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From C0 to C6: Expanding Bloom's Taxonomy to Diagnose Passive Learning in AI-Mediated Classrooms

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Abstract The rapid integration of generative artificial intelligence (AI) into educational environments has reshaped the way learners access and engage with knowledge. While AI offers unprecedented efficiency and convenience, it has simultaneously created conditions that foster passive learning behaviors, particularly copy-pasting without cognitive involvement. This phenomenon contributes to a degradation of higher-order thinking, popularly termed "brain rot." This article introduces the concept of Zero Order Thinking State (ZOTS) as a new pre-cognitive category—designated as C0—that precedes the lowest level of Bloom's Taxonomy. ZOTS represents a non-cognitive state in which learners exhibit no mental activation, processing, or interpretation of information. Through a reflective qualitative approach grounded in conceptual analysis, this study synthesizes contemporary literature on AI-assisted learning, cognitive psychology, and digital distraction to formalize the C0–C6 pedagogical matrix. Findings indicate that ZOTS is not merely a lower level of cognition but a null cognitive condition that requires urgent pedagogical and policy intervention. The expanded taxonomy proposed in this study offers educators a strategic framework to diagnose and mitigate ZOTS while promoting more ethical, reflective, and epistemically aware uses of AI. The article contributes both theoretical insights and practical strategies essential for designing learning environments that preserve human cognition in an era of technological acceleration.

Keywords: Zero Order Thinking State, Bloom's Taxonomy, brain rot, copy-pasting, artificial intelligence, epistemic awareness.

INTRODUCTION

The advent of generative artificial intelligence (AI) has reshaped several dimensions of contemporary education, presenting a duality of opportunities and challenges. On one hand, AI facilitates enhanced access to knowledge and potentially personalized learning experiences; on the other hand, it can encourage passive consumption of information, negatively impacting attention and analytical skills due to excessive reliance on automated outputs without meaningful engagement with the content (Fatimah et al., 2025). This phenomenon is particularly alarming in educational contexts where cognitive activation is presumed to be a foundational element of learning.

Traditional pedagogical frameworks, such as Bloom's Taxonomy, are fundamentally predicated on a hierarchy of cognitive processes that begin with remembering, which includes active retrieval. With the increase in AI utilization, a troubling trend can develop where students opt for uncritical acceptance of AI-generated content over authentic cognitive engagement. This bears significant implications for both learning efficacy and learner identity, as students may find themselves disengaged from the actual learning experience (Shahzad et al., 2025). The notion of "Zero Order Thinking State" (ZOTS) emerges from this state of disconnection, highlighting a realm of intellectual interaction where learners merely reproduce AI-generated responses without engaging in nuanced cognitive tasks such as application, analysis, or synthesis (Fatimah et al., 2025).

The introduction of ZOTS—noted as a new conceptual level beneath the foundational layer of remembering—addresses the gap left by traditional cognitive models in recognizing contemporary educational challenges. This state signifies a passive mindset, positioning students at a cognitive deadlock where the potential for higher-order thinking is relegated to the background. The integration of this emergent construct into academic discourse not only illuminates concerns regarding the loss of critical thinking but also serves as a catalyst for curriculum innovation and pedagogical reform (Kanthimathi & Raja, 2025; Rathore, 2025). By emphasizing the importance of restructuring educational paradigms to counteract passive learning tendencies, it becomes imperative for educators to implement teaching strategies that incorporate active engagement and critical reflection, thereby restoring cognitive integrity in an AI-augmented environment (Shahzad et al., 2025).

The implications for curriculum design and educational policy stemming from ZOTS are profound. By reformulating traditional learning metrics to encompass cognitive states beyond recall, educators can develop tailored interventions that encourage active learning and enhance critical thinking skills (Зарічна et al., 2020). As AI continues to proliferate within educational systems, recognizing and addressing ZOTS becomes paramount for safeguarding the quality of educational experiences and ensuring that learners do not simply become passive recipients of information (Shahzad et al., 2025).

In summary, the reality of generative AI in education demands vigilant scrutiny and innovative adaptations of existing frameworks to cultivate a generation of learners capable of thoughtful inquiry and analytical reasoning. Adopting ZOTS into pedagogical discussions provides a pathway for educators to confront the emerging challenges posed by AI, thereby enhancing the overall learning landscape.

METHOD

The methodology of this research adopts a qualitative reflective design aimed at addressing the emergent challenges posed by generative artificial intelligence (AI) in educational contexts, particularly regarding cognitive disengagement among learners. This design integrates conceptual synthesis, interpretive analysis, and narrative reflection to explore a newly proposed category—Zero Order Thinking State (ZOTS)—within Bloom's Taxonomy of educational objectives. The incorporation of qualitative methods is essential for understanding complex phenomena that lack empirical categorization, especially in a rapidly evolving field such as education shaped by technology.

