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Research article

Exploring Cognitive Linguistics for Improving Phrasal Verb Learning in Vietnamese EFL Contexts

Explorando la lingüística cognitiva para mejorar el aprendizaje de verbos frasales en contextos de inglés como lengua extranjera (EFL) en vietnamita

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Abstract
Introduction: This study aims to evaluate the effectiveness of cognitive linguistics-based instruction in enhancing the comprehension and retention of English Phrasal verbs (PVs) among Vietnamese EFL learners. **Methodology:** Eighty business-majored students from two classes were selected and divided into two groups, including a control group (n=40) and an experimental group (n=40). These participants were exposed to an intervention that contrasts cognitive linguistics-based PV instruction for the experimental group against traditional teaching methods for the control group. The study utilized the quantitative measures, with pre-, post- and delayed posttests, under analysis of descriptive and inferential statistics.

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Results: The findings revealed that the cognitive-based approach, rooted in understanding prototypical and derivative meanings of PVs and particles, image schemas, and metaphorical extensions and main verb grouping, emerged as a potential alternative to the traditional method of PV instruction. **Discussion:** The research offered a holistic understanding of the merits of cognitive-based methods for teaching English PVs. The results indicated meaningful pedagogical potential for improving phrasal verb instruction. **Conclusions:** The findings hold implications for the pedagogy of some other linguistic areas from this approach. The study also highlights the value of cognitive linguistics-based instruction as a promising approach in the Vietnamese EFL context.

Keywords: EFL learners; cognitive linguistics-based instruction; English Phrasal verbs; intervention; prototypical; derivative; metaphorical extensions.

Resumen
Introducción: Este estudio tiene como objetivo evaluar la eficacia de la instrucción basada en la lingüística cognitiva para mejorar la comprensión y retención de los phrasal verbs (PVs) en inglés entre estudiantes vietnamitas de inglés como lengua extranjera (EFL). **Metodología:** Ochenta estudiantes de negocios de dos clases fueron seleccionados y divididos en dos grupos: un grupo de control (n = 40) y un grupo experimental (n = 40). Estos participantes fueron expuestos a una intervención que contrastaba la instrucción de PVs basada en la lingüística cognitiva para el grupo experimental con los métodos tradicionales de enseñanza para el grupo de control. El estudio utilizó medidas cuantitativas, con pruebas previas, posteriores e intermedias diferidas, bajo análisis estadístico descriptivo e inferencial. **Resultados:** Los hallazgos revelaron que el enfoque cognitivo, basado en la comprensión de los significados prototípicos y derivados de los PVs y las partículas, los esquemas de imagen, las extensiones metafóricas y la agrupación por verbo principal, surgió como una alternativa potencial al método tradicional de instrucción de PVs. **Discusión:** La investigación ofreció una comprensión holística de los méritos de los métodos basados en la lingüística cognitiva para la enseñanza de los PVs en inglés. Los resultados indicaron un potencial pedagógico significativo para mejorar la instrucción de los phrasal verbs. **Conclusiones:** Los hallazgos tienen implicaciones para la pedagogía de otras áreas lingüísticas a partir de este enfoque. El estudio también destaca el valor de la instrucción basada en la lingüística cognitiva como un enfoque prometedor en el contexto vietnamita de EFL.

Palabras clave: estudiantes de EFL; instrucción basada en la lingüística cognitiva; phrasal verbs en inglés; intervención; prototípico; derivado; extensiones metafóricas.

1. Introduction

Cognitive-based approaches to teaching English phrasal verbs (PVs) align with the latest insights in language acquisition, offering a deeper, more intuitive learning experience for EFL students. These methods, rooted in cognitive linguistics, focus on how learners process and internalize language, shifting away from mere memorization towards understanding the conceptual foundations of PVs.

This alignment with learners' cognitive processes not only makes learning more effective but also enhances the ability to apply PVs in various communicative contexts, fostering better linguistic competence and confidence. By leveraging cognitive strategies, these approaches provide learners with tools to decode and predict PV meanings, improving long-term retention and the transferability of knowledge.

The emphasis on meaning construction and active engagement with the language promotes an interactive learning environment, catering to diverse cognitive styles and making learning both enjoyable and effective. Ultimately, cognitive-based approaches to PV instruction improve comprehension, retention, and practical usage, offering significant benefits for achieving fluency in English.

Furthermore, English PVs are a pervasive and multifaceted linguistic phenomenon. Their prevalence and semantic complexity make them a crucial yet formidable aspect for ESL/EFL learners. Numerous scholars (Gardner & Davies, 2007; Liao & Fukuya, 2004; Neagu, 2007; Rudzka-Ostyn, 2008) highlight that even advanced EFL learners often shy away from employing English PVs due to their syntactic and semantic intricacies. The complexity of PVs lies in their unpredictability and lack of compositional meaning, rendering them difficult to interpret (Cornell, 1985; Moon, 1997; Side, 1990).

