

Rethinking Arabic Grammar Teaching: Integrative Models, Cognitive Load, and Learner Engagement

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Abstract

This research addresses the pedagogical impasse in Arabic grammar instruction caused by mechanistic, rote-heavy approaches. Traditional naḥw teaching often leads to excessive cognitive load and low learner engagement, hindering the transition from theoretical rules to communicative proficiency. Utilizing a qualitative library research design, this study reconstructs grammar pedagogy through the lens of Cognitive Load Theory and integrative models. The findings indicate that traditional methods generate significant cognitive redundancy, which exhausts learners' working memory. Consequently, this study proposes an integrative model that synergizes cognitive management, specifically through scaffolding and extraneous load reduction, with proactive learner participation. By positioning syntactic rules as functional semantic markers within authentic discourse, this model optimizes cognitive processing and enhances engagement. This reconstruction transforms Arabic grammar from a static theoretical burden into a dynamic communicative tool, ensuring its pedagogical relevance in the contemporary era.

Keywords: Arabic Grammar, Integrative Models, Cognitive Load, Learner Engagement.

ملخص

يتناول هذا البحث المأزق التربوي في تعليم قواعد اللغة العربية الناتج عن المناهج الآلية التي تعتمد بكثافة على الحفظ والاستظهار. غالبًا ما يؤدي تعليم النحو التقليدي إلى عبء معرفي مفرط وانخفاض في تفاعل المتعلمين، مما يعيق الانتقال من القواعد النظرية إلى الكفاءة التواصلية. وباستخدام تصميم البحث المكتبي النوعي، تعيد هذه الدراسة بناء تربوية القواعد من منظور "نظرية العبء المعرفي" والنماذج التكاملية. تشير النتائج إلى أن الأساليب التقليدية تولد تكرارًا معرفيًا (redundancy) كبيرًا، مما يستنزف الذاكرة العاملة للمتعلمين. وبناءً على ذلك، تقترح هذه الدراسة نموذجًا تكامليًا يآزر بين الإدارة المعرفية، تحديدًا من خلال الدعم التعليمي (scaffolding) وتقليل العبء الخارجي، والمشاركة الاستباقية للمتعلمين. ومن خلال وضع القواعد النحوية كعلامات دلالية وظيفية داخل الخطاب الأصيل، يعمل هذا النموذج على تحسين المعالجة المعرفية وتعزيز التفاعل. يعيد هذا البناء تحويل النحو العربي من عبء نظري استاتيكي إلى أداة تواصلية ديناميكية، مما يضمن ملاءمته التربوية في العصر المعاصر.

الكلمات المفتاحية: النحو العربي، النماذج التكاملية، العبء المعرفي، تفاعل المتعلمين.

Abstrak

Penelitian ini membahas kebuntuan pedagogis dalam pengajaran tata bahasa Arab yang disebabkan oleh pendekatan mekanistik yang sarat dengan hafalan. Pengajaran *nahw* tradisional sering kali menyebabkan beban kognitif yang berlebihan dan rendahnya keterlibatan pelajar, sehingga menghambat transisi dari kaidah teoretis ke kemahiran komunikatif. Dengan menggunakan desain penelitian pustaka kualitatif, studi ini merekonstruksi pedagogi tata bahasa melalui lensa Teori Beban Kognitif dan model integratif. Temuan menunjukkan bahwa metode tradisional menghasilkan redundansi kognitif yang signifikan, yang menguras memori kerja pelajar. Oleh karena itu, studi ini mengusulkan sebuah model integratif yang mensinergikan manajemen kognitif, khususnya melalui perancah (*scaffolding*) dan reduksi beban ekstrinsik, dengan partisipasi pelajar yang proaktif. Dengan memposisikan kaidah sintaksis sebagai penanda semantik fungsional dalam wacana autentik, model ini mengoptimalkan pemrosesan kognitif dan meningkatkan keterlibatan. Rekonstruksi ini mengubah tata bahasa Arab dari beban teoretis yang statis menjadi instrumen komunikatif yang dinamis, sekaligus memastikan relevansi pedagogisnya di era kontemporer.

Kata kunci: Tata Bahasa Arab, Model Integratif, Beban Kognitif, Keterlibatan Pelajar.