Conceptual synthesis serves as a key technique in this methodology, linking the concept of ZOTS to established cognitive frameworks. This integration highlights the necessity for an additional category that captures scenarios where cognitive engagement is notably absent. The analysis draws from a rich tapestry of literature spanning cognitive psychology, digital learning tools, and the effects of AI on learning processes, particularly focusing on concepts like cognitive load and digital distractions. By synthesizing this body of knowledge, this study evidences a pressing need for expanding educational taxonomies to adequately reflect the realities of modern learning environments.

Narrative analysis further enriches this methodology by identifying recurring behavioral patterns among students—the reliance on copy-pasting AI-generated answers that often indicate a lack of cognitive effort. This analysis aligns with the observations in studies assessing AI's role in education, where passive consumption rather than active engagement compromises the development of critical thinking skills. By recognizing these patterns, educators can address the cognitive deficits associated with ZOTS and re-engage learners in meaningful educational experiences.

Hermeneutic reflection provides a deeper understanding of the epistemic and ethical dimensions of AI integration into learning, emphasizing the responsibilities of educators in mitigating the effects of non-cognitive states such as ZOTS. The ethical implications of AI usage in education necessitate a critical examination of how passive learning experiences influence not only academic performance but also long-term cognitive development. This reflective analysis underpins the importance of enhancing students' cognitive engagement and developing new pedagogical strategies to encourage active learning.

To ensure the rigor and validity of this research, theoretical triangulation is employed, drawing from interdisciplinary sources across fields such as educational technology and cognitive development. This triangulation bolsters the robustness of the findings and offers a comprehensive understanding of ZOTS within the framework of cognitive models. The iterative process of reading and conceptual

mapping across diverse literature allowed for the development of a nuanced understanding of how ZOTS manifests in educational settings and how it can be addressed effectively.

In conclusion, the qualitative reflective design utilized in this study facilitates a thorough exploration of ZOTS and offers practical pathways for developing educational strategies that enhance cognitive integrity in AI-mediated learning environments. By illuminating the implications of this new cognitive category, the research aims to inform pedagogical practices and contribute to the ongoing discourse on responsible AI integration in education.

RESULTS AND DISCUSSION

The findings from this research position Zero Order Thinking State (ZOTS) as a notable addition to current educational theory, highlighting its unique characteristics and implications. ZOTS is defined as a state where learners engage in minimal cognitive activity, acting as intermediaries for AI-generated information—essentially, replicating outputs without undergoing substantial mental processing. This contrasts with traditional cognitive processes articulated within Bloom's Taxonomy, where even the most basic level, "Remembering," requires some degree of cognitive engagement, such as the retrieval or recall of information. The absence of this engagement in ZOTS necessitates its processing as a distinct cognitive behavioral concern within educational practices (Deif, 2023).

The efficiency and sophistication of AI tools often amplify this behavior. Students benefit from the immediacy of answers provided by AI, fostering a culture of reliance on automation that can bypass the cognitive processes intended by educational frameworks (Gonsalves, 2024). Such reliance fundamentally challenges the structure that Bloom's Taxonomy offers, which rests on a hierarchy progressing from simple to complex cognitive activities. The emergence of ZOTS illustrates a neglect of cognitive development, as learners tend to consume content passively, rather than engage in higher-order thinking skills (HOTS). This situation emphasizes the need to consider ZOTS as a category that fits within Bloom's Taxonomy framework. A clear distinction between low-order and higher-order thinking, inclusive of ZOTS, presents a diagnostic tool for identifying learners struggling with recall and those disengaged from the learning process (McHugh et al., 2021; Chavda et al., 2023).

From a pedagogical perspective, the identification of ZOTS carries significant implications. If unaddressed, this cognitive deadlock risks producing students who lack essential skills in critical, creative, and independent thinking—core competencies of modern education. The pervasive use of AI tools can undermine students' development of intellectual habits necessary for meaningful learning, including questioning assumptions, discerning relationships, evaluating evidence, and formulating original arguments (Voinohovska & Doncheva, 2024). This reflects a broader educational challenge where learners may no longer perceive themselves as active participants in knowledge construction, potentially leading to an epistemological void within the educational landscape (Salido, 2025).

Preventative measures against ZOTS necessitate intentional curricular and pedagogical design. Educators should aim to foster epistemic awareness, enabling students to recognize the processes behind knowledge construction and validation. Assignments should encourage cognitive engagement through tasks that demand comparison, critique, and synthesis rather than mere replication of information. In this new paradigm, AI should be viewed as a collaborative partner in inquiry rather than simply as a shortcut for information retrieval (Muhsinin et al., 2025; Yu & Xu, 2024). Furthermore, educators should cultivate skills for effective and reflective engagement with AI tools, ensuring students can utilize these technologies thoughtfully rather than passively (Kaabi, 2025).

