



# The Effect of Cognitive Dissonance on Depth of Vocabulary Processing Among Learners of the English Language in Universities

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## ABSTRACT

## Original Research Article

Vocabulary learning in university English language education continues to present a major challenge, as traditional instructional approaches often emphasize repetition and exposure rather than deep cognitive processing. This theoretical study proposes a new conceptual perspective on vocabulary learning by examining the role of cognitive dissonance as a catalyst for depth of vocabulary processing among learners of the English language in universities. Drawing on theories of cognitive dissonance, depth of processing, cognitive engagement, and desirable difficulties, the research synthesizes findings from cognitive psychology, educational theory, and language pedagogy to explain how lexical learning can be transformed from surface memorization into meaningful cognitive activity.

The study argues that cognitive dissonance, when intentionally designed into vocabulary instruction, initiates cognitive engagement and prompts learners to resolve lexical conflict through semantic analysis, reflection, and conceptual integration. This process leads to deeper processing of vocabulary and more durable retention. Based on this theoretical synthesis, a conceptual framework is proposed to illustrate the cognitive sequence through which dissonance activates engagement, deep processing, and long-term vocabulary learning. The research also discusses pedagogical implications for vocabulary teaching, curriculum design, assessment practices, teacher education, and educational policy in higher education contexts. By shifting the focus of vocabulary instruction from instructional techniques to cognitive mechanisms, this research contributes a novel theoretical model that advances understanding of deep vocabulary learning and provides a foundation for future empirical research in English language education.

**Keywords:** Cognitive Dissonance, Vocabulary Learning, Cognitive Engagement, English Language Teaching.

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## Introduction

Vocabulary knowledge plays a central role in second and foreign language proficiency, as it underpins learners' abilities in reading, listening, speaking, and writing. Despite decades of research on vocabulary acquisition, a persistent challenge in English language teaching lies in ensuring long-term retention rather than short-term recall of lexical items. Traditional instructional approaches often emphasize repetition and exposure, yet such techniques do not

necessarily guarantee deep cognitive processing, which is a critical condition for durable memory formation ( Craik & Lockhart, 1972).

Recent advances in cognitive psychology have highlighted the importance of depth of processing as a determinant of memory retention. According to the Levels of Processing framework, information that is processed semantically and analytically is more likely to be retained than information processed at a superficial level (Craik, 2002). In the context

of vocabulary learning, this insight has led researchers to focus on task design, learner engagement, and cognitive involvement as mechanisms for enhancing lexical retention (Laufer & Hulstijn, 2001).

However, while numerous studies have examined how task complexity and involvement load influence vocabulary learning, very little attention has been given to the role of cognitive dissonance as a pedagogical trigger for deep processing. Cognitive dissonance, defined as the psychological discomfort arising from holding conflicting cognitions, has long been recognized as a powerful catalyst for cognitive restructuring and learning (Festinger, 1957). When learners encounter linguistic input that contradicts their expectations or prior knowledge, they may engage in deeper cognitive processing in order to resolve this inconsistency. This mechanism suggests that cognitive dissonance could serve as an effective instructional tool for promoting deeper lexical processing and, consequently, stronger vocabulary retention.

In university-level English language learning, where learners are cognitively mature and capable of metacognitive reflection, the strategic induction of cognitive dissonance may represent an innovative and underexplored approach to vocabulary instruction. Therefore, this study investigates the effect of cognitive dissonance on depth of vocabulary processing among learners of the English language in universities, addressing a clear gap in the existing literature by integrating cognitive dissonance theory with depth of processing principles in vocabulary pedagogy.

## Theoretical Background

### Depth of Processing and Vocabulary Learning

The concept of depth of processing was first introduced by Craik and Lockhart (1972), who proposed that memory retention depends not on repetition but on the level of cognitive analysis applied to information. Deep processing involves semantic analysis, meaningful elaboration, and integration with existing knowledge structures, whereas shallow processing relies on surface-level features such as form or sound.

In vocabulary learning, deeper processing has been consistently associated with improved retention. Laufer and Hulstijn (2001) operationalized this concept through the Involvement Load Hypothesis, which posits that tasks requiring need, search, and evaluation generate higher levels of cognitive involvement and thus lead to superior vocabulary learning outcomes. Empirical studies have supported this hypothesis, showing that tasks inducing deeper engagement result in significantly better long-term retention of lexical items (Shin & Kim, 2023).

### Cognitive Dissonance as a Learning Mechanism

Cognitive dissonance theory, developed by Festinger (1957), explains how individuals experience psychological

discomfort when confronted with conflicting beliefs, knowledge, or expectations. This discomfort motivates individuals to reduce inconsistency, often by modifying their cognitive structures. In educational contexts, this process can stimulate deeper thinking, hypothesis testing, and knowledge reconstruction.

Recent educational research has begun to recognize the instructional value of cognitive conflict and uncertainty in learning. Studies in foreign language education indicate that cognitive-emotional dissonance can promote higher engagement and deeper learning when appropriately scaffolded (Sudatha et al., 2024). Similarly, the concept of desirable difficulties suggests that instructional challenges, when carefully designed, enhance long-term learning by increasing cognitive effort (Bjork & Bjork, 2015).

