



Arabic *Qirā'ah* Learning Strategies Based on Cognitive Load Theory: Analysis and Pedagogical Implications

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Abstract

This study addresses the persistent working memory bottlenecks in Arabic reading (*qirā'ah*) instruction that hinder deep textual comprehension. The objective is to evaluate how Cognitive Load Theory (CLT) can optimize learners' mental capacities during text processing. Employing a qualitative library research methodology, empirical studies published predominantly within the last five years, together with foundational theoretical works, were synthesized and evaluated through systematic content analysis. The results indicate that standard *qirā'ah* tasks generate excessive cognitive strain due to high intrinsic load from complex *nahwu-sharaf* structures, high extraneous load from suboptimal lesson layouts, and underutilized germane load. The synthesis further demonstrates that the morphosyntactic complexity of Arabic (*nahwu-sharaf*) constitutes the primary source of intrinsic cognitive load, thereby requiring instructional designs that systematically regulate linguistic complexity through cognitively informed learning strategies. To mitigate these operational barriers, this paper proposes actionable interventions, including text chunking, structural pruning, prior schema activation, and systematic scaffolding. It is concluded that aligning instructional designs with human working memory limits successfully reduces extraneous cognitive load while fostering sustainable schema construction. Ultimately, CLT offers a robust, process-oriented pedagogical framework for engineering adaptive Arabic learning materials.

Keywords: Arabic Reading; Cognitive Load Theory; Working Memory; Arabic Morphosyntax; Reading Comprehension.

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INTRODUCTION | مقدمة

Qirā'ah instruction within Arabic language pedagogy persistently grapples with complex structural and cognitive bottlenecks. While a significant number of learners demonstrate the ability to decode Arabic texts mechanically, deeper reading comprehension, thematic identification, and syntactic integration remain major hurdles (Hasanah 2025, 190). This discrepancy indicates that mastering *maharah qirā'ah* extends beyond simple linguistic competence; it is inherently bound to how students cognitively process dense text structures under working memory constraints. Recent investigations confirm that heavy syntactic frameworks, limited vocabulary retention, and text density stand out as primary catalysts for low comprehension outcomes (Amanda et al. 2025, 56).

In conventional classroom environments, educators frequently deliver *qirā'ah* materials through linear, high-density presentation modes that overlook cognitive thresholds. Students are routinely forced to process lexical novelties, decode morphosyntactic structures, and synthesize textual meaning simultaneously. This multi-layered demand triggers cognitive overload, which

severely sabotages deep comprehension. Grounded in John Sweller's Cognitive Load Theory (CLT), human working memory possesses a finite capacity, necessitating instructional designs that strictly align with human cognitive architecture (Sweller et al. 2019, 270). Unstructured or poorly sequenced learning environments inevitably amplify extraneous cognitive load, thereby blocking systemic knowledge schema construction (Syagif 2024, 97).

Theoretically, CLT categorizes mental workload into three distinct dimensions: intrinsic, extraneous, and germane load. Applied to Arabic *qirā'ah*, intrinsic load naturally emerges from the complex nature of Arabic morphology and syntax (*nahwu-sharaf*). Extraneous load is generated by inefficient instructional practices, while germane load represents the mental energy dedicated to schema formation and deep comprehension. Consequently, managing these cognitive dimensions becomes critical to shifting *qirā'ah* from a mechanical exercise into a meaningful comprehension process. Prior research in cognitive-driven language learning suggests that explicit information organization and material segmentation substantially enhance textual retention and learning efficiency (Syafei 2025, 572).

Over the last decade, scholarship in Arabic education has increasingly pivoted toward cognitive and metacognitive mechanics. For instance, Zunairoh (2023, 263) demonstrated that metacognitive strategies heavily influence reading comprehension by empowering students to self-monitor and systematically organize textual data. This underscores that *qirā'ah* success relies not just on vocabulary size, but on executive cognitive regulation during reading tasks. Furthermore, broader applications of cognitive theories have been explored; Zahrotul's study (2021, 85) examined Piagetian principles within audiolingual frameworks, while Syafei (2025, 572) evaluated cognitivist models in general Arabic instructional design. Yet, these studies stop short of explicitly linking CLT variables to the unique linguistic challenges of Arabic reading comprehension (Sweller et al. 2019, 261).

