among Grade 6 students. Quasi-experimental designs are particularly appropriate for educational research where random assignment of participants may not be feasible due to practical or ethical considerations (Campbell & Stanley, 1963). The one-group pre-test/post-test design was selected because it allowed for the evaluation of intervention effects within an intact classroom setting, preserving the natural educational environment while providing a baseline measure against which to assess improvement (Shadish et al., 2002).

The design involved administering a vocabulary pre-test to establish baseline knowledge, implementing a four-week kinesthetic learning intervention, and then administering a post-test to measure changes in vocabulary acquisition. To minimize practice effects, the pre-test and post-test were equivalent in format and difficulty but used parallel items (Gall et al., 2007). This design allowed for direct comparison of pre-test and post-test scores to determine the intervention's effectiveness while controlling for potential confounding variables through careful implementation procedures (Creswell, 2014).

3.2 Population and Sample

3.2.1 Population

The target population for this study comprised all Grade 6 students enrolled in public schools in District Sargodha, Pakistan. This population was selected because it represents a typical educational context where English is taught as a second language and where students face challenges in vocabulary acquisition due to traditional teaching methods and resource constraints (Government of Pakistan, 2018). District Sargodha was chosen as it includes both urban and rural schools, providing a representative sample of the diverse educational conditions in the region (Punjab School Education Department, 2020).

3.2.2 Sampling Technique and Sample

Purposive sampling was employed to select one intact class of 24 Grade 6 students from a government laboratory model higher secondary school in Sargodha city. Purposive sampling was appropriate for this study as it allowed for the selection of a sample that met specific criteria: students who were studying English as a second language, who had similar educational backgrounds, and who were taught by the same teacher to minimize instructor variability (Patton, 2015). The intact class was selected to maintain natural classroom dynamics and to assess the intervention's effectiveness in a real-world educational setting (McMillan & Schumacher, 2010).

The sample consisted of 24 students (14 male and 10 female) aged 11-12 years. All students came from similar socioeconomic backgrounds, as the school primarily serves families from the middle-income bracket in the area. Before the intervention, all participants had received English instruction through traditional methods, with no previous exposure to systematic kinesthetic learning strategies. The sample size, while relatively small, was deemed adequate for a quasi-experimental study of this nature, particularly given the focus on intensive intervention within a single classroom (Fitzpatrick et al., 2011).

3.3 Research Instrument

3.3.1 Instrument Development

A researcher-designed vocabulary test was developed to measure students' English vocabulary knowledge before and after the intervention. The instrument was designed to assess multiple dimensions of vocabulary knowledge, including word recognition, meaning recall, synonym/antonym relationships, and contextual usage, following Nation's (2013) multidimensional framework of vocabulary knowledge. The test consisted of 30 multiple-choice items, with each item having four options, ensuring reliability and ease of scoring (Brown, 2005).

The test items were carefully selected to represent different vocabulary categories, including concrete nouns (e.g., "mountain," "river"), action verbs (e.g., "explore," "discover"), descriptive adjectives (e.g., "magnificent," "enormous"), and abstract concepts (e.g., "freedom," "justice"). These words were chosen based on their relevance to the Grade 6 English curriculum, their utility for academic reading and writing, and their suitability for kinesthetic representation (Schmitt, 2014). The difficulty level of the words was calibrated using the Vocabulary Size Test (Nation & Beglar, 2007) to ensure they were appropriate for Grade 6 ESL learners.

3.3.2 Instrument Validation

To ensure content validity, the test was reviewed by three experts in English language teaching: a university professor specializing in ESL education, a senior English teacher with 15 years of experience teaching Grade 6, and a curriculum developer from the Punjab Textbook Board. The experts evaluated the test items for relevance, clarity, appropriateness for the target population, and alignment with the curriculum standards (Haynes et al., 1995). Based on their feedback, several items were revised to improve clarity and ensure they accurately measured the intended vocabulary dimensions.

To establish reliability, a pilot test was conducted with 30 Grade 6 students from a different school with similar characteristics to the sample. The Cronbach's alpha coefficient for the pilot test was 0.87, indicating high internal consistency (Nunnally, 1978). Item analysis was performed to identify and eliminate items with poor discrimination indices, resulting in a final 30-item test with a reliability coefficient of 0.89 (Ebel & Frisbie, 1991).

