

# Cognitivism Theory and Its Application in Technology-Based Islamic Religious Education (PAI) Learning

Mamluatun Ni'mah<sup>a</sup>, Muhammad Hafil Mangkudilaga<sup>b</sup>, Rifka Diana Sosilowati<sup>c</sup>

<sup>a</sup>Universitas Islam Zainul Hasan Genggong

<sup>b,c</sup>Program Studi Magister Pendidikan Islam, Universitas Islam Zainul Hasan Genggong

Corresponding author: [luluknikmahasa@gmail.com](mailto:luluknikmahasa@gmail.com) [hanyamaha703@gmail.com](mailto:hanyamaha703@gmail.com)  
[rifkaazzarkasi@gmail.com](mailto:rifkaazzarkasi@gmail.com)

## Abstract

**Purpose** – This study analyzes how cognitivism theory—particularly the ideas of Jean Piaget and Jerome Bruner—together with the Cognitive Theory of Multimedia Learning (CTML), can inform the design of technology-based Islamic Religious Education (PAI) learning, and proposes an integrative framework that balances cognitive, affective, and spiritual dimensions.

**Design/Methodology/Approach** – The study employs a qualitative library research approach. Sources were purposively selected from reputable books, journals, and articles published between 2015 and 2025 using defined inclusion and exclusion criteria, and were analyzed thematically. Conceptual triangulation across Western psychology, Islamic pedagogy, and multimedia-learning research was used to strengthen the credibility of the synthesis.

**Findings** – Cognitive development theory and CTML jointly provide a sound basis for designing concrete digital mediators that bridge the “abstraction gap” in PAI while controlling cognitive load. However, cognitive efficiency alone is insufficient: the internalization of faith requires the affective–spiritual domain to be cultivated through reflection, worship habits, and the teacher’s moral example. These relationships are summarized in a proposed integrative framework.

**Originality/Value** – The study contributes an explicit, framework-based integration of cognitivism, CTML, and Islamic pedagogy for technology-based PAI—positioning technology as a *wasilah* (medium) rather than a *ghayah* (goal)—and offers practical and research implications for holistic religious learning.

**Keywords:** Bruner; Cognitivism; CTML; Multimedia; PAI Learning; Piaget

*Manuscript received: 01-10-2025; revised: 21-11-2025; accepted: 03-12-2025. Date of publication: 09-01-2026.*

©2025 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).



## I. INTRODUCTION

The rapid evolution of digital technology has transformed the global educational landscape, yet Islamic Religious Education (PAI) frequently remains anchored in conventional pedagogy with limited digital integration. This creates a developmental mismatch: students aged 7–12 are in the concrete operational stage (Piaget, 1972; Marinda, 2020), and therefore require concrete mediators to grasp abstract metaphysical concepts such as *iman* (faith) and *akhlak* (morals) (Khamidah & Sholichah, 2022). The challenge of rendering abstract knowledge teachable is not new; classical scholars such as Al-Ghazali (trans. 2010), in *Ayyuhal Walad*, emphasized that knowledge must be made tangible and practiced to be internalized, warning that abstract theory without concrete application is of little benefit.

Although the theories of Piaget and Bruner are well documented in general education (Aida, 2015; Buto, 2016), their convergence with the Cognitive Theory of Multimedia Learning (CTML) remains under-explored in religious contexts. CTML, pioneered by Mayer (2001), offers principles for designing instructional media aligned with the brain’s information-processing architecture, particularly the dual-channel and limited-capacity assumptions. To date, however, most CTML research has concentrated on STEM subjects, leaving a gap regarding how multimedia can be adapted to the affective and spiritual nuances of PAI (Syukri, 2025).

Research on active learning further indicates that student engagement increases when cognitive theories are paired with interactive media (Prince, 2004), and emerging studies suggest that digital platforms can serve as a *wasilah* (medium) for spiritual growth when designed intentionally (Hidayat et al., 2023). Building on these strands, this article aims to (1) examine how cognitive development theory and CTML can inform technology-based PAI, (2) propose an integrative framework that connects cognitive design with the affective-spiritual aims of PAI, and (3) identify the challenges and opportunities of this integration for building religious literacy that transcends rote memorization.

## II. METHOD

This study employs a qualitative library research (literature study) approach, in which existing academic discourse is treated as the primary data. Rather than gathering field data, the research systematically reviews established theories and recent findings in order to synthesize a conceptual framework for technology-based PAI.

Sources were selected purposively according to explicit criteria. Inclusion criteria were: (a) books, peer-reviewed journal articles, and scholarly works addressing cognitivism, PAI/Islamic education, or educational technology and multimedia learning; (b) publications between 2015 and 2025, with the exception of foundational primary theoretical sources (e.g., Piaget, Bruner, Mayer, Bloom, Al-Ghazali) retained for their conceptual significance; and (c) sources available in full text. Works that were not peer-reviewed, not relevant to the research questions, or duplicated were excluded. Relevant literature was identified through academic databases and scholarly search engines using keyword combinations such as “cognitivism,” “multimedia learning,” “CTML,” and “PAI/Islamic education technology.”