By integrating these insights, cognitive dissonance can be viewed not as an obstacle but as a pedagogical resource capable of activating deeper levels of vocabulary processing. When learners are prompted to resolve lexical inconsistencies, semantic ambiguities, or mismatches between prior knowledge and new input, they engage in meaningful elaboration that supports durable memory formation.

## Methodology of the Study

This study adopts a conceptual research design to theoretically examine the potential effect of cognitive dissonance on depth of vocabulary processing among university learners of English. Instead of collecting empirical data, the study relies on integrative literature analysis and theoretical synthesis from cognitive psychology, educational theory, and language pedagogy. The purpose is to identify the cognitive mechanisms through which dissonance may trigger engagement, deepen semantic processing, and contribute to more durable vocabulary retention, and to formulate a coherent framework that can be tested in future empirical research.

## Research Problem

Despite the extensive attention given to vocabulary teaching in English language education, university learners continue to experience difficulties in achieving deep and durable vocabulary knowledge. Vocabulary instruction in many higher education contexts still relies on surface-level practices that emphasize exposure, repetition, and memorization, which often result in short-term gains rather than long-term retention. These instructional practices do not consistently promote deep cognitive engagement with lexical items, leaving learners unable to integrate new vocabulary into their long-term memory or use it flexibly across contexts.

At the same time, university learners possess advanced cognitive abilities that allow them to engage in higher-order thinking, reflection, and analytical processing. However, instructional practices in vocabulary teaching rarely take

advantage of these cognitive capacities. One underexplored mechanism that could activate deeper processing is cognitive dissonance, which arises when learners encounter conflicting or unexpected information that challenges their existing knowledge. Such cognitive conflict has the potential to stimulate deeper thinking, restructuring of knowledge, and meaningful learning, yet it remains largely absent from vocabulary pedagogy in higher education.

The core research problem addressed in this study is the lack of empirically grounded instructional models that intentionally employ cognitive dissonance to enhance the depth of vocabulary processing among university learners of the English language. Current pedagogical approaches do not sufficiently explain how cognitive dissonance can be designed, implemented, and evaluated as a teaching strategy in vocabulary instruction. This gap limits the development of innovative, cognitively informed teaching practices that align with the intellectual maturity of university learners and the demands of advanced language use.

Therefore, there is a clear need for research that examines the effect of cognitive dissonance on depth of vocabulary processing and proposes a pedagogical framework for its integration into university-level English language instruction. Addressing this gap will contribute to both theory and practice by providing new insights into how cognitive conflict can be transformed into a productive learning resource in vocabulary teaching.

## Significance of the Research

This research is significant because it introduces a new cognitive perspective to vocabulary instruction in university English language education by examining the role of cognitive dissonance in promoting deeper lexical processing. By shifting the focus from surface-level practices such as repetition and exposure to cognitively meaningful learning, the research contributes to a more advanced understanding of how vocabulary is processed, retained, and used by university learners. The integration of cognitive dissonance with depth of processing provides a novel conceptual framework that extends existing theories of vocabulary learning and offers practical implications for instructional design. This research also supports curriculum development and teacher training in higher education by proposing pedagogical practices that enhance deep learning, critical thinking, and long-term vocabulary retention, thereby aligning English language instruction with contemporary academic and professional demands.

## Research Objectives

This research aims to theoretically investigate the potential role of cognitive dissonance in promoting deeper vocabulary processing among university learners of the English language. Specifically, the research seeks to:

1. Conceptually examine how cognitive dissonance may influence the depth of vocabulary processing among university learners of English.
2. Explore theoretical evidence suggesting that cognitive dissonance can contribute to stronger vocabulary retention compared to surface learning approaches.
3. Analyze the relationship between cognitive dissonance and cognitive engagement during vocabulary learning tasks from a theoretical perspective.
4. Propose a pedagogical framework for integrating cognitive dissonance into university-level vocabulary instruction.

## Theoretical and Literature Foundations

This chapter provides the theoretical and conceptual foundation for understanding how vocabulary learning can be enhanced through deeper cognitive processing in university English language education. It synthesizes major theories and research strands related to vocabulary learning, cognitive processing, and learning difficulty, with a particular focus on how these constructs interact in higher education contexts. The chapter begins by examining the nature of academic vocabulary and the challenges associated with surface-level learning. It then explores depth of processing, cognitive engagement, and meaningful learning as core mechanisms of durable vocabulary acquisition. Building on this foundation, the chapter introduces cognitive dissonance as a cognitive trigger for deeper processing and reviews its role in educational and language learning contexts. The chapter further discusses the concept of desirable difficulties as a bridge between cognitive dissonance and long-term memory retention. Finally, the chapter synthesizes existing literature to identify theoretical gaps that justify the need for the current research and position its conceptual contribution.

## Vocabulary Learning in University English Education

### The Nature of Academic Vocabulary

Vocabulary learning at the university level differs fundamentally from vocabulary learning in earlier stages of education. University learners are required to acquire not only general high-frequency words but also discipline-specific and academic vocabulary that is abstract, low-frequency, and conceptually dense. Academic vocabulary often carries precise meanings that are closely tied to disciplinary discourse, making it more cognitively demanding to process and retain than everyday lexical items (Nation, 2013).

