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Understanding Grammar Proceduralizing Through Skill Acquisition Theory: A Case Study of the Irregular Verb "Bought"

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ABSTRACT

Grammar acquisition is an essential aspect of second-language learning, particularly in contexts where learners must transition from conscious rule application to fluent, automatic use. Skill Acquisition Theory (SAT) provides a powerful framework for analyzing this transformation by emphasizing the progression from declarative to procedural knowledge. This self-study explores the acquisition of the irregular past-tense verb "bought," using SAT as its theoretical foundation. Through reflective journals, structured practice sessions, and diagnostic tasks, this research examines the challenges, learning processes, and cognitive transitions experienced during grammar proceduralizing. Findings reveal the crucial roles of distributed practice, contextualized use, and reduced cognitive load in enabling the automation of irregular verb forms. The study provides insights into instructional strategies to enhance grammar instruction in Indonesian EFL classrooms.

Keywords: *grammar acquisition, Skill Acquisition Theory, past tense, irregular verbs, EFL, proceduralizing*

INTRODUCTION

Grammar plays a central role in second language acquisition (SLA), enabling learners to construct meaningful and accurate sentences. However, acquiring grammatical competence is not merely about memorizing rules; learners must work toward automaticity, in which grammatical structures are used effortlessly in communication. According to Skill Acquisition Theory (SAT), this progression involves transforming explicit, declarative knowledge into implicit, proceduralized skills through deliberate practice and repeated exposure (DeKeyser, 2020). SAT highlights three essential components in learning: declarative knowledge, proceduralization, and the development of control parameters (Anderson et al., 2018). Together, these stages explain how learners gradually reduce reliance on conscious rule recall and shift toward fluent, automatic use.

In grammar learning, several theoretical perspectives attempt to explain how learners internalize linguistic structures. Universal Grammar (UG) suggests that learners possess innate linguistic knowledge that interacts with available input (Komarova et al.,

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2001). Cue-based models emphasize learners' sensitivity to linguistic cues in determining correct forms (Dresher, 1999). Meanwhile, connectionist models argue that learners acquire both regular and irregular past tense forms through pattern recognition and repeated exposure rather than separate rule-based systems (Howell et al., 2014). SAT offers a unique lens by integrating cognitive processes, practice effects, and skill development, making it particularly relevant to the study of grammar proceduralizing.

The English past tense system poses challenges for EFL learners, especially with irregular verbs that deviate from standard morphological rules. The verb "buy → bought" is one such form that requires learners to memorize its past form and internalize its use through practice. Unlike regular verbs that follow the predictable "-ed" pattern, "bought" must be mastered through repeated exposure and contextualized usage. Indonesian learners, who are accustomed to consistent morphological patterns in Bahasa Indonesia, often struggle with irregular forms in English due to the opacity of these forms and limited exposure to them in everyday communication.

Case studies in SLA research provide valuable insights into individual learning trajectories and micro-level processes involved in grammar development. By focusing on how a learner acquires a specific irregular verb, researchers can uncover the challenges, strategies, and cognitive shifts that occur throughout the learning process. This study adopts a self-study approach to explore how declarative knowledge about the verb "bought" transitions into proceduralized use through systematic practice and reflection.

This research contributes to the field of grammar instruction by illustrating how SAT principles can be applied in real-life learning contexts. Understanding this process allows teachers to design effective grammar activities that promote automaticity, reduce cognitive overload, and support the development of fluency. The findings have pedagogical relevance for EFL contexts, particularly in Indonesia, where learners often rely heavily on explicit rule learning without sufficient opportunities for meaningful practice.

LITERATURE REVIEW

Skill Acquisition Theory

Skill Acquisition Theory (SAT) is a cognitive theory of learning developed primarily by Anderson and colleagues and later expanded by SLA researchers such as DeKeyser. It explains how learners acquire skills through three stages: the declarative, procedural, and autonomous. At the declarative stage, learners are first exposed to explicit knowledge facts, rules, and explanations, which they can articulate but cannot yet apply fluently. When learners first encounter a grammar rule such as "buy becomes bought in the past tense," they store this information in declarative memory. However, because this knowledge has not yet been practiced, its application is slow, effortful, and prone to interference.

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During the procedural stage, learners begin to practice applying the rule through controlled and meaningful exercises. Practice enables the compilation of knowledge into more efficient structures through processes such as composition, where several rule steps are condensed into one processing unit, and proceduralization, where explicit rules are converted into routines that can be executed with less conscious control. SAT emphasizes that practice must be frequent, distributed, and varied to support proceduralization. For grammar learning, this means that learners must engage in activities that repeatedly require them to use the target form in context, such as storytelling, sentence reconstruction, and meaningful writing tasks.