Conversely, contemporary developments in CLT have mostly unfolded within mathematics, multimedia learning, or generic instructional design, rather than non-Western language pedagogy. Recent frameworks highlight that cognitive load management directly impacts student motivation and behavioral investment. Evans et al (2024, 10) observed that minimizing extraneous load through structured, autonomy-supportive scaffolding significantly boosts intrinsic motivation and academic achievement. While these insights reinforce the value of cognitive regulation, their integration into Arabic *qirā'ah* pedagogy remains vastly underdeveloped (Zou et al. 2025, 877). The intricate nature of Arabic grammar urgently demands an instructional framework capable of systematically buffering students' cognitive capacities.

This pedagogical void establishes a clear research gap: there is a distinct lack of literature detailing targeted Arabic *qirā'ah* strategies engineered through a CLT lens. Existing studies frequently gravitate toward generic reading models or broad cognitive paradigms, leaving the interplay of intrinsic, extraneous, and germane loads in *qirā'ah* mostly unexamined (Syagif 2024, 93). Consequently, the issue of cognitive saturation in Arabic reading has yet to receive a structured pedagogical remedy. To address this, an instructional approach that harmonizes cognitive load variables with the distinct structural realities of the Arabic language is critically required (Sweller et al. 2019, 275).

Driven by these systemic issues, this article aims to analyze Arabic *qirā'ah* learning strategies through the framework of Cognitive Load Theory and delineate their broader pedagogical implications. The novelty of this study centers on its deliberate integration of CLT into *qirā'ah* instruction as a functional pedagogical architecture designed to curb cognitive

overload via text segmentation, structural simplification, schema activation, and process-oriented scaffolding. Ultimately, this inquiry seeks to offer a theoretical contribution to modern Arabic pedagogy while delivering an adaptive, cognitively balanced strategy for language educators. While this study is conceptually grounded in established theories, particularly Cognitive Load Theory, as its theoretical foundation, the review of empirical evidence primarily emphasizes studies published within the last five years to capture recent developments in Arabic qirā'ah pedagogy.

METHOD

منهج

This inquiry adopts a qualitative design rooted in library research methodology to explore conceptual frameworks systematically. This structural choice matches the study's primary objective: executing a rigorous, critical analysis of Arabic qirā'ah learning mechanics through John Sweller's Cognitive Load Theory (Abdussamad 2021, 25). The theoretical framework serves as an analytical lens to dissect how intrinsic, extraneous, and germane cognitive loads operationally affect text comprehension in Arabic classrooms (Sweller et al. 2019, 270). The core data corpus comprises secondary sources, including academic books, empirical monographs, and peer-reviewed journal articles indexed across national and international databases (Sinta and Scopus). Foundational theories, particularly Cognitive Load Theory and other established learning theories, were retained regardless of publication year because they provide the study's theoretical and ontological foundation. In contrast, the criterion of publications predominantly within the last five years was applied specifically to empirical studies to ensure that the analysis reflects the most recent developments in Arabic qirā'ah pedagogy and Cognitive Load Theory implementation. These documentary materials were gathered using targeted bibliographic techniques, filtering for critical intersections between qirā'ah pedagogy, cognitive architectures, and structural linguistics (Nasution 2023, 52).

The analytical phase relies on qualitative content analysis guided by Braun and Clarke's thematic analysis framework, enabling a systematic interpretation of concepts across the selected literat (Braun & Clarke 2006, 39). The analysis proceeded through six iterative stages: (1) familiarization with the selected literature through repeated reading; (2) initial coding of concepts related to qirā'ah learning challenges, cognitive load dimensions, and instructional strategies; (3) grouping similar codes into broader thematic categories; (4) reviewing and refining themes by comparing conceptual consistency across sources; (5) defining and naming the final themes; and (6) synthesizing these themes into an integrated conceptual framework for Arabic qirā'ah instruction (Byrne 2022, 1394). This analytical process explicitly identifies manifestations of intrinsic, extraneous, and germane cognitive load experienced during qirā'ah learning and examines how instructional strategies may reduce unnecessary cognitive burden while promoting schema construction (Berli 2021, 765).

To enhance the trustworthiness of the analysis, methodological triangulation was conducted through continuous comparison of theoretical arguments and empirical findings drawn from multiple scholarly sources. In addition, peer-reviewed publications from reputable national and international databases were cross-examined to verify conceptual consistency and minimize interpretive bias (Hasibuan et al. 2022). The resulting thematic patterns were subsequently synthesized into pedagogical recommendations aligned with the principles of Cognitive Load Theory.

The operational sequence governing this qualitative evaluation is visually mapped out in Figure 1 to demonstrate architectural clarity.