These are amplified by the sheer abundance and frequent usage of PVs in spoken English. Celce-Murcia and Larsen-Freeman (1983, p. 425) describe PVs as "ubiquitous", with Gardner and Davies (2007) asserting that learners may encounter one PV in every 150 words of an English text. While foreign learners tend to avoid PVs (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993; Liao & Fukuya, 2004), native English speakers continue to effortlessly create new PVs often endowing them with fresh meanings in diverse contexts (Dwight, 1971).

Gardner and Davies (2007) empirically identified approximately five distinct meanings for each frequently used PV. As productive elements of the language, PVs pose a formidable challenge for learners while remaining an integral part of native speakers' communication). Moreover, the teaching of PVs through textbooks often underscores their arbitrary nature, resulting in an unsystematic approach (Cornell, 1985; Darwin & Gray, 1999; Gardner & Davies, 2007; Moon, 1997; Tyler, 2004). Rudzka-Ostyn (2008) succinctly captures the challenge faced by EFL learners: "All these so-called 'idiomatic PVs' would therefore have to be learned one by one, an arduous, time-consuming and not very rational task" (Rudzka-Ostyn, 2008, p. 3).

While the complexities of English PVs are well-documented in the literature, the specific challenges faced by Vietnamese EFL learners in mastering these linguistic constructs within their linguistic and educational context are under-researched. Some have recently explored the difficulties of the post-graduates in using PVs in writing academic English (Tran & Pham, 2023; Tran & Tran, 2019).

Vietnamese, with its unique linguistic and educational traits, poses specific challenges for the Vietnamese when dealing with English PVs. Syntactic and semantic differences between the two languages further complicate the EFL learners' understanding and usage of this lexical area. Moreover, the scarcity of resources tailored to Vietnamese learners exacerbates the issue. These contextual challenges underscore the pressing need for research that investigates instructional methods that acknowledge the distinct linguistic and EFL educational environment of the Vietnamese learners.

As such, this study seeks to bridge the gap by exploring the potential of cognitive-based methods in teaching English PVs within the Vietnamese context, aiming to assist Vietnamese EFL learners in comprehending and retaining the nuances of PVs while extrapolating metaphorical knowledge to new instances. The research questions are therefore framed:

1) *Does cognitive knowledge of VP improve Vietnamese EFL learners' ability to understand and retain PV meanings more effectively than rote learning of PVs as whole units with corpus-based lists of common PVs?*

2) *Does cognitive knowledge of PVs enhance the Vietnamese EFL learners' capacity to deduce the meanings of novel PVs more effectively than studying PVs as whole units?*

2. Literature Review

2.1. Cognitive-Based Approaches to English PVs

Within the Cognitive Linguistics (CL) framework, particularly under the umbrella of Cognitive Grammar, English PVs manifest as instances of relationships, as outlined by Langacker (2012) and Lindstromberg (2022). These verbs are regarded as composite structures, where the verb and particle components are semantically intertwined to create a unified construction. Thus, each PV embodies a relational expression, making the whole construction a complex relation in itself.

For instance, the work of Mahpeykar and Tyler (2015) builds upon the polysemy network introduced by Tyler and Evans (2004), focusing on particles' semantics in verbs like "*get up*", "*take up*", "*get out*", and "*take out*". Their findings emphasize that PV meanings stem from embodied experience and background knowledge, leading to systematic yet motivated interpretations beyond literal composition. This concept of meaning extension, progressing from core senses to distinct nuances, sheds light on the systematic polysemy inherent in English PVs.

Cognitive-based approaches to studying English PVs explore the realm of image-schemas, with metaphorical extension playing a central role in comprehension. The figurative meanings of PVs may be housed within the verb component, the particle, or both (Donati & Strapparava, 2023; Morgan, 1997). Lindner (1983), through mapping spatial relations and their metaphorical extensions onto image schemas instantiated by particles like "*up*" and "*out*", illustrates how these elements systematically contribute to PV meaning. This metaphorical extension framework offers learners a way to penetrate the opacity and idiomatic nature of PVs, facilitating deeper understanding (Donati & Strapparava, 2023).

In Cognitive Linguistics, emphasis is placed on the role of the particle in determining a PV's meaning. The prototypical meaning associated with a particle has the power to reshape the overall interpretation of the verb-noun pair (Rudzka-Ostyn, 2008). Notably, many common PVs feature a single particle with several ostensibly distinct meanings, which upon closer examination, reveal interconnectedness (Rudzka-Ostyn, 2008). Lu and Sun (2017, p. 159) highlight that cognitive linguistics demonstrates the cognitive motivations behind the polysemy and underscores the role of prepositions in phrasal verbs (PVs) as being closely related to metaphors.

