



Artificial Intelligence and Digital Media Between Psychological Manipulation and Educational Guidance: A Psycho-Educational Systemic Approach

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Abstract ;

Enter This study aims to analyze the psychological and educational dimensions of human interaction with artificial intelligence systems and digital media, from a systemic perspective that balances the risks of psychological manipulation with the potential for educational guidance. The study is based on a theoretical and critical analysis of a range of contemporary psychological models and theories, such as mediated–interpersonal interaction theory, the self-directed learning model in AI environments, and cognitive-behavioral analytical frameworks.

The study concludes that artificial intelligence, despite its potential psychological risks associated with hidden influences on cognition and emotion, can become an effective educational tool if integrated within a conscious value-based educational project grounded in critical thinking and digital psychological citizenship.

Article info

Received

March 11.2026

Accepted

May 05.2026

Keyword:

- ✓ *Artificial intelligence;*
- ✓ *digital media;*
- ✓ *psychological manipulation;*
- ✓ *educational guidance;*
- ✓ *systemic approach;*



1. Introduction

The Artificial intelligence today represents one of the most significant transformations in the history of human knowledge, having evolved beyond its role as a technological tool to become an intellectual and cultural system that reshapes consciousness, behavior, and relationships. Alongside this transformation, digital media—with its various channels and algorithms—has ceased to be merely a conduit for information transmission, becoming instead a force that influences collective perception and shapes psychological and social trends (Reeves & Nass, 1996).

This paper addresses a central issue: the profound interplay between artificial intelligence and digital media on one hand, and the psychological and educational structures of individuals and society on the other. Smart media do not merely present content; they create cognitive and emotional contexts that impact consciousness and decision-making.

Analyzing this phenomenon requires moving beyond a narrow technological view and adopting a psycho-educational approach capable of uncovering the mechanisms of subtle manipulation of feelings and behavior, while simultaneously highlighting the immense potential of artificial intelligence in supporting learning, developing critical thinking, and enhancing self-regulation.

2. Research Problem

Amid the digital acceleration and the rise of artificial intelligence systems, a pivotal scientific problem emerges: How do artificial intelligence and digital media

reshape human psychological structures, turning these systems into potential tools of influence, and at the same time, how can this formative influence be directed to serve conscious educational goals? This interaction is no longer merely an exchange of information but a complex process that reshapes mental representations, emotional motivations, and learning patterns, positioning algorithms as active agents—not just neutral intermediaries—but as architects of attention and decision-making contexts.

From a psychological perspective, Bandura's Social Cognitive Theory is invoked, which emphasizes self-efficacy in human interaction, as behavior is not formed solely by environmental stimuli but through mental representations and self-expectations (Bandura, 2001). In this framework, intelligent algorithms can exploit these representations: they do not merely convey information but form an interactive relationship with the user that adapts to their motivations and expectations, potentially reconstructing cognitive and emotional models.

On another front, psychological literature indicates that humans often respond to machines as if they were social entities—a phenomenon known as "Computers Are Social Actors." Studies by Nass and Moon (2000) have shown that individuals automatically apply social rules to computers, such as politeness or social categorization, despite knowing they are not human (Nass & Moon, 2000). This quasi-social interaction enhances the algorithms' capacity for subtle psychological influence through interactive designs (interfaces, chat agents, AI, etc.) that leverage these acquired social rules.

At the political-economic level of information, thinkers like Yeung discuss the concept of "hyper nudge," where big data systems invest in directing individuals' decisions through dynamically designed "choice architecture." This is not a static model as in traditional frameworks but highly personalized, real-time adaptive guidance, raising questions about autonomy, privacy, and the multiplicity of self-directed decisions (Yeung, 2017).

Additionally, studies such as Faraoni's (2023) on computational manipulation highlight how it can breach mental self-determination through "persuasive influence" techniques like hypernudging, raising significant ethical concerns about individuals' right to unguided decision-making from the outset (Faraoni, 2023).

From an educational standpoint, researchers face a crossroads between the risk of these mechanisms dominating individual thinking and consciousness on one hand, and the opportunity to employ them as tools for designing interactive learning environments that foster critical thinking and digital citizenship on the other. Relying on a partial approach misses the depth of the phenomenon; thus, it is essential to adopt a systemic framework that integrates psychological, pedagogical, and technological/political dimensions to guide human-AI interaction toward empowerment rather than exploitation.

From this vantage point, the core research problem is posed:

How do artificial intelligence systems and digital media reshape users' mental representations and emotions, transforming them into tools of psychological manipulation, and under what design and ethical conditions can they be converted into educational

mechanisms that support critical thinking, digital citizenship, and psychological empowerment?