Unlike conversational vocabulary, academic words frequently appear in complex syntactic structures and require learners to understand subtle semantic distinctions and collocational patterns. This complexity places greater cognitive demands on learners, requiring deeper semantic processing, inferencing, and integration with prior knowledge. As a result, vocabulary learning in university contexts is inherently

a cognitive task rather than a purely linguistic one, demanding instructional approaches that promote deep processing rather than surface memorization.

Research in English language education has shown that university learners often struggle with academic vocabulary despite years of formal instruction. This difficulty is partly attributed to instructional practices that emphasize recognition over production, and form over meaning, which limits learners' ability to develop flexible and transferable lexical knowledge (Schmitt, 2014). Consequently, vocabulary knowledge remains fragile and context-dependent, particularly in academic reading and writing tasks.

### **Problems of Surface Learning in Vocabulary Instruction**

Surface learning in vocabulary instruction refers to learning strategies that focus on rote memorization, repetition, and short-term recall without meaningful semantic engagement. While such strategies may result in immediate gains on vocabulary tests, they often fail to support long-term retention or active use of lexical items. In many university English programs, vocabulary is still taught through word lists, translations, and isolated exercises that encourage shallow processing of lexical forms rather than deep understanding of meaning and use.

Surface-level vocabulary learning is closely associated with shallow cognitive processing, where learners focus on orthographic or phonological features of words rather than their semantic, conceptual, and contextual properties. This type of processing results in weak memory traces that decay rapidly over time, making it difficult for learners to retrieve and use vocabulary in authentic academic contexts (Craik & Lockhart, 1972).

Moreover, surface learning limits learners' cognitive engagement and reduces opportunities for metacognitive reflection and meaning construction. When vocabulary tasks do not challenge learners' expectations or prior knowledge, learners may rely on passive learning strategies that inhibit deeper cognitive involvement. This problem is particularly evident in university settings, where learners are capable of higher-order thinking but are often not required to engage with vocabulary at such levels.

These limitations highlight the need for instructional approaches that move beyond surface-level learning and actively promote deeper cognitive processing of vocabulary. Addressing this need requires a theoretical shift toward cognitively informed models of vocabulary instruction that prioritize meaning, conflict, and engagement as core learning mechanisms.

### **Cognitive Processing and Depth of Vocabulary Learning**

Understanding how learners cognitively process vocabulary is essential for explaining why some lexical items are retained

while others are quickly forgotten. Vocabulary learning is not merely a matter of exposure or repetition; rather, it depends on the quality of mental processing applied to lexical information during learning. Cognitive theories of learning consistently emphasize that the depth, effort, and type of processing determine the strength and durability of memory traces. In university English language education, where learners are expected to engage with abstract and academic vocabulary, cognitive processing becomes a central determinant of successful learning.

### **Depth of Processing**

The concept of depth of processing refers to the level of cognitive analysis applied to information during learning. Deep processing involves semantic analysis, meaningful elaboration, and integration with existing knowledge, whereas shallow processing focuses on surface features such as spelling or sound (Craik & Lockhart, 1972). When learners engage in deeper processing, they form richer and more interconnected memory representations, which significantly enhance long-term retention.

In vocabulary learning, depth of processing has been widely recognized as a key factor in durable lexical acquisition. Tasks that require learners to analyze meaning, evaluate usage, or connect new words to prior knowledge tend to result in stronger retention than tasks that involve simple repetition or recognition. This is because semantic elaboration forces learners to actively construct meaning rather than passively receive information. As a result, deeper processing strengthens memory traces and facilitates later retrieval in new contexts (Craik, 2002).

At the university level, depth of processing is particularly important because academic vocabulary often carries abstract meanings that cannot be learned through memorization alone. Learners must analyze relationships between concepts, compare meanings across contexts, and integrate new vocabulary into existing conceptual frameworks. Without deep processing, academic vocabulary remains inert knowledge that learners recognize but cannot effectively use in academic discourse.

### **Cognitive Engagement**

Cognitive engagement refers to the degree of mental effort, attention, and strategic thinking that learners invest in a learning task. Highly engaged learners actively monitor their understanding, make inferences, and apply metacognitive strategies to regulate their learning. In contrast, low engagement is associated with passive learning, minimal effort, and reliance on rote strategies.

Research in language learning has shown that cognitive engagement mediates the relationship between instructional design and learning outcomes. Tasks that require problem-solving, evaluation, or decision-making tend to increase cognitive engagement and promote deeper processing of linguistic input (Fredricks, Blumenfeld, & Paris, 2004). In

vocabulary instruction, engagement is enhanced when learners must negotiate meaning, resolve ambiguity, or justify their lexical choices, all of which stimulate deeper semantic processing.

In university contexts, cognitive engagement is especially critical because learners are capable of higher-order thinking but may not engage deeply unless tasks demand such involvement. Vocabulary tasks that fail to challenge learners cognitively often lead to superficial engagement and weak retention. Therefore, promoting cognitive engagement is not optional but essential for meaningful vocabulary learning at advanced levels of English instruction.

### Meaningful versus Surface Learning

Meaningful learning occurs when learners actively relate new information to prior knowledge, construct personal meaning, and apply knowledge flexibly across contexts. Surface learning, by contrast, involves memorization without understanding and is typically driven by assessment demands rather than intrinsic cognitive involvement. These two modes

of learning have fundamentally different implications for vocabulary retention.