Consequently, a deeper comprehension of the relations between the particles can enhance and simplify the learning of PVs. This perspective, echoed by Kurtyka et al. (2001) and Lakoff et al. (1983), highlights the pivotal role of the particle in PVs. Similarly, Armstrong (2004), Jackendoff (1997), and Celce-Murcia and Larsen-Freeman (1983) contend that particles are essential for grouping and comprehension. As elucidated by Neagu (2007), when the verb's meaning is clear and the particle has a spatial quality, understanding PVs becomes more accessible.

2.2. Factors Affecting the Instruction of English PVs for EFL Learners

The traditional approach to English PVs involves rote learning of translations as these lexical units PVs are considered idiomatic expressions with arbitrary figurative meanings (Boers, 2004). Some scholars suggest that PVs be learned as indivisible units without analyzing their components (Gibbs, 1990, 1991; Nippold, 1998). The particle in PVs is believed to have no significant role in their meanings (Fraser, 1975). Researchers such as Gardner and Davies (2007), Strong and Boers (2019), or Tyler and Evans (2003) have also criticized the way PVs are presented in textbooks, where they are typically listed with definitions, followed by gap-fill exercises.

This approach can lead to a superficial and inadequate comprehension of these linguistic constructs. Van der Veer (2000) cautions against memorization without conceptual understanding, as it could hinder the application of acquired knowledge to novel contexts. Contemporary scholars in Teaching English as a Foreign Language (TEFL) underscore the crucial role of PVs in enhancing language proficiency, as emphasized by Moon (1997), Schmitt and Siyanova (2007), and Wray (2002). In this light, they emphasize several key considerations for effective PV pedagogy.

One primary consideration for English language teachers is the selection of which PVs to include in the curriculum. To aid in this decision-making process, frequency lists have emerged as an essential tool (Gardner & Davies, 2007; Lin, 2018; Liu & Myers, 2020). These lists enable educators to prioritize PVs, particularly those incorporating particles like "*up*", "*out*", and "*off*", which possess multiple meanings and widespread usage, as highlighted by Lindner (1983).

Moreover, the disparities between learners' native languages and English pose a significant challenge in the acquisition of English PVs. Scholars have identified inconsistencies between the first language (L1) and the target language, as well as the scarcity of PVs in some L1s, as major barriers to using PVs in EFL/ESL contexts (Dagut & Laufer, 1985; Ellis & Sagarra, 2010; Liao & Fukuya, 2004). To bridge this gap, exercises that compare PVs between English and the learners' native language can be instrumental in highlighting linguistic similarities and differences, as demonstrated by Alhamdan et al. (2018) in their study focusing on learners from Arabic backgrounds.

Furthermore, an understanding of the systematic nature of the abstract senses of PVs can significantly aid in the learning process. Neagu (2007) emphasizes the existence of patterns in the development of abstract meanings, suggesting that recognizing these patterns could alleviate the burden of memorization for EFL learners.

In line with these considerations, this study aims to adopt a cognitive-based approach, incorporating the critical aspects outlined above. By focusing on the frequency of PVs, cross-linguistic differences, and the systematicity of abstract meanings, the study seeks to enhance the pedagogical strategies surrounding English PVs. The ultimate goal is to equip Vietnamese EFL learners with a comprehensive understanding of PVs, enabling them to utilize these linguistic constructs effectively in various contexts.

2.3. Previous Research on Instructing English PVs Using the Cognitive-Based Approach

The exploration of teaching English PVs through the cognitive-based approach has been a subject of several detailed experiments, shedding light on various key aspects and dynamics of the learning process. A multitude of studies (Boers, 2000; Karahan, 2015; Kövecses & Szabo 1996; Lee,2012; Lin,2018; Lu & Sun,2017; Mohammed,2019; Side,1990; Spring,2018;Talebinejad & Sadri,2013; White,2012; & Yasuda, 2010) have contributed significantly to our understanding of the cognitive learning paradigm in the context of teaching English PVs. These studies have primarily focused on undergraduate participants, with varying participant numbers ranging from as few as 12 to as many as 120 learners, representing a diverse array of first language backgrounds, including Arabic, Hungarian, French, Japanese, Chinese, Korean, Taiwanese, Iranian, Turkish, and Vietnamese native speakers.

The experimental durations varied considerably, with some studies being conducted over two or three 10 to 15-minute sessions, while others opted for more extensive periods, such as two three-hour lessons or even spanning across seven weeks. The range of PVs introduced also exhibited substantial diversity, varying from 10 to 30 PVs, and the number of associated particles showed a similar level of variability, ranging from 2 to 17. Notably, Spring's study (2018) stood out with its incorporation of 17 of the most prevalent particles identified by Garnier and Schmitt (2015), including "*up*", "*down*", "*in*", "*out*", "*on*", "*off*", "*back*", "*away*", "*after*", "*under*", "*over*", "*across*", "*along*", "*about/around*", "*through*", "*apart*", and "*together*".