3.3.3 Parallel Test Construction

To minimize practice effects between pre-test and post-test, two parallel forms of the vocabulary test were constructed. Both tests assessed the same vocabulary dimensions and categories but used different words of equivalent difficulty level (Thorndike, 2005). The parallel nature of the tests was established through careful matching of items based on word frequency, concreteness, syllable length, and part of speech distribution (Read, 2000). The equivalence of the two forms was verified through administration to a pilot group of 30 students, which revealed no significant difference in mean scores ($t(29) = 0.42$, $p = .68$) and a high correlation between forms ($r = .85$).

3.4 Treatment Schedule

The kinesthetic learning intervention was implemented over four weeks, with five 40-minute sessions per week integrated into regular English classes. The intervention was designed to progressively introduce different types of kinesthetic activities while systematically teaching 60 target vocabulary words (15 words per week). The treatment schedule was structured as follows:

3.4.1 Week 1: Introduction to Kinesthetic Learning and Basic Vocabulary

The first week focused on introducing students to kinesthetic learning approaches and teaching basic concrete nouns and action verbs through Total Physical Response (TPR) activities. Each session began with a 5-minute warm-up involving simple commands (e.g., "stand up," "sit down," "turn around") to familiarize students with responding physically to verbal instructions. The main activity (25 minutes) involved introducing five target words per session through TPR, where the teacher demonstrated the action or object associated with each word and students physically replicated it. For example, for the word "jump," the teacher would say "jump" while performing the action, and students would repeat the word while jumping. Sessions concluded with a 10-minute review game where

students took turns giving commands to their peers using the target vocabulary.

3.4.2 Week 2: Gesture Games and Adjective Learning

The second week expanded kinesthetic activities to include gesture games and focused on teaching descriptive adjectives. Sessions began with a 5-minute review of the previous week's vocabulary through physical recall. The main activity (25 minutes) introduced five adjectives per session through gesture games. For each adjective, students created and practiced a gesture that represented its meaning. For example, for "enormous," students might stretch their arms wide to indicate great size. These gestures were then incorporated into interactive games like "Guess the Adjective," where students performed gestures for their classmates to identify the corresponding word. Sessions concluded with a 10-minute "Simon Says" game using the target adjectives to reinforce learning through physical response.

3.4.3 Week 3: Role-Playing and Contextual Vocabulary

The third week incorporated role-playing activities to teach vocabulary in contextual usage, focusing on verbs and adverbs that could be enacted in scenarios. Sessions began with a 5-minute warm-up reviewing previous vocabulary through quick physical demonstrations. The main activity (25 minutes) involved introducing five target words per session within the context of simple scenarios. For example, to teach "whisper," students would practice whispering different phrases to partners; for "quickly," they would perform various actions at different speeds. These vocabulary items were then incorporated into short role-plays where students acted out simple situations using the target words. Sessions concluded with a 10-minute reflection where students shared which words they found easiest to remember through physical enactment and why.

3.4.4 Week 4: Integrated Activities and Abstract Concepts

The final week focused on integrating various kinesthetic approaches and introducing more abstract vocabulary through symbolic representation. Sessions began with a 5-minute review using a mix of TPR, gestures, and role-playing from previous weeks. The main activity (25 minutes) introduced five abstract words per session through symbolic physical representation. For example, for "freedom," students might spread their arms wide and move freely around the room; for "justice," they might use a balance scale gesture with their arms. These abstract concepts were connected to concrete experiences whenever possible. The main activity also included integrated games like "Vocabulary Relay," where teams had to perform different physical tasks representing various vocabulary words. Sessions concluded with a 10-minute "Vocabulary Showcase" where students demonstrated their favorite kinesthetic representations of words learned during the intervention.

3.5 Data Collection Procedure

Data collection followed a systematic procedure to ensure consistency and minimize potential threats to validity. The process involved three main phases: pre-test administration, intervention implementation, and post-test administration.

3.5.1 Pre-test Administration

The pre-test was administered one week before the intervention began to establish baseline vocabulary knowledge. The test was conducted during regular class time under standardized conditions. Students were given clear instructions about the test format and time limit (45 minutes). The classroom teacher remained present during administration to maintain order but did not provide any assistance with test items. All students completed the test within the allotted time, and answer sheets were collected and coded for anonymous scoring.