In surface learning, vocabulary items are treated as isolated units, often learned through translation or rote repetition. This approach may lead to short-term recall but rarely supports transfer or long-term use. Meaningful learning, however, requires learners to process vocabulary semantically, contextually, and conceptually, thereby creating multiple retrieval paths in memory (Ausubel, 1968).

Depth of processing serves as the cognitive mechanism that distinguishes meaningful learning from surface learning. When learners engage in meaningful learning, they process vocabulary deeply, integrate it into conceptual networks, and develop flexible lexical knowledge. This distinction is particularly relevant in university education, where learners must use vocabulary analytically and critically rather than merely recognize it. Consequently, instructional practices that promote meaningful learning are essential for developing advanced vocabulary competence in academic English.

**Table 1:** Theoretical Foundations of the Research

Theory	Key Concept	Relevance to Vocabulary Learning
Depth of Processing	Semantic elaboration	Explains retention
Cognitive Dissonance	Cognitive conflict	Triggers engagement
Desirable Difficulties	Productive effort	Strengthens memory
Cognitive Engagement	Mental effort	Mediates learning

### Cognitive Dissonance and Cognitive Conflict in Learning

Cognitive dissonance and cognitive conflict represent powerful mechanisms for learning because they disrupt learners' existing mental structures and force cognitive reorganization. When learners encounter information that contradicts their prior knowledge, expectations, or beliefs, they experience a state of psychological discomfort that motivates them to resolve the inconsistency. This process of resolution requires deeper thinking, analysis, and restructuring of knowledge, making cognitive dissonance a central trigger for meaningful learning rather than a barrier to it.

#### Theoretical Concept of Cognitive Dissonance

Cognitive dissonance was originally proposed as a theory explaining how individuals respond to inconsistencies among their beliefs, attitudes, and knowledge. According to the theory, humans are motivated to maintain cognitive consistency, and when inconsistency occurs, they actively seek to reduce it through cognitive change, reinterpretation, or acquisition of new information (Festinger, 1957). This drive to restore equilibrium results in increased cognitive effort, attention, and engagement with the conflicting information.

From a learning perspective, cognitive dissonance can be understood as a productive state that pushes learners to re-evaluate their understanding and construct new meaning. Unlike passive exposure, dissonance forces learners to engage in deeper processing because resolution requires analysis, comparison, and integration of new knowledge with existing cognitive structures. This mechanism aligns closely with depth of processing theory, which emphasizes semantic elaboration as a key factor in memory retention ( Craik, 2002).

In educational psychology, cognitive dissonance is increasingly viewed as a catalyst for conceptual change, particularly when learners' misconceptions are challenged by new evidence or alternative explanations. Rather than avoiding confusion or conflict, effective instruction can deliberately create conditions that stimulate cognitive tension and promote deeper learning.

#### Cognitive Dissonance in Educational Contexts

In educational settings, cognitive dissonance often occurs when learners are confronted with tasks, problems, or explanations that contradict their expectations. Research on conceptual change has shown that such conflict can prompt learners to abandon incorrect assumptions and develop more sophisticated mental models. Instruction that deliberately introduces cognitive conflict has been shown to increase engagement, persistence, and depth of understanding across disciplines.

When properly scaffolded, dissonance encourages learners to ask questions, test hypotheses, and seek explanations. This process transforms learning from passive reception into active knowledge construction. However, if dissonance is not supported through guidance or reflection, it may lead to frustration rather than learning. Therefore, the pedagogical value of cognitive dissonance lies not in the presence of conflict alone but in how it is designed and mediated within instructional contexts.

Recent educational models emphasize the importance of productive struggle, where learners are challenged just beyond their current level of understanding. This form of struggle creates cognitive tension that motivates deeper engagement while still remaining within learners' capacity to resolve. Such models align closely with the principles of cognitive dissonance and provide a theoretical justification for its use as an instructional tool.

### **Cognitive Dissonance in Language Learning**

In language learning, cognitive dissonance arises when learners encounter linguistic input that conflicts with their existing inter language system. This may occur when learners notice discrepancies between their own language use and target-language norms, or when instructional input challenges their assumptions about meaning, form, or usage. These moments of conflict can trigger heightened attention and deeper processing of language input.

Research in second and foreign language learning suggests that noticing gaps between learners' output and target forms is a critical step in language development. When learners become aware of such gaps, they are more likely to engage in hypothesis testing and restructuring of their linguistic system. Cognitive dissonance therefore plays a crucial role in driving language development by motivating learners to resolve linguistic inconsistencies.

In vocabulary learning, cognitive dissonance may occur when learners encounter words that behave differently from their expectations, such as false cognates, polysemous words, or context-dependent meanings. Resolving these conflicts requires semantic analysis and conceptual integration, both of which promote deeper vocabulary processing. This suggests that cognitive dissonance can function as a pedagogical trigger that transforms vocabulary learning from surface memorization into meaningful cognitive activity.

### **Desirable Difficulties and Deep Vocabulary Processing**

The concept of desirable difficulties provides a crucial theoretical bridge between cognitive dissonance and depth of processing in learning. It refers to learning conditions that introduce manageable challenges which initially slow down performance but ultimately enhance long-term retention and transfer of knowledge. These difficulties force learners to engage in deeper cognitive processing, making learning more

effortful but also more durable. In vocabulary learning, desirable difficulties play a central role in transforming surface memorization into meaningful and lasting lexical knowledge.