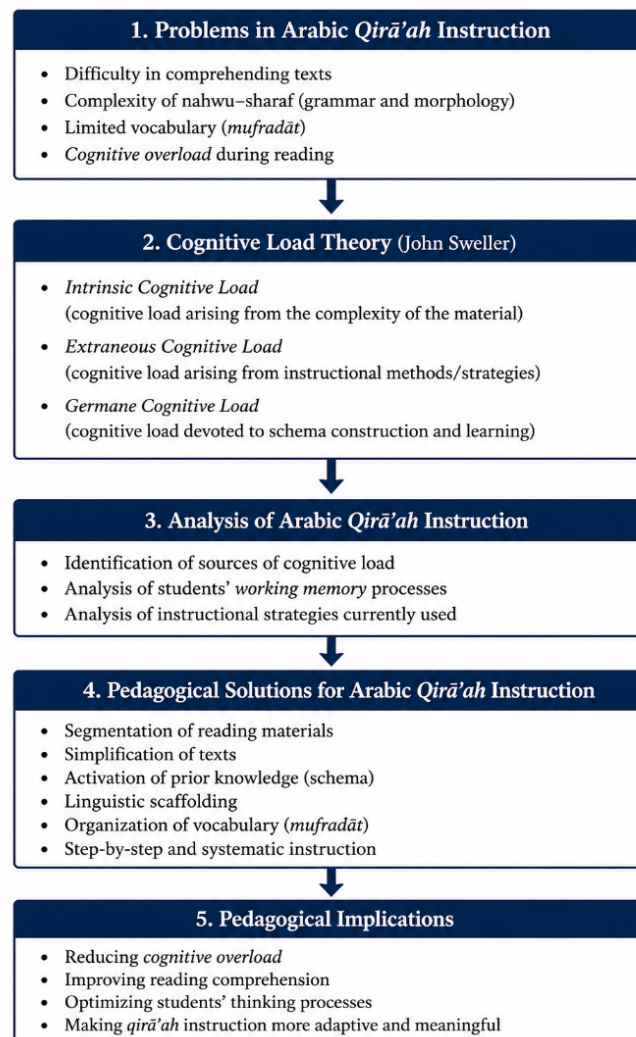


Figure 1. Analysis Framework of Qirā'ah Learning Strategies Based on Cognitive Load Theory

As delineated in Figure 1, the investigative trajectory initiates with a diagnostic assessment of current reading obstacles within Arabic pedagogy. These empirical challenges are subsequently filtered through Sweller's cognitive load taxonomy (Craig et al. 2021, 8). By establishing a clear conceptual mapping of how intrinsic and extraneous stresses disrupt student schema building, the final phase of the method synthesizes a set of systematic, adaptive, and practical instructional guidelines tailored to learners' cognitive thresholds.

RESULT | نتائج

Problematics of Arabic Qirā'ah Learning from the Perspective of Cognitive Load Theory

Arabic qirā'ah learning across various educational levels continues to encounter highly complex academic challenges, particularly in terms of text comprehension, mastery of nahwu–sharaf structures, limited *mufradāt* acquisition, and the inability to integrate linguistic information simultaneously (Ihwan et al. 2022, 61). Numerous studies indicate that many students are capable of reading Arabic texts literally; however, they experience difficulties in understanding deeper meanings, identifying main ideas, and connecting syntactic relationships

within the reading passages (Aziza & Muliansyah 2020, 56). Research conducted by Zunairoh (2023, 255) explains that the process of understanding Arabic texts is strongly influenced by students' cognitive and metacognitive abilities in managing information during reading activities. Furthermore, Syafei (2025, 161) emphasizes that Arabic language learning cannot be separated from mental activities and information processing within students' cognitive systems. These findings demonstrate that the problems of qirā'ah learning are not merely related to linguistic aspects, but are also closely associated with information-processing capacity within students' working memory (Habibah et al. (2024, 20).

From the perspective of Cognitive Load Theory, the complexity of Arabic linguistic structures may generate high intrinsic cognitive load because students are required to process multiple linguistic elements simultaneously, such as nahwu structures, sharaf transformations, vocabulary, and intersentential relationships. According to John Sweller, intrinsic load emerges from the level of complexity of the material being learned and the interrelatedness of information elements within a learning activity (Sweller et al. 2019, 270). In the context of qirā'ah learning, Arabic texts containing complex syntactic structures and diverse vocabulary may easily overload students' working memory when the reading process occurs simultaneously. Such conditions tend to cause students to focus more on text decoding rather than comprehending the content comprehensively Syagif (2024, 93).