Data were analyzed using a systematic thematic procedure. Rather than offering a chronological summary, the authors deconstructed the selected texts to identify recurring patterns, core principles, and conceptual overlaps, and then categorized the findings into thematic clusters: the application of cognitive stages in religious curricula, the reduction of cognitive load through multimedia, and the integration of spiritual values within digital frameworks. To strengthen the credibility of the synthesis, conceptual (theoretical) triangulation was applied by cross-referencing Western psychological theories (Piaget and Bruner), Islamic pedagogical insights, and contemporary multimedia-learning research. This interpretive process aimed to bridge psychological theory and religious pedagogical practice rather than merely report existing studies.

## III. RESULT AND DISCUSSION

### 1. Piaget and Bruner’s Cognitives Theory as a Foundation for PAI

Cognitive development theory provides a necessary framework for addressing the “abstraction gap” in religious education. Piaget (1972) identified that children aged 7–12 operate within the concrete operational stage, in which logical reasoning is tied to physical reality (Marinda, 2020). Consequently, metaphysical concepts such as *iman* or the unseen realms cannot be fully grasped through verbal explanation alone; they require concrete digital mediators such as simulations or visual metaphors.

This developmental need aligns closely with the Qur’anic method of *amsal* (parables). In the Qur’an, Allah often uses physical imagery to explain abstract spiritual truths—for example, comparing a “good word” to a “good tree” (Q.S. Ibrahim: 24). This Qur’anic pedagogy mirrors Bruner’s (1966) modes of representation, particularly the iconic mode. By employing digital images and videos, educators provide the iconic bridge that enables students to progress from the enactive (physical action) to the symbolic mastery of sacred texts. For instance, an animated simulation of the stages of *salat* (enactive-*iconic*) can precede the study of its textual and spiritual meaning (*symbolic*). As Fauzi et al. (2023) note, digital storytelling in PAI functions as a modern form of *amsal*, making prophetic values tangible for the digital-native generation.

### 2. Applying CTML in PAI Design: Optimizing the Dual-Channel Process

The Cognitive Theory of Multimedia Learning (Mayer, 2001) holds that humans process information through two channels—visual and auditory—each with limited capacity. For PAI multimedia to be effective, it should respect the dual-coding/modality principle by presenting narration together with relevant animation, rather than overloading a single channel. Because each channel is capacity-limited, poorly designed media can cause cognitive overload, in which working memory is consumed by extraneous processing.

To prevent this, PAI developers should apply the redundancy principle (avoiding on-screen text that merely duplicates the spoken narration) and the coherence principle (removing decorative music or graphics that do not contribute to the lesson). For example, a video on the etiquette of *wudu* should pair concise narration with a clear demonstration, omitting ornamental background music that

competes for auditory attention. By streamlining extraneous load, the learner’s mental resources are preserved for generative processing—the deep work of making sense of religious values and integrating them into an existing belief system.

### 3. The challenge of Spiritual Internalization

Despite the efficiency of cognitive strategies, a significant challenge remains in the affective and spiritual domains. Cognitivism focuses primarily on the intellectual processing of information, whereas PAI ultimately aims for Qalbun Salim (a sound heart). As argued by Zohar and Marshall (2001), spiritual intelligence requires a connection to meaning that transcends pure logic, and the affective domain of learning—receiving, responding, and valuing—must be deliberately cultivated rather than assumed (Krathwohl, Bloom, & Masia, 1964).

Multimedia is an excellent tool for cognitive clarity, but it remains a *wasilah* (medium) rather than the *ghayah* (goal) (Hidayat et al., 2023). For technology-based PAI to succeed, the cognitive domain must be balanced with the affective and psychomotor domains. In practice, this means digital learning should be complemented by the teacher’s *uswah hasanah* (moral example) and the cultivation of consistent worship habits. Technology can explain how to pray (cognitive) and demonstrate its procedure (psychomotor), but the felt closeness to Allah (affective–spiritual) is nurtured through reflection, habituation, and lived practice. The medium, in other words, can prepare the ground for internalization but cannot replace the relational and experiential dimensions of *fait*.

### 4. Toward an Integrative Framework

Synthesizing the preceding discussion yields an integrative framework (Figure 1) in which three inputs—cognitive development theory, CTML, and Islamic pedagogy—converge on a single design principle: concrete digital mediators, designed under CTML to minimize extraneous load, are used to bridge the abstraction gap. Crucially, the framework specifies two interdependent outcomes. The cognitive outcome is religious literacy that surpasses rote memorization, while the affective–spiritual outcome—the formation of a Qalbun Salim—is achieved only when digital design is paired with reflection, worship habituation, and the teacher’s moral example. This dual-outcome structure distinguishes the present synthesis from CTML applications in STEM, where the affective–spiritual dimension is typically absent.