Teacher training and professional development are essential to effectively addressing ZOTS. Educators need to recognize behaviors linked to cognitive disengagement, considering them indicative of deeper issues rather than mere academic misconduct. Developing assessments that resist automation can help shift focus toward higher-order thinking. Continued professional development should guide educators in adapting their teaching methods to enhance cognitive engagement in an AI-influenced educational landscape (Kimmel, 2024; Sychev et al., 2021).

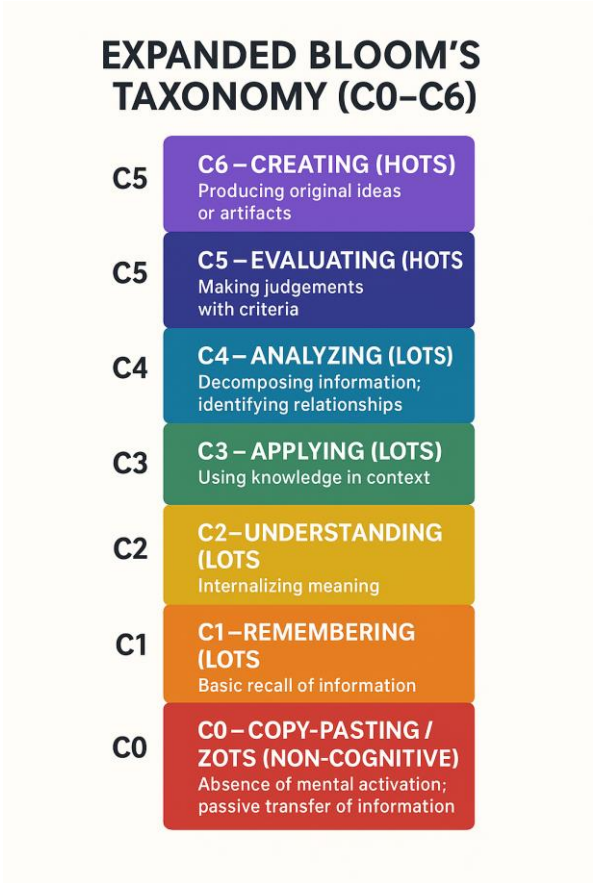

Figure: Expanded Bloom's Taxonomy

At the policy level, integrating AI ethics, digital literacy, and cognitive awareness into national curricula and educational priorities is crucial. Policymakers should develop standards that promote responsible AI use, ensuring that technological advancements enhance rather than detract from intellectual growth (Turvey & Pachler, 2025; Nurhajarurahmah et al., 2025).

As ZOTS emerges as a measurable phenomenon, it poses challenges but also opportunities for evolving educational practices. When educators systematically address this issue—using an expanded Bloom's Taxonomy and promoting active learning—there is potential to ensure that AI serves as a complement to, rather than a substitution for, human thought and creativity.

CONCLUSION

This study introduces the Zero Order Thinking State (ZOTS) as a concept that addresses the cognitive disengagement resulting from increased reliance on artificial intelligence (AI) tools. ZOTS represents a state where learners do not engage cognitively; they neither recall nor process information meaningfully, thereby merely transferring AI-generated outputs. This construct underscores the necessity for educators to effectively identify and address learning challenges in the digital age Akavova et al. (2023).

The broader implications of ZOTS extend to pedagogy, curriculum development, and educational policy. To mitigate the cognitive risks associated with uncritical use of AI-generated information, educators must foster reflective thinking, epistemic awareness, and ethical AI literacy among their students. This requires rethinking pedagogical practices to emphasize authentic engagement, critical evaluation, and knowledge creation, rather than purely information retrieval. Policymakers have a vital role in this transformation, supporting the integration of AI ethics within educational standards to provide a framework for responsible technology use across educational institutions.

Additionally, positioning ZOTS as a foundational element in an expanded cognitive framework highlights the necessity for AI to enhance human cognitive processes rather than overshadow them. As generative AI technologies continue to advance, maintaining intellectual rigor necessitates

deliberate strategies to keep learners actively engaged and ethically informed in their educational journeys (Chadha, 2024). This approach ensures that students are not merely passive recipients of information but become active participants in knowledge construction, which is central to the aims of education.

In conclusion, this study advocates for a comprehensive reevaluation of educational strategies and frameworks to address the challenges posed by AI, emphasizing the need for a collaborative effort among educators, policymakers, and technology developers. By recognizing and addressing ZOTS, the educational community can work towards ensuring that technology enhances the learning process rather than serves as a barrier to active cognitive engagement.

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