In addition to intrinsic load, the problematics of qirā'ah learning are also influenced by extraneous cognitive load originating from ineffective instructional design and pedagogical strategies. Evans et al (2024, 11) explain that excessively dense instructional strategies, unstructured explanations, and excessive information presentation may increase students' cognitive load and reduce learning engagement. In qirā'ah learning practices, teachers often explain nahwu, sharaf, mufradāt, and reading content simultaneously without clear material segmentation (Fahrezi et al. 2026, 145). Consequently, students' attention becomes divided, and working memory experiences difficulty in processing information optimally. This condition indicates that the problems of qirā'ah learning are not solely caused by the difficulty level of Arabic texts, but also by pedagogical designs that have not adequately considered students' cognitive capacities (Ihsan Nurbaehaqi et al. 2026, 318). Based on the empirical mapping of these classroom observations, the specific breakdown of qirā'ah learning barriers and their cognitive consequences are systematically classified in Table 1.

Table 1 Classification of *Qirā'ah* Learning Problems from the Perspective of Cognitive Load Theory

Problematics of <i>Qirā'ah</i> Learning	Type of Cognitive Load	Impact on Learning
Complexity of <i>nahwu-sharaf</i> structures	Intrinsic Cognitive Load	Working memory becomes easily overloaded
Limited <i>mufradāt</i> mastery	Intrinsic Cognitive Load	Text comprehension becomes slower
Excessively dense teacher explanations	Extraneous Cognitive Load	Students' concentration and focus decrease
Unstructured material presentation	Extraneous Cognitive Load	Information becomes difficult to process optimally
Activation of text comprehension	Germane Cognitive Load	Assists schema construction
Linguistic scaffolding	Germane Cognitive Load	Facilitates the integration of linguistic information

Analysis of Cognitive Load in Arabic Text Reading Activities

Reading activities in Arabic qirā'ah learning constitute highly complex cognitive processes because they involve various simultaneous mental activities, such as recognizing linguistic symbols, understanding syntactic structures, connecting vocabulary meanings, and interpreting textual content contextually. From the perspective of Cognitive Load Theory, these processes are closely related to students' working memory capacity in managing information received during reading activities. According to John Sweller, working memory possesses limited capacity;

therefore, students may experience cognitive overload when they are required to process excessive amounts of information simultaneously (Sweller et al. 2019, 270). In the context of qirā'ah learning, such conditions frequently occur when students are required to comprehend Arabic texts containing complex nahwu structures, sharaf transformations, and unfamiliar vocabulary at the same time. Consequently, students' attention is often more focused on language decoding processes rather than on deeply understanding the content of the reading passage.

The decoding process in reading Arabic texts is not merely associated with the ability to pronounce the text, but also involves activities of meaning identification, grammatical analysis, and the simultaneous integration of linguistic information. Research in Arabic Language Education conducted by Amanda et al. (2025, 54) indicates that one of the primary difficulties experienced by students in qirā'ah learning lies in their ability to understand the relationships among vocabulary, sentence structures, and reading contexts. Furthermore, Ihwan et al. (2022, 61) emphasize that mastery of nahwu and sharaf significantly influences students' ability to read Arabic texts. These findings demonstrate that reading Arabic texts requires multilayered and interconnected information processing, which naturally compounds a student's internal cognitive processing strain during independent text immersion.

Within the framework of Cognitive Load Theory, cognitive load in reading activities can be categorized into intrinsic load, extraneous load, and germane load. Intrinsic load emerges from the complexity of the Arabic language itself, particularly the interrelationship among nahwu, sharaf, and textual meaning. Meanwhile, extraneous load arises when material presentation, teaching methods, or teacher explanations are not structured effectively, thereby increasing students' information-processing burdens. Syagif (2024, 93) explains that Cognitive Load Theory emphasizes the importance of managing instructional design so that students' working memory capacities are not excessively burdened. Therefore, the empirical identification of these cognitive operational loads serves as a baseline for understanding how the human brain processes textual data under varying academic constraints.

In addition to linguistic aspects, the process of understanding Arabic texts is also influenced by students' abilities to construct schemas during reading activities. From the perspective of cognitivist theory, learning occurs through the organization of new information within previously acquired knowledge structures. Syafei (2025, 161) explains that Arabic language learning is strongly associated with students' mental activities in processing, storing, and systematically connecting information. This perspective is consistent with the findings of Zunairoh (2023, 255) which demonstrate that cognitive and metacognitive strategies heavily dictate reading comprehension performance through monitoring activities, information management, and the reinforcement of thinking processes during reading. Thus, the process of understanding Arabic texts is not merely a linguistic activity, but also a cognitive activity involving the simultaneous integration of attention, memory, meaning comprehension, and schema construction.