This core problem branches into sub-questions such as:

- What are the psychological-behavioral mechanisms (e.g., personalization, instant feedback, hypernudge, fragmented attention) used by algorithms to shape behavior?
- How can educational AI environments be designed to support critical thinking rather than superficial reception?
- What is the most suitable systemic framework (technological-psychological-educational) for understanding the human-technology relationship in the context of manipulation and guidance?

3. Conceptual Framework

3.1 The Concept of Artificial Intelligence as Simulation of Human Capabilities

Artificial intelligence is defined as systems capable of simulating human intelligence functions, including learning, thinking, and problem-solving (Holmes, Bialik, & Fadel, 2022). This definition, despite its apparent simplicity, opens the door to rethinking the nature of "intelligence" itself, especially when complex human skills—previously considered evidence of consciousness and higher cognitive ability—are transferred to the realm of computations and algorithms. Moreover, the ability of intelligent systems to adapt to data, modify their responses, and generate new decisions makes them akin to a "cognitive self" operating through processes that mimic human thinking without possessing motivations or consciousness. This duality between the "technical" and the "human" creates a theoretical tension that demands

psychological and educational analysis of these systems' effects on the individual—not merely as tools, but as cognitive partners intervening in the shaping of their educational and emotional experience.

3.2 Digital Media as an Interactive Environment for Meaning Production

The term digital media refers to the interactive environment that enables the exchange of knowledge, emotions, and behavior among individuals via electronic media. However, this description goes beyond identifying the medium to highlight the structural role of digital media in reshaping human communication patterns, attention styles, and even perceptions of self and others (Bacevic, 2018). Digital media is not just a channel but a new experimental world operating according to distinct rhythms: speed, immediacy, personalization, and emotional centering. These dynamic turns digital media into a field where social behavior is reconstructed in ways that may enhance collective awareness or, conversely, deepen digital individualism based on brief interactions and fragmented emotions. Here arises the need to understand how this environment produces "meaning" rather than merely "information."

3.3 Interaction Between Artificial Intelligence and Digital Media: From Technical Mediator to Influential Actor

The relationship between these concepts transcends the technical aspect, as digital media has become a space where artificial intelligence operates as an active agent in shaping meaning and constructing the user's cognitive experience (Bandura, 2001). This point represents a crucial shift: the user is no longer facing a screen displaying content alone but interacting with a system that learns from them, adjusts content based on their behavior,

and rearranges their cognitive experience according to precise algorithms. Here, the agency of artificial intelligence is not merely technical but social-psychological, as it contributes to shaping the user's expectations, interpretations, and even beliefs. Consequently, the binary human-technology relationship transforms into a triangular interactive one: human – algorithm – content; where no party can be understood without the others.

3.4 Psychological Analysis of the Algorithmic Role: Engineering Emotion and Directing the Unconscious

Psychological analysis of this relationship reveals that algorithms do not operate neutrally but aim to direct attention and emotion through what is known as "emotional engineering"—designing digital content to align with users' repressed drives and deep psychological needs (Freud, 1923). Here emerges the hidden dimension of artificial intelligence: it does not engage the user as a conscious mind alone but infiltrates the realm of drives, desires, and anxieties. Recommendation mechanisms based on tracking emotions and affective tendencies reproduce a pattern resembling what Freud called the "return of repressed desires." This makes digital manipulation fundamentally different from traditional persuasion, as it invests in the unconscious rather than logic. This "emotional engineering" is capable of shaping habits, orientations, and even digital identity patterns without the user sensing the internal transformation occurring.

3.5 Psychological Manipulation Versus Educational Guidance: A Comparison of Depth and Purpose

The importance of comparing the concept of psychological manipulation—which involves directing behavior and beliefs through stimulating the unconscious—with educational guidance, which seeks to enhance individuals' autonomy and ethical awareness, becomes evident (Rogers, 1969). While both concepts share the use of psychological knowledge, they differ in purpose:

- Manipulation: Seeks control and restriction of choice freedom by exploiting perceptual and emotional vulnerabilities.
- Educational guidance: Seeks to open spaces of awareness, empower thinking, and develop decision-making capacity.

This contrast positions artificial intelligence as a double-edged sword: if employed for commercial or political goals, it becomes a tool of covert coercive influence; if directed educationally, it can awaken consciousness, regulate emotions, and enhance self-directed learning. Herein lies the responsibility of educators and psychologists in regulating the ethical use of digital content.

3.6 The Systemic Relationship: Necessity of Integrating Psychological, Educational, and Technical Dimensions

This intersection indicates that artificial intelligence does not provide neutral information but constructs a network of influence on emotion and thinking, necessitating analysis of the phenomenon within a systemic framework that integrates psychological, educational, and technical dimensions. Without this integration, analysis remains truncated: a purely technical approach ignores psychological effects, a purely psychological one overlooks algorithmic rules, and a purely educational one may remain idealistic without practical grounding. Thus, understanding artificial intelligence as a comprehensive influence system arises from liberating the concept from the "magic of technology" and viewing it as a field where mind, emotion, social context, and technology intersect—forming the basis for any educational or preventive intervention in the contemporary digital environment.