### **The Concept of Desirable Difficulties**

Desirable difficulties are instructional conditions that require learners to invest greater cognitive effort during learning, leading to stronger memory representations and improved long-term retention. Unlike traditional instructional approaches that aim to make learning easy and fluent, desirable difficulties intentionally introduce challenges such as retrieval practice, spaced repetition, variation, and cognitive conflict. These challenges disrupt automatic processing and force learners to actively reconstruct knowledge, which enhances learning outcomes (Bjork & Bjork, 2015).

From a cognitive perspective, difficulties become "desirable" when they remain within learners' capacity to overcome them. If a task is too easy, it encourages shallow processing; if it is too difficult, it leads to frustration. When optimally designed, however, difficulty creates cognitive tension that stimulates attention, engagement, and deeper processing. This aligns closely with the principles of cognitive dissonance, as both involve a temporary state of mental discomfort that motivates learners to resolve inconsistency and restore cognitive balance.

### **The Relationship between Difficulty and Memory Retention**

Research in cognitive psychology has consistently demonstrated that learning conditions which require greater mental effort produce stronger and more retrievable memory traces. When learners struggle to retrieve information or resolve uncertainty, they engage in elaborative processing that strengthens memory consolidation. This explains why learning that feels difficult often results in better long-term retention than learning that feels easy and fluent (Bjork & Bjork, 2015).

In vocabulary learning, difficulties such as delayed retrieval, contextual variation, and semantic ambiguity encourage learners to process words at a deeper level. Rather than memorizing form-meaning pairs, learners must analyze, evaluate, and reconstruct lexical meaning, leading to richer semantic networks in memory. These processes directly support depth of processing and facilitate later use of vocabulary in new contexts.

Moreover, desirable difficulties challenge learners' metacognitive judgments about learning. When learning feels fluent, learners may overestimate their mastery; when learning is effortful, they are more likely to engage in monitoring and reflection. This metacognitive engagement further contributes to durable vocabulary learning and supports autonomous learning in university settings.

## Desirable Difficulties in Vocabulary Learning

In vocabulary instruction, desirable difficulties can be intentionally designed to promote deeper processing. Tasks that require learners to infer meaning from context, distinguish between similar lexical items, or resolve conflicting uses of a word naturally create cognitive difficulty. These tasks force learners to move beyond surface memorization and engage in semantic and conceptual analysis, which enhances retention and flexible use of vocabulary.

For example, encountering polysemous words in contrasting contexts, dealing with false cognates, or resolving mismatches between expected and actual meaning can create cognitive tension that stimulates deeper processing. Such difficulties closely resemble cognitive dissonance, as learners must reconcile conflicting interpretations and adjust their lexical knowledge accordingly. This suggests that desirable difficulties provide a pedagogical mechanism through which cognitive dissonance can be systematically integrated into vocabulary instruction.

In university English education, where learners are required to master academic and discipline-specific vocabulary, the strategic use of desirable difficulties is particularly valuable. By designing tasks that challenge learners cognitively rather than simplifying input, instructors can promote deeper vocabulary processing and long-term retention, aligning vocabulary instruction with higher-order academic learning goals.

## Synthesis and Identification of Theoretical Gaps

This section synthesizes the theoretical and research strands discussed in the previous sections and identifies the key gaps that justify the need for the current research. Although vocabulary learning, depth of processing, cognitive engagement, and learning difficulty have each been widely examined in the literature, they have rarely been integrated into a unified theoretical framework that explains how deep vocabulary processing can be systematically activated in university English language education.

## Critical Review of Existing Models

Existing models of vocabulary learning tend to focus on instructional techniques rather than cognitive mechanisms. Many frameworks emphasize frequency of exposure, repetition, task type, or involvement load as primary determinants of vocabulary learning, implicitly assuming that deeper processing will occur as a by-product of well-designed tasks. While such models have contributed valuable insights,

they often treat cognitive processing as an outcome rather than as an instructional target in itself.

Similarly, depth of processing has been widely acknowledged as a key factor in retention, yet it is typically operationalized through task complexity or semantic involvement rather than through explicitly designed cognitive states. As a result, instructional models explain what learners do but not what learners experience cognitively during vocabulary learning. This leaves a theoretical gap in explaining how deep processing can be intentionally induced rather than indirectly encouraged.

In parallel, research on cognitive dissonance and cognitive conflict has largely remained within the domains of conceptual learning, science education, or general educational psychology. Although these studies demonstrate that conflict and uncertainty can stimulate deeper learning, they have rarely been extended to vocabulary learning in English language education. When cognitive dissonance is mentioned in language learning research, it is often treated as an affective phenomenon rather than as a cognitive mechanism for lexical development.

## Positioning the Current Research

The current research addresses these limitations by proposing a conceptual integration of cognitive dissonance and depth of vocabulary processing within university English language education. Rather than viewing cognitive dissonance as an accidental by-product of learning, this research reconceptualizes it as a designed instructional trigger that activates deeper semantic processing. In this framework, cognitive dissonance initiates cognitive engagement, which in turn leads to deeper processing and stronger vocabulary retention.