The complexity of Arabic reading activities indicates that the mental strain experienced by students is highly dependent on how the material aligns with their cognitive limitations. In this context, documenting the specific real-time behaviors of working memory becomes essential for diagnosing why comprehension failure occurs. Evans et al (2024, 11) explain that excessive cognitive load directly correlates with a drop in learning engagement, diminished intrinsic motivation, and lower overall comprehension effectiveness (Syifa et al. 2025, 1547). To map

these live mental transactions during reading tasks, a structured breakdown of cognitive activities and their psychopedagogical impact on students is detailed in Table 2.

Table 2 Analysis of Cognitive Load in Arabic Text Reading Activities

Cognitive Activities in <i>Qirā'ah</i>	Mental Processes Involved	Type of Cognitive Load	Impact on Students
Decoding Arabic texts	Recognizing letters, vowel markings, and word structures	Intrinsic Load	Requires high levels of concentration
<i>Nahwu-sharaf</i> analysis	Connecting grammatical functions and word transformations	Intrinsic Load	Working memory becomes easily overloaded
Integration of mufradāt and meaning	Connecting vocabulary with reading contexts	Germane Load	Assists schema construction
Excessively dense teacher explanations	Simultaneous processing of excessive information	Extraneous Load	Decreases focus and comprehension
Reading lengthy texts without segmentation	Continuous information processing	Extraneous Load	Increases cognitive overload
Prior knowledge activation	Connecting new information with previous experiences	Germane Load	Enhances deeper reading comprehension
Linguistic scaffolding	Gradual assistance in understanding texts	Germane Load	Reduces information-processing burden

Based on the empirical mapping in Table 2, reading Arabic texts involves various interconnected cognitive processes that inherently generate distinct cognitive load profiles for students. The structural complexity of Arabic morphosyntax naturally establishes a high baseline of intrinsic cognitive load. Concurrently, environmental factors such as dense oral instructions or unsegmented reading materials trigger a severe escalation in extraneous cognitive load, causing systemic working memory failures. Conversely, the presence of internal cognitive assets, such as prior knowledge frameworks and structural schema construction, represents the activation of germane cognitive load, which is essential for processing linguistic data meaningfully.

DISCUSSION | مناقشة

Qirā'ah Learning Strategies Based on Cognitive Load Theory

The diagnostic insights established in the empirical analysis underscore a core pedagogical principle: educational success is not a matter of how much linguistic content can be packed into a syllabus, but rather how effectively that information is calibrated to fit the human brain's processing threshold (Sweller et al. 2019, 265). To alleviate the working memory bottlenecks identified in the previous section, this study proposes a practical framework composed of six tactical interventions. These pedagogical strategies were not formulated independently; rather, they were synthesized from recurring themes identified across the reviewed literature on Cognitive Load Theory, Arabic *qirā'ah* pedagogy, instructional scaffolding, and cognitive-oriented language learning. Each strategy represents the conceptual integration of empirical findings and established theoretical principles discussed in the preceding analysis.

These strategies are specifically designed to minimize extraneous friction, regulate intrinsic linguistic demands, and expand germane processing capacity, as summarized in Table 3.

Segmentation of Reading Materials

This strategy is synthesized from studies emphasizing information segmentation, progressive instructional sequencing, and cognitive load regulation as effective approaches to reducing extraneous cognitive load during reading activities (Sweller et al. 2019, 265). Managing the visual volume of a target text serves as the first line of defense against cognitive exhaustion. By breaking down intimidatingly long Arabic passages into bite-sized, logical conceptual units

(text chunking), educators can prevent sudden working memory lapses. In practical qirā'ah sessions, this is achieved by isolating individual paragraphs, grouping core thematic ideas, or pausing strategically based on syntactic boundaries. Introducing text in managed waves ensures that students isolate processing resources for immediate semantic decoding rather than panicking over total text volume. As noted by Syagif (2024, 93), this gradual pacing effectively dilutes the processing density within a student's working memory. Furthermore, maintaining a non-excessive, well-paced instructional flow has been shown to directly enhance student attention spans and boost text comprehension accuracy (Evans et al. 2024, 11).

Simplification of Linguistic Structures

This strategy emerged from the synthesis of studies highlighting grammatical simplification, progressive linguistic sequencing, and adaptation of text complexity to learners' proficiency levels as essential for regulating intrinsic cognitive load (Amanda et al. 2025, 54; Sweller et al. 2019, 265). Because the intrinsic load of Arabic is dictated by its morphosyntactic density, reducing structural friction during initial learning phases is crucial. Beginners should be exposed to curated reading materials featuring linear nahwu variations, common root words (sharaf), and minimal nested clauses. Tailoring the structural difficulty to match the learners' actual proficiency baseline shields them from immediate cognitive paralysis. This controlled entry point is highly vital, considering that standard qirā'ah failures are routinely caused by a combination of syntactic complexity and sparse vocabulary knowledge (Amanda et al. 2025, 54). Since foundational mastery of nahwu-sharaf dictates a student's overall tracking speed during reading tasks (Ihwan et al. 2022, 61), simplifying text architectures early on establishes a stable pathway toward sustainable literacy.