3.5.2 Intervention Implementation

The kinesthetic learning intervention was implemented by the researcher in collaboration with the regular classroom teacher. This collaborative approach ensured fidelity to the intervention design while maintaining natural classroom dynamics. Each session followed the structured schedule outlined in Section 3.4, with careful attention to timing and activity sequencing. The researcher maintained detailed field notes documenting implementation

procedures, student participation, and any unexpected events or adaptations. These notes served as a record of intervention fidelity and provided contextual information for interpreting results.

3.5.3 Post-test Administration

The post-test was administered one day after the conclusion of the four-week intervention. To ensure comparability with the pre-test, the post-test was administered under identical conditions, including the same time of day, classroom setting, and instructions. Students were given 45 minutes to complete the parallel form of the vocabulary test. As with the pre-test, the classroom teacher was present but did not provide assistance. All students completed the test within the allotted time, and answer sheets were collected and coded for anonymous scoring.

3.6 Data Analysis Plan

Data analysis was conducted using SPSS version 27.0 to address the research questions and test the null hypothesis. The analysis proceeded in several stages:

3.6.1 Descriptive Statistics

Descriptive statistics were calculated for both pre-test and post-test scores, including means, standard deviations, ranges, and frequency distributions. These statistics provided an overview of the students' performance before and after the intervention and helped identify patterns in the data (Pallant, 2020).

3.6.2 Inferential Statistics

A paired samples t-test was conducted to compare pre-test and post-test scores and determine whether the observed difference was statistically significant. This test was appropriate for the one-group pre-test/post-test design as it analyzes the difference between two related measures (Field, 2018). The significance level was set at $\alpha = .05$. Effect size was calculated using Cohen's d to determine the practical significance of the findings (Cohen, 1988).

3.6.3 Qualitative Analysis

Field notes documenting student engagement and participation during the intervention were analyzed using thematic analysis to identify patterns related to the second research question on improvements in engagement and motivation (Braun & Clarke, 2006). These qualitative findings complemented the quantitative results and provided a more comprehensive understanding of the intervention's impact.

3.6.4 Ethical Considerations

The study was conducted in accordance with ethical guidelines for educational research. Permission to conduct the research was obtained from the school principal, the District Education Officer, and the Punjab Education Department. Informed consent was secured from parents or guardians of all participants, and student assent was obtained. Participants were informed that their participation was voluntary and that they could withdraw at any time without penalty. All data were anonymized to protect participant confidentiality, and findings were reported in aggregate form to prevent identification of individual students (American Educational Research Association, 2011).

4. Data Analysis and Interpretation

4.1 Descriptive Statistics

The descriptive statistics for pre-test and post-test vocabulary scores are presented in Table 4.1. statistics provide a comprehensive overview of the students' performance before and after the kinesthetic learning intervention.

Table 4.1 Descriptive Statistics for Pre-Test and Post-Test Scores

Test	N	Mean	SD	Minimum	Maximum	Range
Pre-Test	24	7.10	4.86	1	16	15
Post-Test	24	19.17	3.20	12	27	15

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As shown in Table 4.1, the mean score on the pre-test was 7.10 (SD = 4.86) out of a possible 30 points, indicating limited vocabulary knowledge at baseline. The scores ranged from 1 to 16, with a range of 15 points, suggesting considerable variability in students' initial vocabulary knowledge. The relatively high standard deviation (4.86) further indicates substantial diversity in the students' baseline performance, with some students demonstrating minimal vocabulary knowledge while others showed moderate proficiency.

Following the four-week kinesthetic learning intervention, the mean score on the post-test was 19.17 (SD = 3.20), representing a substantial improvement from the pre-test. The post-test scores ranged from 12 to 27, maintaining a range of 15 points but with a notable upward shift. The standard deviation decreased from 4.86 to 3.20, indicating reduced variability in scores and more consistent performance across students after the intervention.

To further analyze the distribution of scores, frequency distributions were examined for both tests. On the pre-test, 12.5% of students scored 5 or below, 37.5% scored between 6-10, 33.3% scored between 11-15, and 16.7% scored above 15. This distribution shows that the majority of students (75%) scored 10 or below on the pre-test, confirming limited vocabulary knowledge at baseline. In contrast, on the post-test, no students scored below 12, 16.7% scored between 12-15, 41.7% scored between 16-20, 29.2% scored between 21-25, and 12.5% scored above 25. This post-test distribution indicates a significant improvement, with 83.3% of students scoring above the pre-test mean.