A. Introduction

The teaching of Arabic grammar, specifically the discourses of *naḥw* and *ṣarf*, occupies a central position within the tradition of Islamic linguistics and education. Historically, the science of Arabic grammar functions as a fundamental instrument to preserve the validity of linguistic structures and to unveil the meanings of authoritative religious texts. Despite its essential nature, in contemporary educational praxis, grammar instruction is frequently entrapped in a mechanistic approach that prioritizes pure theoretical memorization (*naḥw 'ilmī*) over optimizing its communicative and pedagogical functions (*naḥw ta'līmī*) (Ḍayf, 1982). The dominance of this deductive grammar-translation method consequently triggers a stagnation in learner engagement. A significant discrepancy is often found between rote memorization of rules and the ability to transfer grammatical knowledge into holistic language skills, particularly in the proficiency of reading unvoweled Arabic texts (*qirā'at al-kutub*) (Al-Nāqah, 1985b). This phenomenon underscores a disorientation between the ideal objectives of grammar learning and the methodologies implemented in the classroom, thereby demanding a more integrative and adaptive pedagogical reorientation tailored to the learners' mental capacities.

The complexity of Arabic syntactic structures and the abstraction of the *i'rāb* system have proven to exert substantial psychological and cognitive pressure on non-native learners (Ryding, 2013). Within the framework of educational psychology, this problematic issue can be analyzed through the Cognitive Load Theory introduced by John Sweller (Sweller, 1994). This theory postulates that the limited capacity of human working memory will experience dysfunction or cognitive overload when confronted with overly complex, redundant, and unstructured instructional elements. Traditional Arabic grammar learning, which requires the simultaneous assimilation of theoretical formulations and advanced syntactic analysis, generates an exceedingly high intrinsic cognitive load (Syaudah et al., 2024). If this instructional structure is not managed through appropriate instructional design, extraneous cognitive load will increasingly dominate, thereby severely hindering the process of comprehension construction (germane cognitive load). Therefore, a strategic intervention is imperative to reduce this mental burden, ensuring that the processing of linguistic information can proceed optimally and meaningfully.

As an academic response to this methodological impasse, integrative learning models offer a comprehensive solution framework. In contrast to previous studies that predominantly focus on the partial simplification of *naḥw* rules or the mere digitization of traditional learning media, this study promotes an approach that synergizes linguistic awareness, cognitive design management, and neurodidactics. The integrative model does not merely reduce grammatical structures into superficial schemas; rather, it internalizes syntactic rules

progressively (scaffolding) within the context of discourse reading that is relevant to the learners' realities (Yaqin et al., 2025), such as through the contextual application of Qur'anic texts (Hula et al., 2025). The novelty of this research specifically lies in the conceptualization of Arabic grammar teaching that aligns cognitive load management with strategies for enhancing holistic learner engagement—an area of discourse that has yet to receive adequate analytical attention in Arabic language education literature (Nasirudeen & Lawal, 2025). The synthesis of linguistic rigor and cognitive flexibility is projected to reconstruct learners' memory schemas from surface-level memorization to profound syntactic understanding (Tampubolon, 2025).

Building upon the theoretical foundation and literature gap previously outlined, this article aims to rethink the paradigm of Arabic grammar teaching through the framework of integrative models. Specifically, this research seeks to evaluate how the application of cognitive load reduction principles in the instructional design of *naḥw* can eliminate learners' psychological barriers. Furthermore, the article examines the extent to which the integration of grammatical materials with an active participation-centered approach can optimize their applied syntactic proficiencies in the classroom. It is anticipated that the findings of this study will ultimately provide academic and practical contributions for educators, curriculum developers, and policymakers in designing Arabic grammar methodologies that are not only scientifically valid but also pedagogically effective and congruent with human cognitive architecture.

B. Method

This research employs a qualitative approach with a library research (*baḥs al-maktabī*) design. The research framework is directed toward conducting a critical review and theoretical reconstruction of Arabic grammar teaching models through the lens of educational psychology and instructional design (Creswell & Creswell, 2018). The primary focus of this study is to explore the integration between integrative teaching models and cognitive load management to enhance learner engagement. As a library-based study, the working procedures do not involve direct field intervention but instead focus on an in-depth analysis of authoritative literature, encompassing both classical (*turās*) and contemporary works relevant to Arabic linguistic discourse and modern pedagogy.