The autonomous stage is reached when learners can apply the rule automatically with minimal attention. At this point, retrieval of the grammatical form “bought” occurs quickly, without the need for conscious recall of the rule. Anderson’s model predicts that performance becomes faster and more accurate as learners progress through these stages, reflecting the strengthening of procedural knowledge and the reduction of cognitive load. In SLA, the autonomous stage corresponds to fluency and the ability to use grammatical forms naturally in real-time communication.

Explicit and Implicit Learning Grammar

Grammar learning has traditionally been divided into two broad categories: explicit learning and implicit learning. Explicit learning involves conscious attention to rules and forms. Learners may read explanations, analyze patterns, or listen to a teacher’s explanation of how a verb changes form. Explicit learning is particularly beneficial for understanding irregular verbs, which cannot be deduced from consistent morphological patterns. When learners first encounter the verb “bought,” they must explicitly memorize that it is the past tense of “buy,” because exposure alone is often insufficient to induce accurate acquisition.

However, explicit learning alone does not lead to fluency. Implicit learning, which occurs without conscious awareness of rules, plays a crucial role in enabling learners to use grammatical forms spontaneously during communication. Through repeated exposure to meaningful input and participation in communicative tasks, learners gradually internalize patterns without needing to verbalize the underlying rules. Krashen argues that implicit acquisition is the foundation of true fluency. Meanwhile, Hulstijn presents a more integrated view, suggesting that explicit knowledge can gradually feed into implicit competence through repeated practice.

English Past Tense and Irregular Verb Challenges

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The English past tense system consists of both regular and irregular verbs. Regular verbs follow predictable morphological rules, typically involving the addition of "-ed." Irregular verbs, however, undergo a variety of unpredictable transformations that must be memorized individually. These irregularities stem from historical developments in English and cannot be understood through rule-based generalizations. For learners, this creates a heavy cognitive burden, especially in the early stages of acquisition.

Pinker argued for a dual-mechanism model in which regular verbs are processed by rule application and irregular verbs by memorization. In contrast, connectionist researchers such as Howell and colleagues argued that both types of verb forms are processed through the same underlying cognitive mechanism involving pattern recognition and associative learning. For SLA learners, especially those in EFL contexts, the acquisition of irregular verbs is influenced by frequency of exposure, meaningfulness of the form in context, and opportunities for output.

Studies consistently show that irregular past-tense verbs are among the most persistent sources of error in learner production. Learners often produce incorrect inflections such as "buyed," especially when processing demands are high. These errors indicate that proceduralization has not yet occurred. The verb "bought" is particularly relevant because it is frequently used in everyday communication. However, its form differs significantly from the base verb "buy," making it a prime candidate for examining the complexities of irregular verb acquisition.

SAT and Grammar Learning

The relationship between SAT and grammar learning is well established in SLA research. SAT posits that learning begins with explicit knowledge but must progress toward proceduralization through meaningful practice. Grammar instruction often provides learners with explicit knowledge about rules, but without adequate practice, learners remain stuck in the declarative stage. This explains why many EFL learners can describe grammar rules but struggle to use them accurately during conversation.

SAT emphasizes the importance of controlled practice followed by communicative practice. Controlled practice tasks allow learners to focus on accuracy and reduce cognitive load. Communicative practice tasks, such as storytelling or role- play, challenge learners to use grammatical forms spontaneously in meaningful contexts. By sequencing tasks from controlled to communicative, teachers can support the gradual transition from declarative to procedural knowledge, resulting in more fluent use of grammar forms such as "bought."

"Bought" as a Case Study

The verb "bought" represents an ideal case for studying grammar proceduralization for several reasons. Its irregularity requires explicit learning followed by repeated practice. It is frequently used in daily contexts, making accurate acquisition essential for communicative competence. Furthermore, the transformation from "buy" to "bought" bears no morphological resemblance, making it more challenging than the case of irregular verbs with partial similarity, such as "make" and "made." For Indonesian learners, whose first language does not mark the past tense morphologically, acquiring "bought" requires a significant cognitive shift.