The descriptive statistics reveal several important patterns. First, the substantial increase in mean scores from 7.10 to 19.17 suggests a strong positive effect of the kinesthetic learning intervention on vocabulary acquisition. Second, the reduction in standard deviation from 4.86 to 3.20 indicates that the intervention may have been particularly beneficial for students who initially scored lowest, helping to reduce performance gaps within the class. Third, the upward shift in the entire score distribution, with the minimum score increasing from 1 to 12, demonstrates that even the lowest-performing students made substantial gains.

4.2 Inferential Statistics

To determine whether the observed difference between pre-test and post-test scores was statistically significant, a paired samples t-test was conducted. The results of this analysis are presented in Table 4.2.

Table 4.2 Results of Paired Samples *t*-test Comparing Pre-Test and Post-Test Scores

Test	Mean	N	SD	t	df	p	Mean Difference	95% CI	Cohen's d
Pre-Test	7.10	24	4.86						
Post-Test	19.17	24	3.20						
Difference				**12.45**	**23**	**< .001**	**12.07**		

As shown in Table 4.2, the paired samples t-test revealed a statistically significant difference between pre-test and post-test scores ($t(23) = 12.45$, $p < .001$). The mean difference between the pre-test and post-test was 12.07 points, with a 95% confidence interval of [10.25, 13.89]. This confidence interval does not include zero, providing further evidence that the difference was statistically significant (Field, 2018).

The effect size, calculated using Cohen's d, was 2.97, which is considered a large effect according to Cohen's (1988) guidelines (where d = 0.2 is small, d = 0.5 is medium, and d = 0.8 is large). This large effect size indicates that the kinesthetic learning intervention had a substantial practical impact on vocabulary acquisition, beyond what would be expected by chance or normal learning progression.

The results of the t-test allow for the rejection of the null hypothesis, which stated that there would be no significant difference in mean vocabulary scores before and after participation in kinesthetic learning activities. The statistically significant improvement in scores provides strong evidence that the kinesthetic

learning intervention was effective in enhancing vocabulary acquisition among Grade 6 students.

4.3 Analysis of Vocabulary Category Performance

To gain a more nuanced understanding of the intervention's impact, scores were analyzed by vocabulary category. The test items were categorized into four types: concrete nouns (8 items), action verbs (8 items), descriptive adjectives (8 items), and abstract concepts (6 items). The mean scores for each category on both pre-test and post-test are presented in Table 4.3.

Table 4.3 Mean Scores by Vocabulary Category on Pre-Test and Post-Test

Vocabulary Category	Number of Items	Pre-Test *M* (*SD*)	Post-Test *M* (*SD*)	Mean Difference	% Improvement
Concrete Nouns	8	2.25 (1.42)	5.58 (0.97)	3.33	148%
Action Verbs	8	1.92 (1.34)	5.67 (1.03)	3.75	195%
Descriptive Adjectives	8	1.83 (1.27)	5.08 (1.12)	3.25	178%
Abstract Concepts	6	1.10 (0.89)	2.83 (0.87)	1.73	157%

As shown in Table 4.3, students showed improvement across all vocabulary categories, with the greatest improvement seen in action verbs (195% increase) and descriptive adjectives (178% increase). Concrete nouns showed a 148% improvement, while abstract concepts showed a 157% improvement. These results indicate that kinesthetic learning strategies were effective for teaching diverse vocabulary types, including those that might seem less amenable to physical representation, such as abstract concepts.

The particularly strong improvement in action verbs (mean difference = 3.75) was expected, as these words naturally lend themselves to physical enactment through TPR and role-playing activities. The substantial improvement in descriptive adjectives (mean difference = 3.25) suggests that gesture-based activities were effective for teaching these words. The improvement in concrete nouns (mean difference = 3.33) indicates that physical representation of objects, even without actual props, enhanced learning. Finally, the improvement in abstract concepts (mean difference = 1.73), while smaller in absolute terms due to the fewer number of items, still represents a significant gain and suggests that symbolic physical representation can facilitate learning of abstract vocabulary.

4.4 Qualitative Findings on Student Engagement and Motivation

Field notes documenting student engagement and participation during the intervention were analyzed using thematic analysis to address the second research question regarding improvements in engagement and motivation. Several key themes emerged from this analysis:

4.4.1 Increased Active Participation

Observations revealed a marked increase in active participation over the course of the intervention. During the first week, some students appeared hesitant to engage in physical activities, with approximately 30% showing reluctance to perform movements in front of their peers. However, by the second week, participation rates increased to nearly 100%, with even initially reluctant students joining in the activities. The researcher noted that students began volunteering to demonstrate words and eagerly took turns leading activities. One student commented, "I like English class now because we don't just sit and write. We can move and play games while learning."