Prior Schema Activation

The recommendation for prior schema activation is derived from studies demonstrating that activating learners' prior knowledge and metacognitive awareness facilitates schema construction and optimizes germane cognitive load during reading comprehension (Zunairoh 2023, 263; Syafei 2025, 572). The human brain is naturally designed to anchor unfamiliar data onto pre-existing cognitive networks. Before unpacking a dense Arabic passage, teachers should actively stimulate students' background knowledge using short warm-up dialogues, everyday analogies, or multimedia cues related to the text's theme. Within cognitivist frameworks, learning becomes significantly more permanent when new linguistic inputs seamlessly lock into familiar conceptual frameworks stored in long-term memory. Actively deploying cognitive and metacognitive strategies during pre-reading exercises enables students to monitor their comprehension and manage incoming data streams more confidently (Zunairoh 2023, 263). This intentional scaffolding shifts the mental energy away from decoding static characters and redirects it toward deep schema construction (Syafei 2025, 572).

Linguistic Scaffolding

Synthesizing Vygotsky's Zone of Proximal Development with empirical findings on instructional scaffolding, this strategy emphasizes adaptive instructional support to reduce unnecessary cognitive burden during Arabic reading activities (Vygotsky, 1978, 51; Umamah, 2024, 34). In a qirā'ah classroom, linguistic scaffolding can take the form of marginal glossaries, explicit structural maps for complex verbs, or targeted guiding questions dropped before each reading section. These temporary frameworks alleviate the immediate decoding burden, ensuring students do not consume their entire mental energy pool on single word look-ups. Incorporating interactive interventions and contextual scaffolding allows students to process

complex language patterns smoothly and autonomously without hitting a cognitive wall (Umamah, 2024, 34).

Vocabulary Organization

This recommendation is synthesized from studies emphasizing semantic organization and contextual vocabulary learning to facilitate schema construction and reduce fragmented lexical processing (Syafei 2025, 572; Aziza & Muliansyah, 2020, 25). Forcing students to memorize long, unlinked vocabulary lists creates rapid mental fatigue and low retention. Instead, mufradāt mastery should be facilitated by organizing words into thematic groups, context-driven webs, or visual semantic charts. Orderly presentation allows the working memory to process data clusters as single cognitive units rather than scattered fragments. Because successful language acquisition requires a holistic instructional method that bridges mechanical skills with integrated grammar systems (Aziza & Muliansyah, 2020, 25), thematic clustering helps students map structural relationships out quickly. This visual and contextual mapping shortens lexical retrieval times during active reading, accelerating schema reinforcement.

Gradual and Systematic Learning

This strategy is based on the synthesis of Cognitive Load Theory and studies advocating progressive sequencing of learning materials according to learners' cognitive capacity and language proficiency (Sweller et al. 2019, 265; Habibah et al. 2024, 20; Zahrotul 2021, 76). A curriculum aligned with Cognitive Load Theory must progress systematically, moving from linear sentences to complex, multi-tiered prose over time. This structured pacing demands that educators carefully calculate material sequencing, grammatical difficulty, and the evolving memory thresholds of their students. Pacing text difficulty gradually gives the brain the time it needs to turn new schemas into automatic reading habits. Respecting the psychological boundaries of language processing directly influences how effectively students internalize text structures (Habibah et al. 2024, 20). By keeping student mental mechanics at the center of classroom design, a gradual qirā'ah model ensures deep text comprehension that is both sustainable and cognitively rewarding (Zahrotul 2021, 76).

Table 3 *Qirā'ah* Learning Strategies Based on Cognitive Load Theory

Pedagogical Strategies	Function in Cognitive Load Theory	Impact on <i>Qirā'ah</i> Learning
Text segmentation	Reduces extraneous load	Students become more focused on understanding the reading content
Simplification of linguistic structures	Controls intrinsic load	Reduces syntactic complexity
Prior schema activation	Optimizes germane load	Assists the integration of new knowledge
Linguistic scaffolding	Reduces information-processing burden	Text comprehension becomes more guided
Vocabulary organization	Facilitates schema construction	Vocabulary becomes easier to understand
Gradual learning	Aligns with working memory capacity	Reduces cognitive overload