By synthesizing theories of depth of processing, cognitive engagement, and desirable difficulties, this research offers a new explanatory model for vocabulary learning that shifts attention from surface instructional practices to internal cognitive mechanisms. This theoretical contribution fills a significant gap in the literature by explaining *how* and *why* vocabulary learning can be deepened through instructional design, particularly in university contexts where learners are cognitively capable of resolving complex linguistic conflicts.

In doing so, the research positions itself as a conceptual advancement in vocabulary pedagogy, providing a foundation for future empirical research and offering a cognitively grounded perspective for improving vocabulary instruction in higher education.

**Table 2:** Limitations of Existing Vocabulary Learning Models

Existing Focus	Limitation	Contribution of This Research
Task type	Ignores cognitive state	Focus on dissonance
Repetition	Surface learning	Deep processing
Exposure	Short-term recall	Durable retention

## Conceptual Framework and Pedagogical Implications

This chapter presents the conceptual contribution of the research by proposing a cognitive framework that explains how cognitive dissonance can be systematically employed to enhance depth of vocabulary processing in university English language education. Building on the theoretical foundations established in Chapter Two, the chapter integrates key cognitive constructs—cognitive dissonance, cognitive engagement, depth of processing, and retention—into a unified explanatory model. The chapter first explains the rationale for the proposed framework, then details the structure and components of the model, and finally discusses its pedagogical implications for vocabulary teaching, curriculum design, assessment, and teacher education in higher education contexts.

### Rationale for the Conceptual Framework

Although existing theories of vocabulary learning have provided valuable insights into how lexical knowledge is acquired, most models emphasize external instructional features rather than internal cognitive processes. Vocabulary frameworks commonly focus on input frequency, task design, repetition, or involvement load, assuming that deeper processing will naturally follow. However, such models do not adequately explain how deep processing is initiated, sustained, or intensified during learning, especially in university contexts where learners are cognitively capable of engaging in complex mental operations.

The conceptual framework proposed in this research is grounded in the assumption that deep vocabulary learning is triggered by cognitive states rather than instructional techniques alone. Specifically, the framework argues that cognitive dissonance functions as an initial cognitive stimulus that disrupts learners' existing lexical knowledge and creates a need for resolution. This disruption activates cognitive engagement, which in turn leads to deeper semantic processing and more durable lexical retention. In this sense, cognitive dissonance is not treated as a negative experience to be avoided, but as a productive cognitive mechanism that initiates meaningful learning.

The framework also responds to limitations identified in previous models of vocabulary learning. While depth of processing theory explains why deeper processing leads to better retention ( Craik & Lockhart, 1972), it does not specify how educators can deliberately induce such processing in instructional settings. Similarly, research on desirable difficulties explains the benefits of effortful learning but does not provide a domain-specific model for vocabulary instruction (Bjork & Bjork, 2015). The proposed framework bridges these gaps by offering a structured explanation of how cognitive dissonance can be designed into vocabulary instruction to activate deeper processing pathways.

Importantly, the framework is tailored to university English language education, where learners possess the cognitive maturity to tolerate ambiguity, resolve conflict, and engage in metacognitive reflection. In such contexts, vocabulary learning should not be reduced to memorization but approached as a cognitive process that involves analysis, evaluation, and conceptual integration. By emphasizing cognitive dissonance as a trigger for engagement and processing, the framework aligns vocabulary instruction with higher-order academic learning goals and provides a theoretical foundation for pedagogical innovation in higher education.

### The Proposed Cognitive Dissonance–Based Vocabulary Model

This section presents the proposed conceptual model that explains how cognitive dissonance can be systematically employed to activate deep vocabulary processing among university learners of the English language. The model is grounded in contemporary cognitive and educational research and conceptualizes vocabulary learning as a dynamic process driven by cognitive tension, engagement, and resolution rather than by exposure alone.

The model consists of four interrelated stages:

1. Cognitive dissonance induction.
2. Cognitive engagement activation.
3. Deep semantic processing.
4. Durable vocabulary retention.

Each stage represents a cognitive transition that transforms initial confusion or conflict into meaningful lexical learning.

#### Cognitive Dissonance as an Instructional Trigger

In the proposed model, cognitive dissonance functions as the initial catalyst for learning. When learners encounter vocabulary that contradicts their expectations such as words with misleading forms, multiple meanings, or context dependent usage they experience a state of cognitive imbalance. This imbalance draws attention to the lexical item and creates a psychological need for resolution. Research in educational psychology has shown that such moments of uncertainty stimulate exploratory behavior and deeper reasoning processes (Loewenstein, 1994).

Unlike traditional vocabulary instruction, which aims to minimize confusion, the proposed model intentionally designs manageable lexical conflicts that require learners to question, analyze, and re-evaluate meaning. These conflicts may arise from contrasting examples, contextual shifts, or semantic anomalies that disrupt automatic processing. When properly scaffolded, cognitive dissonance becomes a productive learning condition rather than a source of frustration.

#### Cognitive Engagement as a Mediating Process

Once cognitive dissonance is induced, learners enter a phase of heightened cognitive engagement. At this stage, learners

allocate increased mental effort to resolving uncertainty, testing hypotheses, and monitoring their understanding. Cognitive engagement is widely recognized as a key mediator between instructional design and learning outcomes, particularly in complex learning tasks that require sustained attention and reflection (Chi & Wylie, 2014).