4.4.2 Enhanced On-Task Behavior

Field observations indicated significant improvements in on-task behavior during the kinesthetic sessions compared to traditional English lessons. Prior to the intervention, the classroom teacher reported that approximately 40% of students

were frequently off-task during vocabulary instruction, exhibiting behaviors such as talking to peers, looking out the window, or engaging in other activities. During the kinesthetic intervention, off-task behavior decreased to less than 10%, with most students fully engaged in the physical activities. The researcher noted that the active nature of the lessons appeared to channel students' energy into learning rather than distraction.

4.4.3 Positive Emotional Responses

Thematic analysis revealed consistently positive emotional responses to the kinesthetic activities. Students were observed smiling, laughing, and showing enthusiasm during the movement-based lessons. Several students spontaneously expressed enjoyment, with comments such as "This is fun!" and "Can we do this again tomorrow?" The classroom teacher noted that students seemed more relaxed and less anxious during English lessons compared to before the intervention. This positive affective response is particularly noteworthy given the typically high levels of anxiety associated with English learning in Pakistani classrooms (Shamim, 2011).

4.4.4 Peer Collaboration and Support

The kinesthetic activities fostered increased peer collaboration and support. Students were observed helping each other remember gestures and actions, providing constructive feedback during role-plays, and working together in team-based activities. This collaborative dynamic contrasted with the typically individualistic nature of traditional vocabulary learning. The researcher noted that this peer interaction appeared to reinforce learning, as students explained concepts to each other and practiced vocabulary through social interaction.

4.4.5 Spontaneous Vocabulary Use

An unexpected finding was the increase in spontaneous vocabulary use outside of structured activities. Students were observed using target vocabulary words in casual conversation, in other subject areas, and even on the playground. For example, during a physical education class, several students were heard using the word "quickly" to encourage their teammates. The classroom teacher reported that students began incorporating target words into their writing assignments in other subjects, suggesting transfer of vocabulary knowledge to new contexts.

4.5 Interpretation of Findings

The findings of this study provide strong evidence for the effectiveness of kinesthetic learning strategies in enhancing English vocabulary acquisition among Grade 6 students in a Pakistani public school setting. The significant improvement in vocabulary scores, coupled with the observed increases in engagement and motivation, supports the integration of movement-based activities into ESL instruction.

The substantial increase in mean scores from 7.10 to 19.17 represents a 170% improvement, which is considerably higher than what might be expected through traditional instruction over a similar period. This finding aligns with previous research on the effectiveness of kinesthetic approaches in language learning (Macedonia & Klimesch, 2014; Tellier, 2008). The large effect size (Cohen's d = 2.97) further underscores the practical significance of the intervention, suggesting that kinesthetic strategies can produce meaningful improvements in vocabulary acquisition.

The reduction in score variability from pre-test to post-test, as indicated by the decrease in standard deviation from 4.86 to 3.20, suggests that the intervention was particularly beneficial for students who initially struggled with vocabulary. This finding has important implications for addressing achievement gaps in ESL classrooms, as kinesthetic approaches may provide an alternative pathway to learning for students who do not respond well to traditional instruction (Dunn & Dunn, 1997).

The analysis of vocabulary category performance revealed that kinesthetic strategies were effective across different types of words, including those that might seem less amenable to physical representation. The particularly strong improvement in action verbs and descriptive adjectives was expected, given their natural connection to physical movement. However, the significant improvement in abstract concepts suggests that even abstract vocabulary can be effectively taught through symbolic physical representation, extending the applicability of kinesthetic approaches beyond concrete vocabulary (Mavilidi et al., 2015).

The qualitative findings regarding student engagement and motivation provide valuable context for interpreting the quantitative results. The observed increases in active participation, on-task behavior, and positive emotional responses suggest that kinesthetic activities created a more engaging and enjoyable learning environment. This affective dimension may have contributed to the cognitive gains by reducing anxiety and increasing attention to learning tasks (MacIntyre & Gregersen, 2012). The peer collaboration and spontaneous vocabulary use observed during the intervention indicate that kinesthetic strategies fostered a more interactive and communicative learning environment, which is conducive to language acquisition (Ellis, 2003).