In these experiments, the discernible pattern was that learners were guided to perceive PVs as analytical units and encouraged to focus on the nuanced senses of their constituent particles. This cognitive learning process was facilitated by providing learners with a set of selected particles and instructions on comprehending particle meanings through the lens of image schemata. Most of these investigations tasked learners with analyzing and comprehending PV meanings based on orientational metaphors, while some studies, such as White's (2012), took this a step further by incorporating mind maps to illustrate particle senses and foster the concept of "conceptual mediation".

White's four-step process involved exposing students to PVs as constructions embedded with "conceptual motivation", encouraging them to visually depict and share the meanings of PVs, and refining their comprehension through sharing and deliberation. Similarly, Mohammed's study (2019) employed mind maps to guide learners in creating distinct representations of particle meanings, drawing from the interpretations presented in Rudzka-Ostyn (2008) to inform their instructional design.

Findings from the above studies confirm the positive impact of the cognitive-based approach on PV comprehension and retention, with clear gains from pre-test to post-tests. Cognitive groups consistently recalled meanings more effectively and transferred understanding to untaught PVs. Notably, Spring (2018) reported significant improvement in explicitly taught and novel PVs, with the cognitive group showing a superior grasp of new PVs. Researchers link these favorable outcomes to orientational metaphor analysis, promoting deeper processing than rote memorization. Explicit intrusion of metaphors can enhance comprehension and accurate PV production.

However, some studies indicated less pronounced or non-significant improvements within the cognitive groups, often citing factors beyond the cognitive-based approach, such as limited classroom instruction time (Boers, 2000), inadequacy in native language input (Lu & Sun, 2017), methodological nuances (White, 2012), or instructional material efficacy (Mohammed, 2019). While White's (2012) study reported a modest and statistically insignificant performance improvement within the cognitive group during the post-test phase, Karahan (2015) noted the absence of a significant interaction between teaching style and enhancement from pre-test to post-test.

Boers' (2000) study revealed that while the cognitive group performed better than the control group concerning presented PVs, this advantage did not extend to novel PVs. Similarly, Mohammed (2019) observed significant enhancement within the experiment group's retention of PV meanings and their ability to extrapolate particles' literal meanings, yet this improvement was not distinctively superior to the control group instructed through more conventional methodologies.

The implications of these studies offer practical pedagogical strategies for effectively teaching English PVs within the cognitive framework. The instruction of particles has proven effective in supporting PV acquisition (Lee, 2012), while analyzing orientational metaphors within individual particles helps learners navigate PVs more efficiently than rote memorization (Boers, 2000). Inferring meaning rather than mere memorization fosters retention of idiomatic uses (White, 2012). Educators should prioritize frequent PVs identified in corpus studies and divide them by particle meanings to strengthen explicit instruction, particularly for PVs with multiple meanings. Native language input remains crucial, highlighting the need for varied approaches tailored to learners' backgrounds.

In essence, these studies collectively advocate for an instructional paradigm rooted in cognitive methodologies, recommending strategies that encompass metaphorical analysis, inferential understanding, and selective emphasis on pertinent PVs. These insights stand to refine the teaching of English PVs by ensuring meaningful comprehension and enduring retention, paving the way for more effective language instruction methodologies and enriching the overall learning experience for students.

3. Methodology

This study is centered on the PVs featured in the Vietnamese national high-school textbooks as well as those presented in the currently employed instructional materials of the study participants, which is "*English File - Pre-intermediate*" by Latham-Koenig et al. (2023). This investigation is also delimited to 15 most frequently encountered particles. This section outlines the research methodology, including participant selection, the instruments, the instructional procedures, and data collection.

3.1. Participants

This study incorporated 80 undergraduate business majors from a Vietnamese university, proficient in English at the intermediate level according to the Common European Framework of Reference for Languages (CEFR). Participants were selected using stratified random sampling to ensure a balanced representation of genders and academic performance. They were then randomly assigned to two groups: a control group (n=40) and an experimental group (n=40) to control for any pre-existing differences between the groups.

3.2. Research Design

We employed a quasi-experimental design with pre-test, post-test, and delayed post-test measures. The control group received traditional instruction on phrasal verbs, while the experimental group received instruction based on cognitive linguistics principles. The design ensured that any differences in phrasal verb comprehension and retention could be attributed to the type of instruction received.

3.3. Instructional Intervention

The experimental group underwent a specially designed cognitive linguistics-based instructional intervention. This intervention involved teaching strategies that highlighted the conceptual metaphors and image schemas underlying phrasal verbs, as well as the semantic networks connecting different phrasal verbs with the same particle or verb. The control group, on the other hand, received standard instruction based on repetition and memorization techniques as outlined in their course textbook.