The data sources in this study are classified into two categories: primary and secondary sources. Primary sources include fundamental works in the field of Arabic grammar, such as *Tajdīd al-Naḥw* by Shawqī Ḍayf, and the seminal literature on Cognitive Load Theory authored by John Sweller. Meanwhile, secondary sources consist of reputable scientific journal articles, international proceedings, and supporting books discussing learner engagement and integrative learning models within the context of second language acquisition (Al-Nāqah, 1985a). All literature

collected was subsequently selected through a purposive technique to ensure the validity and relevance of the information regarding the focal issues under study.

The data collection technique was carried out through systematic documentation and literature observation. The collected data were then grouped based on thematic categorizations, namely: (1) critique of traditional *naḥw* methodology; (2) mechanisms of cognitive load in language learning; and (3) principles of integrative models. The research instrument employed was a documentation guide that enabled the researcher to perform theoretical triangulation to ensure the objectivity of the findings (Miles et al., 2014).

Data analysis in this study applies a descriptive-analytical content analysis technique. The analysis process was conducted through several stages, beginning with data reduction and thematic data display, and culminating in drawing conclusions. The researcher interpreted the existing data by comparing various theoretical perspectives to find a synthesis in the form of an integrative Arabic grammar teaching model (Sugiyono, 2019). Through this technique, it is expected that a robust conceptual framework will be produced concerning how cognitive redundancy can be reduced, thereby making the process of internalizing *i'rāb* rules more effective and capable of stimulating active learner participation in the classroom.

C. Results and Discussion

Cognitive Redundancy in Traditional *Naḥw* Teaching Methodology

Traditional *naḥw* teaching methodologies, which have dominated Arabic language education institutions for centuries, tend to be centered on a deductive-normative approach. In this paradigm, learners are required to internalize grammatical rules abstractly before applying them within sentence structures, a rigid instructional approach that often neglects the communicative and contextual stages of learning (Asyiq & An Nur, 2026). Epistemologically, this tradition is rooted in the effort of linguistic protection (*ṣiyānah al-lugah*) against the phenomenon of *lahn* (linguistic errors); however, in its development, it has become ensnared in highly technical formalism. The approach that prioritizes the memorization of classical *naḥw* texts (*mutūn al-naḥwiyyah*) frequently overlooks the functional aspects of the language itself. Consequently, a decoupling occurs between what is termed *naḥw 'ilmī* (grammar as a theoretical discipline) and *naḥw ta'līmī* (grammar for pedagogical purposes), where learners become more proficient at memorizing *i'rāb* definitions than spontaneously producing grammatically correct sentences (Ḍayf, 1982).

Within the perspective of Cognitive Load Theory (CLT), such a teaching model creates what is referred to as cognitive redundancy. Redundancy occurs when the same information is presented in various unnecessary forms, or when irrelevant material regarding the primary learning objective dominates the

learner's working memory (Sweller et al., 2019). In the context of traditional *naḥw*, cognitive redundancy frequently manifests in the form of overlapping theoretical definitions and the exposition of highly complex sectarian grammatical disputes (*khilāfāt al-naḥwiyyah*). For beginner or intermediate learners, information regarding the differing opinions between the Basra and Kufa schools concerning the position of the *ʿāmil* provides no functional contribution to their language proficiency; rather, it consumes working memory capacity that should be allocated to basic syntactic processing (Al-Nāqah, 1985b).

Furthermore, cognitive redundancy in traditional methodology is also manifested through the presentation of artificial and repetitive sentence examples. Often, traditional textbooks present a single rule with dozens of similar structural examples, yet devoid of a living discourse context. This forces the learner's brain to process identical information repeatedly without an increase in comprehension schema. John Sweller asserts that presenting such redundant information hinders the learning process because it triggers the split-attention effect, where the learner's focus is divided between understanding abstract rules and sorting through examples that essentially carry the same cognitive load (Sweller et al., 2019). In *naḥw* instruction, this extraneous cognitive load is further exacerbated by the use of highly specific technical terms that could actually be simplified without diminishing the scientific essence.