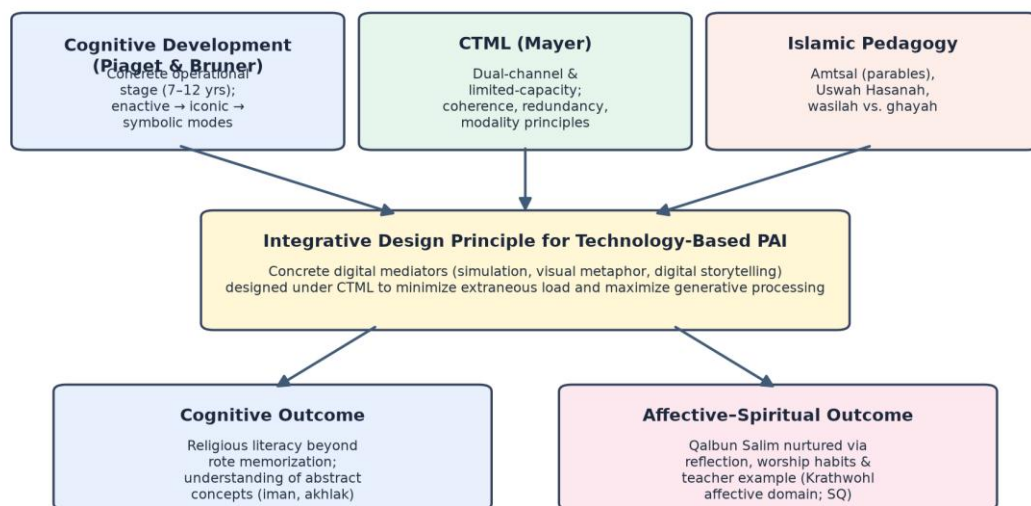


Figure 1. Integrative framework for cognitivism-based, technology-mediated PAI learning

## IV. CONCLUSION

This study concludes that the theories of Piaget and Bruner, combined with CTML, provide a robust psychological foundation for modernizing technology-based PAI. By aligning digital tools with the concrete operational needs of students aged 7–12, educators can bridge the abstraction gap, transforming complex metaphysical concepts into tangible digital experiences. The application of CTML principles—particularly the dual-channel and limited-capacity assumptions—further safeguards against cognitive overload, ensuring that the medium facilitates rather than hinders the internalization of religious messages.

Nevertheless, the central challenge is integrating these cognitive approaches with the affective and spiritual dimensions of faith. While technology optimizes intellectual processing, it must be regarded as a *wasilah* rather than the *ghayah*. Technology-based PAI is therefore most effective when complemented by the teacher's *uswah hasanah* and the habituation of worship in order to nurture a *Qalibun Salim*. The proposed integrative framework offers educators a practical lens for designing such balanced learning.

This study is limited by its conceptual, library-based design: it synthesizes existing literature and does not test the framework empirically. Accordingly, future research should conduct empirical trials of CTML-based media in PAI classrooms, incorporating spiritual and affective variables alongside cognitive and behavioral outcomes, in order to validate the framework and ensure the holistic development of learners.

## V. REFERENCES

- Aida, F. (2015). Perkembangan kognitif: Teori Jean Piaget. *Intelektual*, 3(1), 27-28.
- Al-Ghazali, A. H. (2010). *Ayyuhal walad: Dear beloved son* (P. J. Stewart, Trans.). Islamic Texts Society. (Original work published c. 1100).
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Longmans Green.
- Bruner, J. S. (1966). *Toward a theory of instruction*. Harvard University Press.
- Buto, Z. A. (2016). Implikasi teori pembelajaran Jerome Brunner dalam nuansa pendidikan modern. *Millah: Jurnal Studi Agama*, (ed. khusus), 55-69. <https://doi.org/10.20885/millah.ed.khus.art4>
- Fauzi, A., et al. (2023). Digital storytelling in Islamic education: Bridging prophetic values for the alpha generation. *Journal of Islamic Education Studies*, 9(2), 145-160.
- Hidayat, T., et al. (2023). Technology as a *wasilah* for spiritual growth: Evaluative study on digital platforms in religious learning. *International Journal of Madrasah Education*, 8(1), 22-35.
- Khamidah, A., & Sholichah, N. I. (2022). Digital pop up learning media for early childhood cognitive development. *Indonesia Journal of Early Childhood Educational Research*, 1(1), 11-19. <https://journal.walisongo.ac.id/index.php/ijeecer/article/view/11267>
- Marinda, L. (2020). Teori perkembangan kognitif Jean Piaget dan problematikanya pada anak usia sekolah dasar. *Nisa': Journal of Gender Studies*, 13(1), 116-152. <https://doi.org/10.30811/nisa.v13i1.2017>
- Mayer, R. E. (2001). *Multimedia learning*. Cambridge University Press.
- Piaget, J. (1972). *The psychology of the child*. Basic Books.
- Prince, M. (2004). *Does active learning work? A review of the research*. *Journal of Engineering Education*, 93(3), 223-231.
- Syukri, H. (2025). Pemanfaatan teori cognitive load dalam desain pembelajaran berbasis multimedia. *Journal of Education, Teaching, and Learning*, 2(1), 186. <https://doi.org/10.51673/jetl.v2i1.2025>
- Zohar, D., & Marshall, I. (2001). *Spiritual intelligence: The ultimate intelligence*. Bloomsbury Publishing.