The students received the specified instruction for a duration of 4 weeks, two 90-minute classes each, in September and October 2024. The teaching material consists of a list of PVs in the Vietnamese national high-school textbooks (totaling 81) and "*English File - Pre-intermediate*" (totaling 33) and 15 particles. Eighty students were randomly divided into two groups – a control group and CL-based group.

The Control group (henceforth, CG) received traditional PV instruction, characterized by translation, rote memorization and context-based learning without delving into the cognitive aspects of PVs. This served as a baseline for comparing the effectiveness of the CL-based approach. The teacher presented the list of PVs. They were required to fill in their Vietnamese translations and example sentences for individual PVs. In class, the teacher explicitly explained the meaning and usage of PVs to students. For example, the teacher said that the PV "*come off*" means "*become detached*", "*succeed*", or "*occur*", and provided additional examples in which the PV "*come off*" is used. The students' understanding of the PVs was also enhanced through gap-filling of individual sentences and short dialogues.

The CL-based group (henceforth CLG), on the other hand, received a specially designed instructional program grounded in CL principles. This program emphasized the comprehension of PVs using image-schemas and metaphorical extensions. Participants were introduced to the core meanings of 15 particles and their contributions to the overall meaning of PVs, making use of the graphical presentation of particle' meanings (Rudzka-Ostyn, 2003, p. 4), such as **Figures 1** and **2**, and others, and mind maps showing the possible key senses of the particle, such as **Figure 3**.

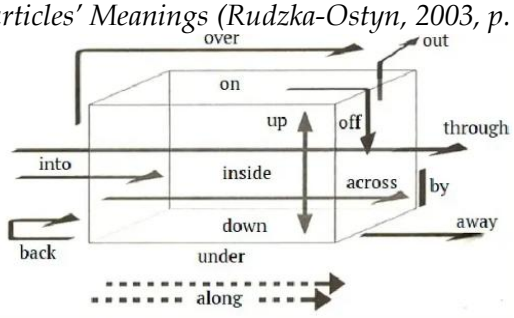
Figure 1.

Mental Image of 'in' and 'out' (Tyler & Evans, 2004).

Source: Own elaboration.

Figure 2.

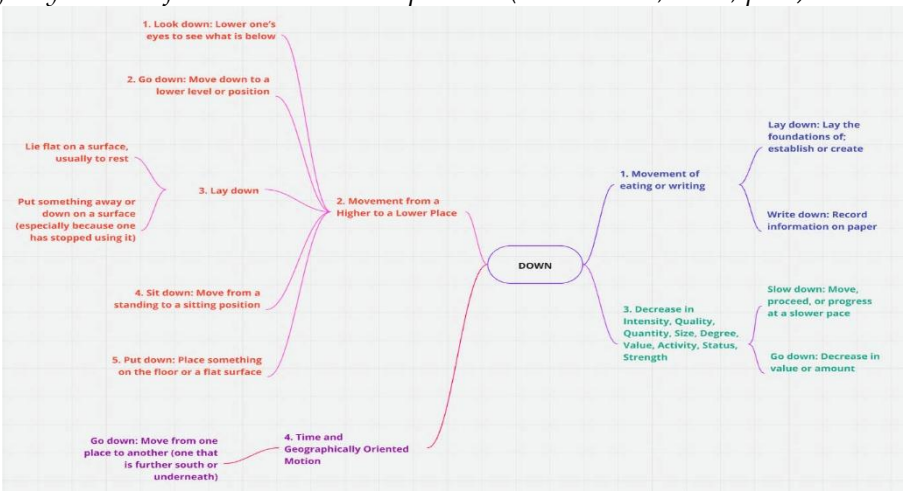
Graphical Presentation of Particles' Meanings (Rudzka-Ostyn, 2003, p. 4)



Source: Own elaboration.

Figure 3.

*A Mind Map of Key Senses of '**down**' with Example PVs (Mohammed, 2019, p.17)*



Source: Own elaboration.

Instructional methods within CLG were interactive, as the students were presented with a problem to solve, and they worked together to come up with a solution. The teacher also navigated and focused on the students' engagement with instructional materials to find and then match the PVs rather than simply passively receive information from lecturing. Additionally, to helps students to grasp and retain the phrasal verbs, the study grouped main verbs of PVs into categories such as verbs of communication, state, motion, and feeling, among others.

For example, the main verb "*come*" as in "*come across*", "*come down*", "*come off*", "*come up with*", the verb "*put*" as in "*put down*", "*put forward*", "*put out*', the verb "*take*" as in "*take off*', "*take up*", "*take over*", and the verb '*get*' as in '*get down*', '*get on*', or '*get off*' can be grouped under the verbs of movement. Alternatively, grouping the phrasal verbs "get in" and "get out" together to facilitate students' seeing the act of entering or leaving a place, rendering their attention and retention of the meanings.