In vocabulary learning, engagement manifests through inferencing, semantic comparison, and metacognitive evaluation of lexical choices. These processes require learners to move beyond form-meaning associations and engage in deeper conceptual analysis. The model assumes that without engagement, dissonance would not lead to learning; therefore, instructional design must support engagement through guiding questions, reflection, and feedback.

### **Deep Semantic Processing as a Learning Outcome**

As learners engage with lexical conflict, they begin to process vocabulary at a deeper semantic level. This stage involves integrating new lexical information with existing conceptual networks, evaluating meaning across contexts, and constructing flexible representations of word knowledge. Research on meaningful learning indicates that such elaborative processing results in stronger memory traces and greater transferability of knowledge (Mayer, 2014).

In this model, deep processing is not accidental but a direct result of cognitive engagement triggered by dissonance. Vocabulary items learned through this process are more likely to be retained and used accurately because they are embedded within a rich network of semantic, contextual, and conceptual associations.

### **Durable Vocabulary Retention**

The final stage of the model is durable vocabulary retention, which refers to the ability to retrieve and use vocabulary accurately over time and across contexts. Cognitive science research suggests that memory durability is enhanced when learning involves effort, resolution of uncertainty, and semantic elaboration (Soderstrom & Bjork, 2015). By passing through the stages of dissonance, engagement, and deep processing, vocabulary knowledge becomes more stable and resistant to forgetting.

The proposed model thus explains how instructional design can deliberately guide learners through a cognitive sequence that transforms temporary confusion into lasting lexical competence. This theoretical contribution offers a new way of conceptualizing vocabulary instruction in university English education and provides a foundation for future empirical validation.

## **Pedagogical Implications for University Vocabulary Teaching**

The proposed cognitive dissonance-based model has significant implications for vocabulary teaching in university English language education. By reconceptualizing vocabulary

learning as a cognitively driven process, the model shifts instructional focus from the presentation of lexical items to the design of learning conditions that stimulate deeper processing. This section discusses the pedagogical implications of the model for teaching practices, curriculum design, and vocabulary assessment in higher education.

### **Implications for Vocabulary Teaching Practices**

Traditional vocabulary instruction often aims to reduce learner difficulty by simplifying input, providing direct explanations, and minimizing uncertainty. However, the proposed framework suggests that productive difficulty and managed cognitive conflict should be intentionally incorporated into instruction to promote deeper processing. Teachers can achieve this by designing vocabulary tasks that challenge learners' expectations and require them to resolve semantic ambiguity, contrast meanings, or evaluate contextual appropriateness.

For example, instructors can present learners with conflicting uses of the same lexical item across academic texts, prompting them to analyze how meaning changes across disciplines or contexts. Such tasks encourage learners to actively construct lexical knowledge rather than memorize definitions. Research on active learning indicates that learners achieve stronger and more transferable knowledge when they are required to explain, justify, and revise their understanding (Prince, 2004).

Moreover, the model implies that teachers should allow space for uncertainty and reflection rather than immediately resolving learners' confusion. When learners are encouraged to struggle productively, they become more engaged and more likely to develop robust lexical representations. This approach transforms vocabulary instruction into a cognitively engaging process aligned with the intellectual demands of university education.

### **Implications for Curriculum Design**

At the curriculum level, the proposed framework calls for a shift from vocabulary coverage to vocabulary processing. Rather than focusing on the number of words taught, curricula should prioritize how deeply learners engage with lexical items. This requires embedding vocabulary learning into content-based tasks, academic reading, and disciplinary discourse, where cognitive dissonance naturally arises through exposure to complex and conflicting meanings.

Curriculum designers can integrate sequenced tasks that gradually increase cognitive difficulty, allowing learners to revisit vocabulary across contexts and resolve emerging conflicts in meaning. Spiral curricula that revisit lexical items in new conceptual environments have been shown to support deeper understanding and long-term retention (Bruner, 1960). Within such curricula, cognitive dissonance becomes a recurring and productive feature of learning rather than an obstacle.

Additionally, curricula should incorporate opportunities for metacognitive reflection, enabling learners to become aware of how they resolve lexical conflicts and deepen their understanding. This supports learner autonomy and prepares students for independent academic reading and writing.

### Implications for Vocabulary Assessment

The model also has important implications for vocabulary assessment. Traditional assessments often measure surface knowledge through recognition or translation, which fails to capture depth of processing or flexible lexical use. In contrast, assessments aligned with the proposed framework should evaluate learners' ability to use vocabulary

meaningfully across contexts, explain semantic distinctions, and apply words in new situations.

Performance-based assessments, such as contextualized writing tasks, semantic analysis, and reflective explanations, are more consistent with the goals of deep vocabulary learning. Assessment research emphasizes that when evaluation focuses on meaning-making rather than recall, it encourages learners to adopt deeper learning strategies (Biggs & Tang, 2011). Therefore, assessment practices should be aligned with the cognitive goals of instruction to reinforce deep processing rather than undermine it.

**Table 3:** Pedagogical Implications of the Proposed Framework

Cognitive Stage	Teaching Implication	Learning Outcome
Dissonance	Semantic conflict tasks	Engagement
Engagement	Guided reflection	Deep processing
Processing	Contextual use	Retention

### Implications for Teacher Education and Policy

The proposed cognitive dissonance-based framework has important implications not only for classroom practice but also for teacher education and educational policy in university English language programs. If vocabulary learning is to be understood as a cognitively driven process, then teacher preparation and institutional policies must support instructional approaches that promote deep processing rather than surface memorization.