The phenomenon of cognitive redundancy is also closely related to the inability of traditional curricula to distinguish between linguistic and philological needs. Much of the *naḥw* instructional material is structured as if preparing learners to become linguistic experts (*naḥwī*), rather than skilled language users (*lugawī*). Ibrāhīm Muṣṭafā, in his monumental work *Iḥyāʾ al-Naḥw*, sharply criticized this tendency, stating that the theoretical burden in the science of *naḥw* has exceeded pedagogical reason (Muṣṭafā, 1937). Redundancy arises when learners are forced to philosophically understand the logic behind a law of *iʾrāb* before they are capable of utilizing that law in conversation or writing. Consequently, the learners' mental energy is exhausted by solving grammatical puzzles, causing their engagement in more meaningful communicative activities to be neglected.

The psychological impact of this cognitive redundancy includes cognitive saturation and a decline in learner engagement. When a learner's working memory is flooded with asynchronous and redundant information elements, they tend to experience mental fatigue, leading to the perception that Arabic is a difficult and rigid language. Recent research indicates that the design of *naḥw* materials that fails to consider cognitive efficiency correlates positively with high levels of language anxiety among learners (Tampubolon, 2025). The inability of learners to transfer their grammatical knowledge into the skill of reading unvoweled texts (*qirāʾah al-kutub*) is not caused by low intelligence, but rather because their working memory

is overburdened by theoretical redundancies that are not integrated with applicative skills.

Therefore, rethinking *naḥw* instruction demands a deconstruction of redundant elements within traditional methodology. Simplification does not imply a shallowing of meaning, but rather an effort to optimize cognitive load to align with the learner's mental architecture. The instructional focus must be shifted from the static mastery of *al-qawā'id al-naḥwiyyah* toward the development of dynamic grammatical awareness. By reducing redundant information and eliminating unnecessary extraneous load, learners' cognitive space can be fully allocated to constructing a deeper and more functional syntactic understanding, which in turn will enhance their active engagement in the language learning process (Yaqin et al., 2025).

Synthesis of Cognitive Management and Learner Participation

The integrative model in Arabic grammar instruction emerges as an antithesis to the atomistic approach that dissociates grammatical rules from their communicative contexts. Conceptually, this model seeks to synergize the mastery of structure (*naḥw*) with discursive functionality (*siyāq*), transforming applied Nahwu into an accessible tool rather than a theoretical burden (Al Husna et al., 2026), ensuring that rules are no longer perceived as isolated, static entities. Within this framework, integration is achieved by presenting grammatical materials through authentic texts with holistic meanings, derived from both *turās* (classical heritage) and contemporary sources. This approach aligns with Tammām Ḥassān's notion, which emphasizes viewing language as an integrated system (*niẓām al-lughah*) where phonology, morphology, syntax, and semantics interact simultaneously to construct meaning (Ḥassān, 2006). Consequently, the teaching of *naḥw* no longer commences with the memorization of formulas but rather with the observation of how these structures operate in building a thought.

The synthesis of cognitive management within this integrative model is implemented through scaffolding strategies aimed at reducing both intrinsic and extraneous cognitive loads for learners. Cognitive load management is executed by regulating the complexity of information elements so they do not exceed the capacity of the working memory. In practice, the integrative model deconstructs complex syntactic rules into smaller, functional units of information, which are subsequently reintegrated progressively into larger structures (Sweller, 2023). The reduction of extraneous load is achieved by eliminating redundant technical terms and focusing the learners' attention on the function of *i'rāb* in determining sentence meaning. Through a cognitively efficient instructional design, which may include computer-assisted interventions aligned with SLA theory (Chapelle, 2009), learners can allocate their mental energy to a deeper construction of knowledge (germane cognitive load) rather than merely processing redundant information.