Therefore, by grouping PVs by main verbs, students can learn all the different ways that a particular verb can be used, as well as see the relationships between different PVs. In other words, grouping of PVs as part of CL-based approach can help the learners gain a better understanding of how the meanings of PVs are derived and related, contributing student memory and retention of PVs. Although dividing PVs according to the meaning of their particles can make explicit PVs instruction efficient (Karahan, 2015), the present study chose to group main verbs of PVs based on the belief that the main verbs play an equal semantically significant role in determining PV meanings. Moreover, the main verbs can often be learned through context and usage, enhancing the ease of learning and retention.

3.4. Instruments

The study involved three tests, including pre-test, post-test and delayed post-test. All the tests were designed in the form of gap-filling of missing PVs in individual sentences.

The *pre-test* (Appendix) comprises 50 multiple-choice statements. Its purpose was to evaluate the participants' comprehension of the PVs they have previously encountered. Accordingly, it was constructed based on the 81 PVs introduced in Vietnamese national high-school textbooks. These 81 PVs encompass 28 lexical verbs (including "*break*", "*bring*", "*call*", "*carry*", "*come*", "*cut*", "*dress*", "*drop*", "*fall*", "*fill*", "*get*", "*give*", "*go*", "*hand*", "*hold*", "*look*", "*make*", "*put*", "*send*", "*set*", "*settle*", "*show*", "*stand*", "*take*", "*try*", "*turn*", "*wear*", "*wipe*") and 20 particles (including '*about*', '*across*', '*after*', '*along*', '*away*', '*by*', '*down*', '*for*', '*forward*', '*in*', '*into*', "*off*", "*on*", "*out*", "*over*", "*round*", "*through*", "*under*", "*up*", "*upon*").

From this list of 81 PVs, we selected 50 PVs based on two specific criteria. Firstly, we ensured that these PVs were included in The PHaVE List (Garnier & Schmitt, 2015). Secondly, we ascertained that each of these 50 PVs consists of one of the 15 particles we chose to emphasize in this study. To test the students' true understanding of the meanings of the PVs, the learnt PVs were used in new contexts distinct from the statements in the learned materials, the PVs were incorporated into novel sentences sourced from reputable academic references, namely Garnier and Schmitt (2015), Liu and Myers (2020), and Rudzka-Ostyn (2008).

The *post-test* aimed to evaluate both the participants' understanding of not only the PVs they had previously learnt but also some novel PVs. Therefore, the post-test comprises 30 learnt PVs and 20 novel PVs. The PVs were used in new contexts distinct from the statements in the pre-test. This post-test was administered in the fourth week, after the treatment.

The *delayed post-test* was conducted with the objective of evaluating the participants' long-term retention of PV knowledge. This assessment was administered four weeks after the treatment, a duration deemed suitable for students to assimilate, apply, and reinforce their PV knowledge and competencies. This final test included the PVs previously examined in the two preceding assessments, in addition to those covered in the instructional materials provided during the implementation phase.

3.5. Data Collection Procedure

Data were collected at three different points: before the intervention (pre-test), immediately after the intervention (post-test), and one month following the intervention (delayed post-test). The pre-test measured baseline knowledge, the post-test measured immediate learning, and the delayed post-test assessed retention over time.

3.6. Data Analysis

Quantitative data obtained from the tests were analyzed using SPSS software. We conducted an Analysis of Covariance (ANCOVA) to control for any initial differences in the pre-test scores when comparing post-test and delayed post-test results. Effect sizes were calculated to determine the practical significance of the findings. Additionally, we performed repeated measures ANOVA to examine the within-subject effects over time for both groups.

3.7. Ethical Consideration

All research activities were conducted in compliance with ethical standards. Participants were informed about the purpose of the study and the nature of the intervention. Informed consent was obtained, and participants were assured of their anonymity and the confidentiality of their responses. The study received ethical approval from the university's review board.

4. Results

4.1. Descriptive Statistics

Descriptive statistics for the pre-test, post-test, and delayed test scores of both the CG and the CLG are presented in Table 1:

Table 1.

Descriptive Statistics of Pre-test, Post-test, and Delayed Test Scores

Group	Test Type	Mean Score	Standard Deviation	Minimum Score	Maximum Score
CG (n = 40)	Pre-test	45.32	12.18	20	70
	Post-test	61.74	13.56	30	86
	Delayed test	58.21	14.22	26	80
CLG (n = 40)	Pre-test	46.18	11.86	22	68
	Post-test	70.45	14.98	36	90
	Delayed test	66.79	15.32	32	88

Source: Own elaboration.

4.1.1. Pre-test Scores

The pre-test scores of both the CG and the CLG were examined to ensure that the participants' baseline knowledge of PVs was comparable before the instructional intervention. As can be seen from Table 1, the minimum and maximum scores for the pre-test were 20 and 70 for the CG and 22 and 68 for the CLG.