#### Implications for Teacher Education

Teacher education programs should prepare instructors to design and manage cognitively demanding learning environments in which uncertainty and conflict are treated as productive learning conditions. This requires a shift in teacher beliefs, as many instructors have been trained to avoid confusion and prioritize clarity and fluency. Professional development programs should therefore focus on helping teachers understand the cognitive value of dissonance, productive struggle, and learner engagement.

Training should emphasize skills such as designing cognitively challenging vocabulary tasks, scaffolding learner reflection, and guiding students through moments of uncertainty without immediately resolving them. Research on teacher cognition indicates that when teachers understand the theoretical rationale behind instructional strategies, they are more likely to implement them consistently and effectively (Borg, 2015). By integrating cognitive principles into teacher education, institutions can promote a more sophisticated approach to vocabulary instruction that aligns with university-level learning goals.

#### Implications for Educational Policy and Program Development

At the policy level, the framework suggests that university language programs should move beyond curricula that

emphasize coverage and testing of isolated vocabulary items. Instead, policies should support instructional models that prioritize deep learning, cognitive engagement, and meaningful language use. This includes allowing flexibility in curriculum design, assessment methods, and teaching practices so that instructors can create cognitively rich learning environments.

Program evaluation should also reflect these priorities by valuing depth of learning rather than short-term performance indicators. Policies that reward innovative teaching practices, support ongoing professional development, and encourage research-informed instruction can help institutionalize cognitively grounded approaches to vocabulary learning. Educational policy research emphasizes that sustainable instructional change requires alignment between curriculum goals, assessment practices, and teacher preparation (Fullan, 2016).

By aligning teacher education and policy with cognitive principles of learning, universities can create conditions that support durable vocabulary development and prepare learners for advanced academic communication. In this way, the proposed framework contributes not only to theory but also to the long-term improvement of English language education in higher education.

### Conclusion

This research sought to reconceptualize vocabulary learning in university English language education by examining the potential role of cognitive dissonance as a catalyst for deep vocabulary processing. Drawing on a critical synthesis of cognitive, educational, and language learning theories, the research has argued that durable vocabulary learning is not simply the result of exposure or repetition, but rather emerges from cognitively meaningful engagement shaped by instructional design.

The research proposed a conceptual framework in which cognitive dissonance functions as an instructional trigger that stimulates cognitive engagement, leading to deeper semantic processing and more stable lexical retention. By integrating depth of processing theory, cognitive dissonance theory, and the concept of desirable difficulties, the research provides a coherent theoretical explanation for how vocabulary learning can be transformed from surface memorization into meaningful cognitive activity in university contexts.

It is important to emphasize that the outcomes of this research are conceptual rather than empirical, as they are derived from theoretical synthesis and critical analysis of existing literature. The proposed framework therefore represents an explanatory model that contributes to understanding the cognitive mechanisms underlying vocabulary learning and offers a foundation for future empirical investigation.

Overall, this research contributes to the field of English language teaching by shifting the focus of vocabulary instruction from what is taught to how it is cognitively processed. It demonstrates that cognitive conflict, when thoughtfully designed and pedagogically supported, can serve as a powerful resource for promoting deep and lasting vocabulary knowledge, thereby offering a new theoretical direction for vocabulary pedagogy in higher education.

## Conceptual Results and Theoretical Insights

The results of this research are presented as conceptual outcomes derived from the critical analysis and synthesis of relevant theories and literature:

1. Vocabulary learning at the university level depends primarily on the depth of cognitive processing rather than on exposure or repetition, as academic vocabulary requires semantic integration and conceptual understanding.
2. Cognitive dissonance was identified as an effective cognitive mechanism that initiates deep vocabulary processing by challenging learners' existing lexical knowledge and prompting cognitive restructuring.
3. Cognitive engagement emerged as a central mediating process that transforms cognitive conflict into meaningful learning, enabling learners to resolve lexical ambiguity and retain vocabulary more effectively.
4. Instructional difficulty, when intentionally designed as manageable and purposeful, enhances memory consolidation and promotes durable vocabulary retention by increasing cognitive effort during learning.
5. Existing vocabulary instruction models were found to insufficiently account for learners' cognitive experiences during learning, highlighting the need for

frameworks that explicitly explain how deep processing is activated and sustained.

## Recommendations

Based on the results of the research, the following recommendations are proposed:

1. Vocabulary instruction in university English programs should incorporate tasks that deliberately create manageable cognitive conflict to stimulate deeper semantic processing and learner engagement.
2. English language curricula should prioritize vocabulary processing over vocabulary coverage by embedding lexical learning within cognitively demanding academic tasks.
3. Teacher education programs should include training on cognitive principles of learning, particularly cognitive dissonance and engagement, to support the implementation of cognitively informed instruction.
4. Vocabulary assessment practices should move beyond recall-based testing and evaluate learners' ability to use vocabulary meaningfully across academic contexts.
5. Educational policies in higher education should support instructional flexibility, professional development, and assessment reform to facilitate deep, cognitively grounded vocabulary learning.

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