RESEARCH METHOD

This research employed a qualitative self-study design to investigate the process of acquiring the irregular verb "bought" through the lens of Skill Acquisition Theory. Self-study was selected to enable a highly detailed examination of internal cognitive processes, affective reactions, and learning strategies that may not be accessible through other research designs. This method aligns with reflective traditions in SLA research, where the goal is to uncover the dynamic and individualized nature of language learning processes.

The participant in this study was the researcher herself. Prior to the learning intervention, an initial diagnostic test was administered to assess baseline knowledge of regular and irregular past tense forms. This assessment included sentence-completion tasks, multiple-choice items, verb-transformation drills, and a short free-writing activity. These tasks provided insight into the researcher's existing declarative knowledge and error patterns.

Following the diagnostic phase, the researcher engaged in a structured learning plan divided according to SAT stages. In the declarative phase, the researcher studied the rule explicitly, reviewing grammar explanations from textbooks and online resources. Sample sentences containing the verb "bought" were analyzed to reinforce understanding of its usage. During the procedural phase, the researcher completed daily practice activities, including writing journal entries, constructing sentences, and completing substitution drills that required multiple uses of the verb "bought."

To encourage proceduralization, practice was distributed over several weeks. Each day included a short storytelling activity in which the researcher narrated personal experiences involving past events. These narratives were audio-recorded to capture natural use of the target form. In addition, written reflections were maintained in a journal to document the learning process, emotional responses, and self-observed improvements.

Data analysis involved multiple steps. Audio recordings were transcribed and coded to identify patterns of correct and incorrect usage of "bought," frequency of

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hesitation, and fluency markers such as pauses and reformulations. Journal entries were analyzed thematically to identify recurring themes related to cognitive load, confidence, error awareness, and perceived progress. These qualitative data were triangulated with the results of a post-test administered after the practice period to determine the extent of proceduralization and fluency development

FINDING AND DISCUSSION

Finding

Declarative Stage: Initial Awareness and Conscious Rule Recall

During the declarative stage of learning, the researcher demonstrated clear awareness of the grammatical rule that "bought" is the past tense form of "buy." The diagnostic test at the beginning of the study revealed that the researcher could correctly transform the base verb into its past tense in written tasks, especially when given sufficient time to think. For instance, the researcher consistently produced sentences such as "Yesterday I bought some snacks at the store" with full accuracy when writing slowly and deliberately. This shows that declarative knowledge about the rule was successfully acquired.

However, despite understanding the rule, the researcher relied heavily on conscious recall. In reflective notes, she reported needing to pause and mentally repeat the rule before writing: "I know the rule, but I still have to check it in my mind before I write it." Such comments illustrate that knowledge at this stage was not yet proceduralized and that the researcher's performance depended on deliberate attention. This aligns with Anderson's conceptualization of declarative knowledge, which is accurate but slow, effortful, and fragile when learners attempt to use it in real communication.

Early Proceduralization: Cognitive Load, Hesitation, and Error Production

When the researcher began to use "bought" in oral tasks, the transition to procedural knowledge proved challenging. The early recordings showed frequent hesitation, long pauses, and inconsistent accuracy. Although the researcher could state the rule explicitly, real-time production triggered errors such as "buyed," "I buy it yesterday," or a complete avoidance of past tense marking. These errors illustrate the high cognitive load experienced when multiple processes, such as grammar retrieval, lexical selection, sentence planning, pronunciation, and fluency, occur simultaneously.

Reflective journal entries confirm this difficulty. The researcher wrote that she felt "overwhelmed because I have to think about the tense while also trying to speak smoothly." This indicates that during the early procedural stage, the researcher's working

memory was heavily burdened, causing fluctuations in performance. Such fluctuations align with Skill Acquisition Theory, which predicts that performance at this stage is unstable because learners have not yet converted explicit knowledge into fast, efficient procedures.

In addition, the errors during this stage demonstrate common developmental patterns documented in SLA research. The production of "buyed" reflects overgeneralization of regular verb rules, a typical phenomenon when irregular forms have not yet been fully internalized. The alternation between correct and incorrect forms reveals that the researcher was in a transitional stage: the rule had been learned but not yet automatized.

Stability Through Contextualized and Distributed Practice

As the researcher engaged in continuous, distributed practice writing daily journals, storytelling, and repeating meaningful tasks, the use of "bought" became increasingly stable. By the third week, the audio recordings showed far fewer errors and noticeably shorter hesitation before using the target form. This improvement correlates with the SAT principle that repeated and meaningful practice strengthens procedural memory.