4.1.2. Post-test Scores

The post-test scores were analyzed to determine the immediate effects of the instructional interventions on the participants' understanding both learnt PVs and novel PVs. As can be seen in Table 1, the minimum and maximum scores for the post-test were 30 and 86 for the CG and 36 and 90 for the CLG.

4.1.3. Delayed Post -test Scores

To assess the long-term retention of PV knowledge, delayed post-test scores were collected four weeks after the completion of the instructional interventions. From Table 1, we can that the minimum and maximum scores for the delayed test were 26 and 80 for the CG and 32 and 88 for the CLG.

4.2. Inferential Statistics

Inferential statistics were used to examine whether there were statistically significant differences in the mean scores between the CG and the CLG for each of the three tests. Independent samples t-tests were conducted, and the results are summarized in Table 2:

Table 2.

Independent Samples t-Tests for Group Differences

Test Type	t-value	df	p-value	Effect Size (Cohen's d)
Pre-test	0.42	78	0.6760	0.07
Post-test	4.68	78	0.0003	0.66
Delayed Test	3.90	78	0.0002	0.55

Source: Own elaboration.

As can be seen from Table 2, the p-value for the pre-test indicates that there was no statistically significant difference in the baseline knowledge between the two groups ($p > .05$). Meanwhile, regarding the post-test, the independent samples t-test for the post-test scores reveals a statistically significant difference between the CG and the CLG ($p<.001$), suggesting that there was an immediate effect of the instructional intervention. As for the delayed post test scores, the p-value indicates that there was a statistically significant difference in the scores between the two groups ($p<.001$), which indicates that the CL-based PV instructions had positive impact on the long-term retention of PV knowledge within the CLG.

5. Discussion

The findings of this study reveal that CL-based instruction significantly enhanced the comprehension, retention, and long-term retention of PV knowledge among Vietnamese EFL learners. First, both groups exhibited improvements in immediate post-test scores with the mean scores of 61.74 for the CG group and 70.45 for the CLG compared with those of 45.32 and 46.18 from the pre-test for the CG and CLG, respectively (Table 1), reflecting the effectiveness of instruction in both cases.

However, the CLG outperformed the CG, as indicated by their significantly higher post-test and delayed test scores, with the mean scores of 58.21 and 66.79 for the CG and CLG, respectively. This suggests that cognitive instruction has a more substantial impact on both short-term understanding and long-term retention of PVs, aligning with the research findings of studies such as Boers (2000), Karahan (2015), Kövecses and Szabo (1996), Lee (2012), Lin (2018), Lu and Sun (2017), Mohammed (2019), Side (1990), Spring (2018), Talebinejad and Sadri (2013), White (2012), and Yasuda (2010).

Additionally, the study result showed that the participants in the CG under traditional instruction faced challenges in retaining their PV knowledge over time. This aligns with prior studies (Cornell, 1985; Gibbs, 1990, 1991; Nippold, 1998) that have highlighted the limitations of traditional PV instruction, which often relies on rote memorization and lacks systematicity. The results also underscore the potential benefits of CL-based instruction for teaching English PVs to Vietnamese EFL learners.

For example, understanding of language influenced by physical experiences in the world enables students to interpret and comprehend the PV '*come off*' as in "Do you think the dirty mark will *come off*?" (Item 13, Appendix- Posttest) as a metaphor for the removal of something form a surface or form a person's body. This metaphor is motivated by the physical experience of removing something, like a mark from a wall, and extends to figurative uses for things not physically attached. It reflects the learners' linguistic and cultural context, offering an alternative to conventional methods. Students can apply CL motivations to infer meanings of new phrasal verbs, and findings show CL-based instruction supports long-term retention and retrieval.

Also, test results showed that grouping phrasal verbs by their main verbs helps learners grasp and retain them better. Knowing that a verb can form multiple PVs improves recall. Focusing on the semantics of verbs and particles clarifies how PV meanings are derived and related, enhancing memory and retention

The CG might view PVs as unanalyzable word combinations or set expressions with meanings that appear to be randomly put together, as suggested by Yasuda(2010). They might not have a complete understanding of the directional aspects of PVs and encounter challenges when trying to comprehend new ones. The structural distinctions between English and Vietnamese could compel learners to memorize PVs without a compelling incentive to break them down into distinct components.

The findings of this study carry important pedagogical implications for the teaching of PVs to EFL learners from the CL-based instruction. Firstly, the study demonstrated that teaching basic CL concepts and motivations can significantly improve PV learning outcomes, as educators use CL frameworks to explain the meanings of PVs from individual components, deepening comprehension (Gardner and Davies, 2007). Second, grouping PVs by main verbs proved effective, helping learners connect meanings and recognize PV syntactic patterns, echoing Dehé (2002) and Moon (1997).