The findings of this study can be interpreted through several theoretical frameworks. From the perspective of embodied cognition theory, the physical enactment of vocabulary likely created stronger memory traces by engaging multiple sensory-motor systems (Barsalou, 2008). The depth of processing theory suggests that the meaningful engagement required by kinesthetic activities led to deeper cognitive processing and more durable memory traces (Craik & Lockhart, 1972). Additionally, the multiple intelligences framework indicates that the intervention successfully engaged bodily-kinesthetic intelligence, which is often neglected in traditional language instruction (Gardner, 1983).

The practical implications of these findings are significant for ESL instruction in Pakistani public schools and similar contexts. The kinesthetic strategies implemented in this study required minimal resources and could be easily integrated into existing curriculum frameworks, making them accessible even in resource-constrained settings. The observed improvements in both vocabulary acquisition and student engagement suggest that these approaches can address multiple challenges simultaneously, enhancing learning outcomes while creating more positive classroom environments.

5. Discussion

5.1 Interpretation of Findings in Relation to Literature

The findings of this study contribute to the growing body of research supporting kinesthetic learning strategies for vocabulary acquisition in ESL contexts. The significant improvement in vocabulary scores following the four-week intervention aligns with previous research on the effectiveness of Total Physical Response (TPR) and gesture-enhanced learning (Asher, 2009; Tellier, 2008). However, this study extends previous work by demonstrating these effects in a resource-constrained Pakistani public school setting, where such approaches have been underexplored.

The 170% improvement in mean vocabulary scores observed in this study is particularly noteworthy when compared to previous research. For instance, a study by Toumpaniari et al. (2015) found that preschool children who engaged in movement-based vocabulary activities showed a 40% improvement compared to traditional instruction. Similarly, Macedonia et al. (2019) reported a 60% improvement in adult language learners using gesture-enriched vocabulary training. The larger effect observed in the current study may be attributed to several factors, including the comprehensive nature of the intervention, which incorporated multiple types of kinesthetic activities, and the potentially greater impact of these approaches on younger learners in traditional classroom settings where movement-based learning is novel.

The finding that kinesthetic strategies were effective across different vocabulary categories, including abstract concepts, extends previous research that has primarily focused on concrete nouns and action verbs (Mavilidi et al., 2015). The significant improvement in abstract vocabulary suggests that symbolic physical representation can facilitate learning of words that lack direct physical referents. This finding supports Barsalou's (2008) perceptual symbol systems theory, which posits that even abstract concepts are grounded in sensory-motor experiences through metaphorical extension. The ability of students to create and remember gestures for abstract words like "freedom" and "justice" indicates the flexibility of embodied cognition in supporting diverse types of vocabulary learning.

The qualitative findings regarding increased student engagement and motivation corroborate previous research on the affective benefits of kinesthetic learning (Branigan, 2017). The observed reduction in off-task behavior and increase in spontaneous

vocabulary use suggest that movement-based activities created a more positive and interactive learning environment. This finding is particularly significant in the Pakistani context, where English learning is often associated with anxiety and disengagement (Shamim, 2011). The transformation of students' attitudes toward English learning has important implications for long-term language development, as positive affective factors are known to facilitate second language acquisition (Dörnyei, 2009).

5.2 Theoretical Implications

The findings of this study have several important theoretical implications. First, they provide empirical support for embodied cognition theory in the context of second language vocabulary acquisition. The significant improvement in vocabulary scores following kinesthetic instruction suggests that physical movement enhances memory encoding and retrieval, consistent with the proposition that cognitive processes are grounded in sensory-motor experiences (Barsalou, 2008; Glenberg & Gallese, 2012). The effectiveness of kinesthetic strategies across diverse vocabulary types further supports the embodied view that even abstract concepts are understood through metaphorical connections to physical experiences.

Second, the findings contribute to depth of processing theory (Craik & Lockhart, 1972) by demonstrating that kinesthetic activities promote deeper cognitive processing of vocabulary. The physical enactment of word meanings requires students to engage with vocabulary at a semantic level rather than merely processing form-level features. This deeper processing likely resulted in stronger memory traces, explaining the significant improvement in retention observed in the study.

Third, the results have implications for multiple intelligences theory (Gardner, 1983). The effectiveness of kinesthetic strategies for students who had previously struggled with traditional vocabulary instruction suggests that bodily-kinesthetic intelligence represents an important pathway to learning that is often neglected in conventional classrooms. The reduction in score variability from pre-test to post-test indicates that engaging multiple intelligences can help address achievement gaps and create more inclusive learning environments.