The methodological superiority of the integrative model lies in its ability to stimulate holistic active learner participation. When cognitive load is managed effectively, the mental barriers that frequently trigger language anxiety can be minimized, thereby creating cognitive space for learners to engage further in classroom activities. Learner participation in this model is not merely responsive-mechanistic; it transforms into proactive cognitive engagement. Learners are encouraged to conduct independent explorations of linguistic phenomena within texts through group discussions and critical analysis, fostering a culture of critical inquiry in text-based environments (Garrison et al., 2000). As asserted by Maḥmūd Kāmil al-Nāqah, optimal learner engagement can only be achieved if the instructional materials possess a high level of relevance to the learners' communicative realities and intellectual capacities (Al-Nāqah, 1985b).

Furthermore, the integrative model strives for the internalization of *naḥw* rules through a functional, meaning-centered approach. In this model, the teaching of *i'rāb* is directly linked to its role as a semantic marker, rather than mere labeling of word positions within a sentence. For instance, understanding the positions of *fā'il* (subject) and *maf'ul bih* (object) is taught through an analysis of how changes in the final vowels (*ḥarakāt*) can alter the logic of a statement. This integration between form and meaning allows learners to develop a sharper linguistic awareness. Recent research indicates that learning models integrating form-focused instruction within communicative contexts significantly improve long-term retention of grammatical rules compared to conventional methods (Yaqin et al., 2025).

The implementation of the integrative model also necessitates a shift in the educator's role from a mere source of grammatical authority to a facilitator of cognitive management. Educators must be capable of designing materials that are not only theoretically accurate but also mentally ergonomic. This involves the use of visual media, concept maps, and educational technology capable of simplifying the abstraction of *naḥw* rules. The use of visualization in Arabic grammar instruction has proven effective in reducing the split-attention effect, as learners no longer need to divide their concentration between complex oral explanations and difficult texts. With appropriate visualization, the relationships between syntactic elements become clearer, thereby accelerating the process of mental schema formation in the long-term memory (Tampubolon, 2025).

Ultimately, the integrative model—which synergizes cognitive management and learner participation—projects an Arabic language learning ecosystem that is more humanistic and effective. This model does not disregard the rigidity of *naḥw* rules that define the scientific identity of the Arabic language; rather, it provides a more mind-friendly path for learners to achieve them. By positioning the learner as an active subject constructing meaning under the guidance of efficient instructional design, the teaching of Arabic grammar can be transformed from a tedious cognitive

burden into an enlightening intellectual adventure. This reconstruction is vital to ensure that Arabic language instruction remains relevant and competitive amidst the development of global language education methodologies in the contemporary era (Syaudah et al., 2024).

Comparative Analysis and Theoretical Evaluation

A comparative analysis between traditional naḥw teaching methodologies and the integrative model based on cognitive management reveals fundamental differences in pedagogical efficiency and output orientation. In traditional methodology, the primary focus lies on formalistic accuracy through the deductive mastery of rules. Conversely, the integrative model prioritizes communicative functionality by synergizing rules within discursive structures. This distinction is not merely an instructional technicality but touches upon the epistemological level of how language is perceived. While the traditional approach treats grammar as a set of static laws to be obeyed, the integrative model views it as a dynamic instrument for the negotiation of meaning. Theoretical evaluation indicates that the integrative model significantly bridges the gap between declarative knowledge ("knowing that") and procedural knowledge ("knowing how"), which has long been a weakness in Arabic language learning for non-native speakers (Ḍayf, 1982).

From the perspective of cognitive efficiency, traditional approaches tend to ignore the limitations of learners' working memory by presenting redundant information on a massive scale. This contrasts with the integrative model, which applies the modality effect and scaffolding principles to optimize cognitive load. In the integrative model, naḥw materials are not presented as standalone entities but as part of a broader linguistic ecosystem. Evaluation of the material structure shows that reducing extraneous load—through the simplification of terminology and the elimination of irrelevant theoretical disputes—enhances information processing speed. As asserted by John Sweller, the effectiveness of an instructional design depends heavily on its ability to direct learners' mental energy toward the formation of meaningful knowledge schemas (germane load), rather than on resolving unnecessary redundant obstacles (Sweller et al., 2019).