Third, fostering a fun and supportive learning environment with games and interactive activities improved students' PV learning experiences, consistent with Krashen's (1985) affective filter hypothesis and the work of Liu (2012) motivation. Finally, to further enhance PV learning, educators should offer opportunities for PVs practice in real-world contexts. Such activities as role-playing, storytelling, blogging, and writing, allow students to apply their PV knowledge practically, reinforcing usage. This highlights the importance of context in PV learning, as emphasized by Side (1990).

Analytically, the implications drawn from this study suggest that CL-based instruction, when integrated effectively into PV teaching, offers promising avenues for improving the comprehension and retention of PV knowledge among EFL learners, such as those in the Vietnamese context. These pedagogical recommendations align with existing research and underscore the need for innovative and learner-centric approaches to PV instruction.

The recent studies published on the effectiveness of cognitive linguistics-based instruction in teaching English Phrasal Verbs (PVs) to Vietnamese EFL learners contribute valuable insights that both support and extend the findings of our research. Tran and Pham (2023) have corroborated the merits of cognitive-based instruction, noting substantial improvements in the learners' capacity to decipher and employ PVs in context. Their findings resonate with our observation that understanding the conceptual metaphors and image schemas underlying PVs significantly aids retention and application.

At the same time, recent studies highlight nuanced challenges. While cognitive-based approaches are beneficial, they require a significant time and a pedagogical shift that may not be immediately feasible in all educational settings (Nguyen & Ho, 2024). Cognitive strategies can also overwhelm learners who are used to rote learning (Le & Vo, 2024). These perspectives stress the need for a balanced approach that integrates cognitive strategies with other methods, adaptable to existing educational infrastructures and learners' background.

6. Conclusions

This research study has shown that using CL-based instruction can help Vietnamese EFL learners understand and retain meanings of English PVs. The study has also found important information about the ways teachers can consider helping Vietnamese EFL students address the challenges associated with mastering PVs, within the specific linguistic and cultural context of Vietnamese EFL learners.

This study centered on using image-schemas and conceptual metaphors as the cognitive tools to unveil the figurative meanings of PVs. Such an approach might have resulted in some limited explanations regarding the evocation of their non-literal meanings. Further studies should incorporate other CL-based PV instruction such as argument structure constructions, the conceptual autonomy-dependence relation or semantic frames in order to assist the learners to understand how the non-literal interpretation of an English PV emerges.

The quantitative analysis revealed that the experimental group, which received cognitive instruction, outperformed the control group in both immediate post-test scores and delayed test scores. This significant difference suggests that cognitive instruction not only leads to better short-term understanding, but also fosters improved long-term retention of PV knowledge. These results support the previous research studies that stress the complexity of PVs and the limitations of traditional teaching methods (Gardner & Davies, 2007; Rudzka-Ostyn, 2008).

Additionally, the practice of grouping PVs by main verbs emerged as a valuable strategy for PV instruction, as it facilitated the recognition of semantic patterns and connections among PVs. This approach aligns with the insights of Gardner and Davies(2007), who stressed the significance of recognizing the role of main verbs in determining PV meanings. Furthermore, our research underlines the importance of creating a supportive and enjoyable learning environment.

Incorporating games, images and interactive activities into PV instruction enhances students' motivation and their overall performance, consistent with Krashen's (1985) affective filter hypothesis. Finally, we recommend that teachers provide ample opportunities for students to use PVs in real-world contexts, including role-playing, storytelling, blogging, and writing exercises, as active usage in diverse situations helps students consolidate their PV knowledge and apply them effectively (Gardner & Davies, 2007)

This study was subject to certain limitations which the inclusion of recent literature helps mitigate. For instance, the initial study design constrained instructional time and follow-up period, potentially impacting findings on longer-term retention. Insufficient consideration of methodology may have downplayed impacts on comprehending novel PVs. Additionally, focusing solely on image schemas within the cognitive-based approach precluded exploration of other strategies like conceptual metaphors.

Generalizing implications to other contexts was limited given the singular Vietnamese sample. Updated insights into factors such as L1 background, register sensitivity, and material design can strengthen interpretations and reduce constraints in these areas. Expanding analysis to acknowledge nuances emerging from the literature enables more robust conclusions. Addressing gaps through future comparative and longitudinal investigations incorporating diverse methodologies can further advance understanding of cognitive linguistics' role in PV pedagogy.

In sum, this research accentuates the potential benefits of CL-based PV instruction for Vietnamese EFL learners. By incorporating CL concepts, emphasizing the meanings of main verbs, and maximizing students' engagement, educators can significantly enhance their students' PV acquisition process. This study contributes to the ongoing dialogue in the field of EFL instruction, emphasizing the importance of tailored and effective pedagogical strategies for addressing the complexities of English PVs.

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