Pedagogical Implications of Cognitive Load Theory in *Qirā'ah* Learning

The empirical findings of this study demonstrate that integrating Cognitive Load Theory (CLT) into Arabic qirā'ah instruction yields profound pedagogical shifts, particularly in reorienting how educators balance text density with working memory boundaries. Historically, traditional Arabic reading classrooms have prioritized continuous text completion and word-for-word translation, often ignoring whether the human brain can handle such unfiltered data streams (M. N. Hasibuan & Sa'diyah 2023, 27). Forcing students to concurrently decode unknown mufradāt,

compute morphosyntactic shifts (nahwu-sharaf), and extract contextual meaning inevitably causes immediate cognitive fatigue. Viewed through Sweller's cognitive lens, this baseline failure highlights the need for instructional architectures that treat the presentation of information with the same importance as the curriculum content itself (Sweller et al. 2019, 270). Consequently, Arabic language practitioners must move toward structural pacing models that are explicitly calibrated to the real-time processing limits of their students.

This shift directly transforms classroom design and material sequencing. Rather than exposing students to full-length classical texts all at once, instructors must partition readings into manageable tiers based on grammatical and vocabulary complexity. Incorporating text chunking, syntactic pruning, and associative vocabulary sorting significantly dilutes extraneous friction while keeping intrinsic processing load within a safe threshold. As Syagif (2024, 93) notes, strategic cognitive load monitoring ensures that the processing demands of a task remain aligned with the student's available mental bandwidth. Moreover, reducing unnecessary processing friction through structured delivery has been proven to enhance intrinsic interest, build classroom confidence, and drive long-term literacy achievement (Evans et al. 2024, 17).

Regarding material development, Cognitive Load Theory offers a clear blueprint for designing text-rich modules that match a student's mental architecture. Modern qirā'ah textbooks must move beyond static sheets of dense Arabic print; they should feature visual concept organizers, parallel marginal glossaries, and structured pre-reading warm-ups. This structural approach aligns with the principle that language mastery requires an integrated, multi-layered framework where mechanics and comprehension develop side by side (Aziza & Muliansyah, 2020, 25). Because internal psychological states and memory tracking deeply influence how students build foreign language literacy (Habibah et al. 2024, 20), reading materials must balance information density with structural assistance so that learning feels purposeful rather than overwhelming.

Furthermore, these cognitive parameters require a total overhaul of evaluation models. Traditional qirā'ah testing relies almost exclusively on product-oriented metrics, such as rote vocabulary recall or literal translation speed. In contrast, a CLT-driven model evaluates the underlying mental operations students use while navigating a text. Assessments should measure how effectively a student links meanings across paragraphs, self-monitors comprehension, and tracks complex syntactic networks. Deploying cognitive and metacognitive tracking methods during reading tasks significantly improves text comprehension among language learners (Zunairoh 2023, 255). Moving evaluation metrics toward analytical thinking and contextual tracking, rather than simple word-for-word decoding, yields a more accurate measure of true literacy (Fikri & Baroroh 2025, 19).

Adopting this cognitive framework also strengthens the foundation for student-centered language instruction. Here, the instructor steps away from lecturing and acts as an instructional facilitator who helps students systematically construct their own mental models through adaptive tracking and strategic schema activation. This practice directly mirrors Vygotsky's social constructivist framework, which underscores the role of guided assistance in helping learners navigate complex cognitive tasks safely (Vygotsky, 1978, 51). Active processing environments empower students to take ownership of their reading journey, leading to permanent retention. As a result, the qirā'ah classroom transforms from a static, lecture-driven room into an adaptive, communicative space (Charles et al. 1991, 97).

Theoretically, this study expands the scope of Arabic applied linguistics by introducing Cognitive Load Theory into qirā'ah research, a domain where cognitive load parameters remain largely overlooked. It proves that the challenges students face when reading Arabic are not merely linguistic problems, but are deeply linked to the operational limits of the human attention engine. Pedagogically, this paper offers actionable strategies such as paragraph chunking, conceptual mapping, and schema activation to optimize classroom performance. The core novelty of this research lies in its systematic pairing of intrinsic, extraneous, and germane load characteristics with the specific structural realities of Arabic grammar, providing a scalable and practical path toward sustainable text comprehension.