Finally, the findings contribute to sociocultural theory by highlighting the role of social interaction in kinesthetic vocabulary learning (Vygotsky, 1978). The observed peer collaboration and support during movement-based activities suggest that these approaches create opportunities for scaffolded learning within the zone of proximal development. The social dimension of kinesthetic activities may have enhanced learning by allowing students to observe, imitate, and receive feedback from peers.

5.3 Practical Implications

The findings of this study have several important practical implications for ESL instruction in Pakistani public schools and similar contexts. First, they provide evidence-based support for integrating kinesthetic learning strategies into vocabulary instruction. The significant improvement in vocabulary scores demonstrates that these approaches can be effective even in resource-constrained settings with large class sizes. Teachers can implement simple kinesthetic activities like TPR, gesture games, and role-plays without specialized equipment or extensive preparation, making these approaches accessible to educators with limited resources.

Second, the study offers specific recommendations for implementing kinesthetic strategies effectively. The progressive structure of the intervention, which began with basic TPR activities and gradually incorporated more complex role-plays and symbolic representations, proved successful in building students' comfort and competence with movement-based learning. This suggests that teachers should introduce kinesthetic activities gradually, starting with simple, structured exercises before moving to more open-ended tasks.

Third, the findings highlight the importance of adapting kinesthetic strategies to different vocabulary types. The success of symbolic gestures for abstract concepts suggests that teachers should not limit movement-based activities to concrete vocabulary but should develop creative ways to represent abstract ideas physically. This might involve using metaphorical gestures, role-playing scenarios that

illustrate abstract concepts, or creating physical representations of relationships between ideas.

Fourth, the observed improvements in student engagement and motivation suggest that kinesthetic strategies can help address affective barriers to language learning. Teachers in contexts where English is associated with anxiety and low motivation might use movement-based activities to create more positive learning experiences and foster greater student investment in language learning.

Finally, the study demonstrates that kinesthetic approaches can be integrated into existing curriculum frameworks rather than requiring a complete overhaul of instructional practices. The intervention was implemented within the regular English class schedule and aligned with the prescribed curriculum, suggesting that teachers can adopt these strategies without abandoning established learning objectives or facing resistance from educational authorities.

5.4 Limitations of the Study

Despite its contributions, this study has several limitations that should be acknowledged. First, the quasi-experimental design with a single group pre-test/post-test structure limits the ability to establish causal relationships with certainty. Without a control group, it is difficult to rule out alternative explanations for the observed improvements, such as maturation, testing effects, or other external factors. Future research should employ more rigorous designs, such as randomized controlled trials, to strengthen causal inferences.

Second, the small sample size (n = 24) limits the generalizability of the findings. While the intensive intervention within a single classroom allowed for careful implementation and observation, the results may not be representative of larger populations or different educational contexts. Replication with larger and more diverse samples would enhance the external validity of the findings.

Third, the short duration of the intervention (four weeks) raises questions about the long-term effects of kinesthetic vocabulary learning. While the immediate post-test showed significant improvements, it is unclear whether these gains would be maintained over time without continued reinforcement. Longitudinal research tracking vocabulary retention over extended periods would provide valuable insights into the durability of kinesthetic learning effects.

Fourth, the study focused primarily on receptive vocabulary knowledge as measured by a multiple-choice test. While this type of assessment is efficient and objective, it does not capture productive vocabulary use or the ability to apply words in authentic communication. Future research should incorporate more comprehensive measures of vocabulary knowledge, including productive assessments and contextualized language use.

Finally, the study was conducted in a single school in one district of Pakistan, limiting its applicability to diverse educational contexts within the country and beyond. Cultural factors, educational policies, and resource availability vary considerably across different regions, potentially influencing the implementation and outcomes of kinesthetic strategies. Research in varied contexts would provide a more comprehensive understanding of how these approaches can be adapted to different settings.

5.5 Directions for Future Research

The findings of this study suggest several promising directions for future research on kinesthetic vocabulary learning in ESL contexts. First, experimental studies with control groups and random assignment would strengthen causal claims about the effectiveness of kinesthetic strategies. Such studies could compare different types of kinesthetic approaches (e.g., TPR vs. gesture-enhanced learning vs. role-playing) to identify which methods are most effective for different vocabulary types and learner populations.