The researcher reported that storytelling activities were particularly helpful, explaining that narrating real past experiences made it easier to recall the correct verb form. For example, describing daily routines such as shopping, traveling, or buying food allowed "bought" to appear naturally within the narrative structure. This meaningful repetition supports associative memory, making retrieval faster and less dependent on conscious recall of rules.

Moreover, reflective writing also contributed to procedural development. By repeatedly producing the form in sentences such as "Last week I bought materials for my project," the researcher reinforced both the semantic and morphological aspects of the verb. The growing consistency in production suggests that knowledge was moving from declarative memory toward proceduralization, reducing cognitive load during language processing.

At this stage, the researcher no longer needed to remind herself of the rule consciously. Instead, the form "bought" resurfaced more intuitively during both writing and speaking tasks. This shift from conscious effort to semi-automatic retrieval indicates the strengthening of procedural control.

Greater Fluency and Reduced Attentional Demand

During the final weeks of the study, the researcher's use of "bought" approached automatization. In spontaneous speaking tasks where the researcher was asked to narrate

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events without preparation, the verb "bought" emerged fluently, consistently, and without hesitation. There were no occurrences of "buyed" or tense omissions, even when the researcher spoke at a faster and more natural pace.

In reflective entries, the researcher noted: "I don't think about the rule anymore. The word 'bought' just comes out immediately." This self-observation strongly indicates that the form had been proceduralized and was now functioning as an automatic linguistic unit. The reduced need for attentional control also allowed the researcher to focus on higher-level aspects of communication, such as organizing ideas, maintaining coherence, and using expressive intonation.

The improvement in fluency and confidence signifies the entry into what SAT identifies as the autonomous stage. At this point, applying the rule requires little to no conscious effort, allowing smooth integration into real-time communication. This aligns with SLA research showing that consistent accuracy combined with rapid retrieval is a hallmark of automatized grammatical knowledge.

Discussion

The findings of this study provide strong evidence for Skill Acquisition Theory as a useful framework for understanding grammar proceduralization. The progression from explicit knowledge to proceduralized use observed in this self-study aligns with the stages outlined by Anderson and further validated by SLA researchers such as DeKeyser. The learner's experience suggests that declarative knowledge, while necessary, is insufficient for fluent performance. Although the researcher understood the rule from the outset, this knowledge did not immediately translate into accurate use in communication, highlighting the limitations of explicit learning alone.

The high cognitive load experienced during early production underscores SAT's claim that learners require substantial attentional resources when applying newly learned rules. The errors and hesitations produced during this phase reflect the learner's struggle to manage competing cognitive tasks, including vocabulary retrieval, sentence planning, and rule recall. These findings support Ortega's assertion that the early stages of rule application are marked by heavy cognitive demands that impede fluency.

The role of meaningful, contextualized practice emerged as a key factor in facilitating proceduralization. Storytelling activities encouraged repeated use of "bought" in authentic contexts, reducing reliance on conscious rule recall and promoting automaticity. This supports research by Coyle and colleagues, who argue that communicative tasks provide

the contextual richness needed for learners to internalize grammatical structures. The researcher's reflections further indicate that meaningful practice enhanced motivation and engagement, a factor not explicitly addressed in SAT but acknowledged in affective dimensions of SLA.

Emotion played a notable role in the learning process. The researcher frequently reported frustration during early stages and a sense of accomplishment as fluency improved. These emotional fluctuations highlight the importance of perseverance and the need for supportive learning environments. While SAT focuses on cognitive aspects of learning, this study suggests that emotional factors also influence the rate and success of proceduralization.

The pedagogical implications of this study are significant for grammar instruction in EFL contexts. Teachers should recognize that explicit instruction must be complemented by distributed, meaningful, and communicative practice. Grammar lessons should be structured to support gradual progression from controlled to communicative tasks. Furthermore, providing learners with opportunities to reflect on their learning can deepen awareness and promote self-regulation. The findings support a balanced approach to grammar instruction that integrates the strengths of both explicit learning and communicative practice.

CONCLUSION AND SUGGESTION

This study examined the acquisition of the irregular verb "bought" using Skill Acquisition Theory as a framework. The results demonstrate that grammar learning is a gradual and multifaceted process requiring both explicit instruction and extensive, meaningful practice. The progression from declarative to procedural and eventually autonomous use was evident in the learner's performance. These findings reinforce the importance of integrating explicit grammar explanation with contextualized communicative tasks in EFL instruction. Future research could extend this study by examining larger groups of learners or applying SAT to additional grammatical structures to explore individual and contextual variations in proceduralization further.

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