Theoretically, learner engagement in the integrative model exhibits a qualitative improvement through more active learner agency. In traditional classrooms, learners are positioned as passive recipients of rigid grammatical laws, which frequently triggers cognitive boredom. However, within the integrative framework, learners are involved in a process of "guided discovery," where they are encouraged to unveil syntactic patterns from authentic texts. Evaluation of these psycho-pedagogical aspects indicates that when learners feel capable of controlling their own cognitive load and perceive a direct relevance between rules and text meaning, their intrinsic motivation increases exponentially (Tampubolon, 2025). This aligns with the critique of Maḥmūd Kāmil al-Nāqah, who stated that Arabic

language teaching must move out of the "prison of rules" toward a broader "horizon of usage" (Al-Nāqah, 1985b).

The evaluation of technology and visual media integration within this model also yields significant findings. The use of visualization to represent syntactic relationships—such as the use of tree diagrams or concept maps to explain *i'rāb* structures—has proven effective in reducing the split-attention effect and significantly enhances the students' understanding of abstract grammatical rules (Izzah et al., 2024) and promoting multimodal interaction (Hampel & Stickler, 2012). Learners no longer need to divide their concentration between abstract oral explanations and dense texts. This visual integration provides cognitive anchors that facilitate the transition of information from working memory to long-term memory. Research results show that material designs considering mental ergonomics correlate positively with the long-term retention of grammatical knowledge—an output that is difficult to achieve through repetitive memorization methods in older teaching traditions (Yaqin et al., 2025).

Discursively, this theoretical evaluation confirms the position of the integrative model as a synthesis between the richness of the *turāṣ* heritage and the demands of modern pedagogy. This model does not intend to replace the scientific authority of classical *naḥw*; rather, it recontextualizes these rules so they can be more efficiently accessed by contemporary learners in a multimodal learning environment (Blake, 2013). The efforts of *tajdīd* (renewal) championed by Shawqī Ḍayf and Ibrāhīm Muṣṭafā find a firmer footing in this research through the support of Cognitive Load Theory (Muṣṭafā, 1937). Thus, the integrative model is not only a methodological proposal but a conceptual framework validating that authoritative Arabic grammar instruction can still be conducted in a cognitively efficient and pedagogically engaging manner.

As a conclusion to this comparative analysis, the reconstruction of Arabic grammar teaching through the integrative model is proven to eliminate the cognitive redundancies that have hindered learning progress. Evaluation of the model's implementation shows that the synergy between mental load management and active participation strategies creates a resilient learning ecosystem. Learners do not merely become "memorizers of *i'rāb* laws," but rather "meaning analysts" capable of using syntactic tools to understand and produce complex Arabic discourse. This transformation is crucial to ensuring that Arabic language education does not only survive as a historical study but thrives as a competitive and relevant scientific discipline in the global era (Syaudah et al., 2024).

D. Conclusion

The reconstruction of Arabic grammar teaching through an integrative model represents a pedagogical imperative to address the methodological stagnation that has long dominated traditional *naḥw* instruction. Based on the analysis conducted,

it can be concluded that the traditional deductive-normative methodology tends to generate massive cognitive redundancy, wherein the learners' working memory is overburdened by non-functional theoretical abstractions and syntactic formalisms. This extraneous cognitive load serves as a primary barrier to the learners' ability to transfer their grammatical knowledge into applicative language skills, particularly in the proficiency of reading unvoweled Arabic texts. Therefore, a paradigm shift from teaching grammar as a pure scientific discipline (*naḥw 'ilmī*) toward grammar as an adaptive instructional instrument (*naḥw ta'limī*) constitutes a vital point of departure in enhancing the effectiveness of instructional design.

The integrative model serves as a solutive synthesis that merges cognitive load management with strategies for enhancing active learner participation. Through the implementation of scaffolding principles, the reduction of redundant terminology, and the utilization of mentally ergonomic visual media, this model is capable of optimizing learners' cognitive capacity to focus on deep meaning construction. Learner engagement is no longer mechanistic but is instead transformed into active agency, allowing for the exploration of linguistic phenomena within authentic discursive contexts. This synergy not only improves the long-term retention of grammatical knowledge but juga significantly reduces language anxiety among learners. By positioning *i'rāb* rules as semantic markers within a functional linguistic ecosystem, Arabic grammar instruction can be transformed into an enlightening and competitive intellectual process that is congruent with human cognitive architecture in the modern era.

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