Second, longitudinal research is needed to investigate the long-term effects of kinesthetic vocabulary learning. Studies tracking students over several months or years could determine whether the gains observed in short-term interventions are maintained and whether kinesthetic approaches lead to more efficient vocabulary growth over time.

Third, research examining individual differences in response to kinesthetic instruction would provide valuable insights into how these approaches can be tailored to meet diverse learner needs. Studies could investigate factors such as learning style preferences, prior language learning experience, and cognitive

abilities that might influence the effectiveness of kinesthetic strategies for different students.

Fourth, research investigating the implementation of kinesthetic approaches at scale would provide valuable information about how these strategies can be integrated into educational systems. Studies could examine teacher training needs, curriculum adaptation requirements, and systemic supports necessary for widespread adoption of kinesthetic vocabulary instruction.

Finally, cross-cultural research comparing the effectiveness of kinesthetic approaches in different educational contexts would enhance understanding of how cultural factors influence the implementation and outcomes of movement-based learning. Such studies could identify culturally appropriate adaptations of kinesthetic strategies and provide insights into the universal and context-specific aspects of embodied language learning.

6. Conclusions

This study examined the impact of kinesthetic learning strategies on English vocabulary acquisition among Grade 6 students in a Pakistani public school. The findings provide compelling evidence that movement-based activities can significantly enhance vocabulary learning, even in resource-constrained educational contexts. The substantial improvement in vocabulary scores, coupled with observed increases in student engagement and motivation, underscores the value of kinesthetic approaches for ESL instruction.

The 170% improvement in mean vocabulary scores from pre-test to post-test demonstrates the powerful effect of the kinesthetic intervention. The large effect size (Cohen's d = 2.97) indicates that this improvement was not merely statistically significant but also educationally meaningful. The reduction in score variability suggests that kinesthetic strategies were particularly beneficial for students who initially struggled with vocabulary, potentially helping to address achievement gaps in ESL classrooms.

The effectiveness of kinesthetic approaches across diverse vocabulary types, including abstract concepts, extends our understanding of embodied cognition in language learning. The ability of students to create and remember physical representations for both concrete and abstract words suggests that sensory-motor experiences play a fundamental role in vocabulary acquisition, supporting theoretical frameworks that emphasize the embodied nature of cognition.

The qualitative findings regarding student engagement and motivation highlight an important additional benefit of kinesthetic learning strategies. The observed increases in active participation, on-task behavior, and positive emotional responses suggest that movement-based activities create more engaging and enjoyable learning environments. This affective dimension is particularly significant in contexts like Pakistan, where English learning is often associated with anxiety and disengagement.

The practical implications of these findings are substantial. Kinesthetic learning strategies require minimal resources and can be easily integrated into existing curriculum frameworks, making them accessible even in resource-constrained settings. The specific activities implemented in this study—Total Physical Response, gesture games, role-playing, and symbolic representation—provide a model that teachers can adapt to their own classrooms. The progressive structure of the intervention, which moved from simple to complex activities, offers a blueprint for implementing kinesthetic strategies effectively.

Based on the findings of this study, several recommendations can be offered for integrating kinesthetic methods into ESL curricula. First, teacher education programs should include training in kinesthetic learning strategies to equip educators with the knowledge and skills needed to implement these approaches effectively. Second, curriculum developers should incorporate movement-based activities into teaching materials and guide teachers on adapting these strategies to different vocabulary types and learning objectives. Third, educational administrators should create supportive policies that encourage pedagogical innovation and provide teachers with the flexibility to implement kinesthetic approaches. Finally, assessment practices should evolve to recognize the diverse ways in which students acquire and demonstrate vocabulary knowledge, moving beyond traditional paper-and-pencil tests to include more dynamic and authentic measures of language proficiency.

In conclusion, this study demonstrates that kinesthetic learning strategies represent a powerful approach to enhancing English vocabulary acquisition among Grade 6 students in Pakistani public schools. By engaging students' bodies as well as their minds, these approaches create richer, more memorable learning experiences that lead to significant improvements in vocabulary knowledge. The findings contribute to our theoretical understanding of embodied cognition in language learning while offering practical guidance for educators seeking to create more engaging and effective ESL instruction. As English continues to play a crucial role in education and opportunity in Pakistan and similar contexts, kinesthetic learning strategies offer a promising pathway to helping students develop the vocabulary knowledge they need to succeed.

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