While the proposed strategies offer substantial pedagogical benefits, their implementation in authentic qirā'ah classrooms may present several practical challenges. Teachers require sufficient pedagogical competence to identify different types of cognitive load and redesign instructional materials accordingly, as effective cognitive load management depends largely on appropriate instructional design (Sweller et al. 2019, 270). Preparing segmented reading texts, scaffolded learning activities, and systematically organized vocabulary materials also demands additional planning time and instructional expertise. Furthermore, variations in students' linguistic proficiency and limited instructional time may constrain the consistent application of these strategies (Habibah et al. 2024, 20). Students who are accustomed to grammar-translation or memorization-oriented instruction may also require a gradual adaptation period before engaging effectively with cognitively structured learning activities (Aziza and Muliansyah 2020, 25). Therefore, the successful implementation of these pedagogical strategies depends not only on sound instructional design but also on continuous teacher professional development, institutional support, and sustained classroom adaptation (Vygotsky 1978, 86).

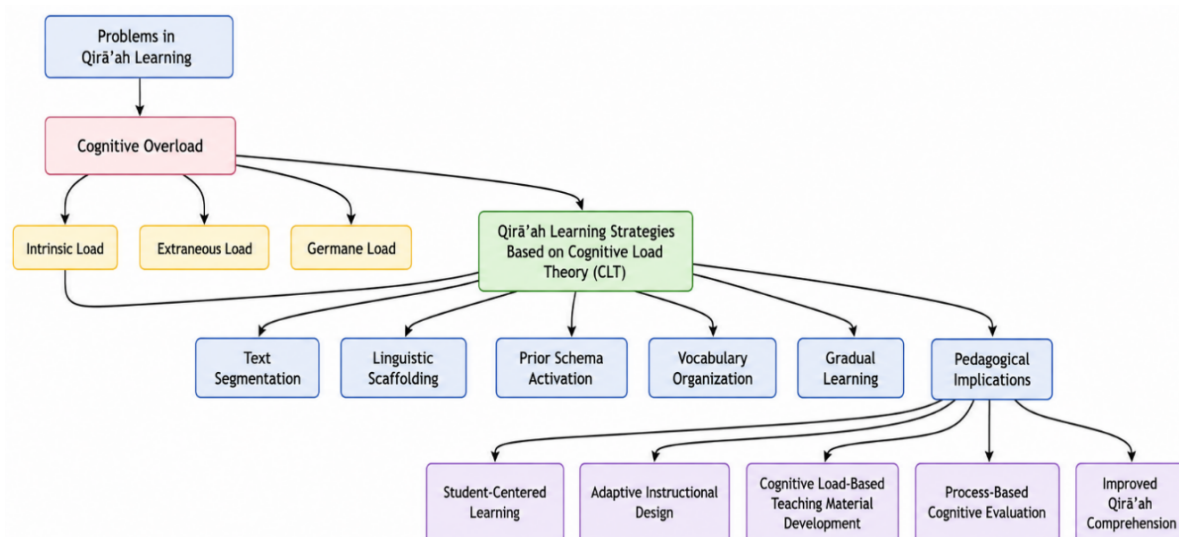


Figure 2. Pedagogical Implications of Cognitive Load Theory in Arabic *Qirā'ah* Learning

CONCLUSSION

خاتمة

Based on the comprehensive analysis and synthesis of the reviewed literature, this study concludes that Arabic qirā'ah instruction possesses highly intense cognitive characteristics that expose non-native learners to system-wide cognitive overload. This systemic processing barrier stems from the structural density of Arabic morphosyntax, limited word-root recognition, and

the demanding mental operations required to integrate linguistic variables simultaneously during real-time reading tasks. Evaluated through Cognitive Load Theory, these literacy challenges break down into three specific dimensions: an elevated intrinsic load driven by complex grammatical frameworks, an unnecessary extraneous load triggered by unoptimized or dense teaching structures, and an underutilized germane load that restricts deep textual schema construction. To address these operational bottlenecks, this study proposes a strategic instructional framework consisting of text chunking, morphosyntactic pruning, prior schema activation, targeted linguistic scaffolding, conceptual vocabulary organization, and gradual skill progression. Conceptually, managing these cognitive load dimensions helps balance students' working memory, transforming reading from a mechanical decoding activity into a structured, adaptive, and meaningful comprehension process. Consequently, this cognitive model provides a valuable pedagogical foundation for designing balanced, student-centered Arabic literacy programs that align with the cognitive architecture of human learning.

Since this study is conceptual and based on a qualitative synthesis of existing literature, the proposed instructional framework has not yet been empirically validated in authentic classroom settings. Therefore, future research should focus on empirically examining the effectiveness of the six proposed strategies through quasi-experimental studies, research and development (R&D), or design-based research (DBR). Such studies are expected to evaluate their impact on students' reading comprehension, cognitive load management, and overall qirā'ah learning outcomes, thereby providing stronger empirical evidence for the practical implementation of Cognitive Load Theory in Arabic language education.

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