4. Psychological Analysis of Digital Manipulation

Modern psychological studies show that artificial intelligence leverages mechanisms of the unconscious and directed attention to generate interactions with users (Faraoni, 2023). For example, social media platforms and educational algorithms present content aligned with users' repressed desires and emotions, creating a sense of being understood and responded to—a mechanism akin to what

Freud described as "transference," where individuals project their feelings onto a substitute object symbolizing their original relationships (Freud, 1923).

These psychological interactions, if not directed within a conscious educational framework, transform into tools of profound psychological manipulation, especially among adolescents who lack sufficient critical analysis skills to handle intensive digital content (Abdel Rahman, 2023). Nevertheless, the same mechanisms can be used to enhance learning motivation through smart educational platforms that provide supportive emotional feedback and continuous cognitive stimulation, underscoring the importance of educational intent and ethical regulation in designing AI educational programs (Holmes et al., 2022).

5. Educational Dimensions of Artificial Intelligence

Educational research affirms that artificial intelligence can bring about a radical transformation in learning methods through:

Personalized Learning represents one of the most significant shifts enabled by artificial intelligence in education. This technology tailors educational content to each learner's individual characteristics, including their knowledge level, learning pace, and specific needs. This approach

offers a genuine opportunity to shift from a uniform group-based educational model to an individualized one that responds to cognitive and emotional differences among learners, thereby enhancing motivation and increasing the effectiveness of personal meaning-making (Nass & Moon, 2000; Yeung, 2017).

Adaptive Assessment, in turn, marks a qualitative step in reimagining the educational evaluation process. This method relies on AI algorithms to adjust question difficulty and direction based on the learner's performance in real-time during the interaction itself, making assessment more accurate by measuring actual abilities rather than depending on static tools that ignore learner differences. It also allows for immediate feedback, contributing to guiding the learner toward performance improvement in a self-directed and proactive manner (Nass & Moon, 2000; Yeung, 2017).

However, the true value of these intelligent tools remains tied to the purpose for which they are used. If personalized learning and adaptive assessment are employed to push learners toward adopting certain commercially or profit-driven behaviors, the educational process turns into a form of psychological and behavioral manipulation. In contrast, if the goal of integrating artificial intelligence is to empower learners to understand themselves, recognize their learning patterns, and develop cognitive

independence, these technologies become powerful tools for fostering cognitive growth, building ethical awareness, and supporting the formation of active, reflective learners (Nass & Moon, 2000; Yeung, 2017).

Arabic studies have yielded similar results; for instance, Abdel Rahman (2023) found that excessive and unregulated use of artificial intelligence and digital media increases digital anxiety and depression among adolescents. Conversely, a study by Tahraoui and Tashma (2022) indicated that guided interaction within smart educational environments can enhance decision-making independence among learners with learning difficulties and develop their critical thinking skills. This reflects the necessity of integrating artificial intelligence within a critical educational culture that teaches learners how to think, not what to think.

6. Prospects for Educational Guidance and Psychological Prevention

In light of the foregoing, engaging with artificial intelligence requires a comprehensive educational strategy based on three axes:

a- Psychological Awareness:

Forms the starting point for any responsible strategy in dealing with AI technologies, as it enables learners to

understand how hidden influences are exerted through algorithms on their perception, emotions, and behavior. Today's digital environments do not merely present information but shape attention and direct decisions via precise mechanisms reliant on data collection, analysis, and crafting content designed to increase engagement or behavioral guidance. By training learners to recognize these mechanisms, they can confront what Zuboff (2019) calls "surveillance capitalism," which turns human behavior into predictable, investable material. This awareness extends beyond understanding technical influence to building a critical sensibility toward the emotion-algorithm relationship, making learners more capable of independent digital decisions and reducing susceptibility to manipulation or misinformation.

b- Cognitive Fortification:

Represents the complementary second dimension to psychological awareness, relying on developing critical and metacognitive thinking skills that allow learners to examine information more deeply and evaluate its reliability before adoption. Learning in the AI era is not just about consuming knowledge but about questioning presented "facts," analyzing content producers' intentions, and distinguishing between objective educational materials and those with

commercial or ideological aims. This axis extends Bandura's (2001) vision of cognitive self-efficacy, where learners become confident in regulating and directing their cognitive behavior. Holmes et al. (2022) emphasize that metacognitive skills are foundational for sustainable learning capable of resisting misinformation and adapting knowledge across contexts. Compared to psychological awareness, which focuses on affective and behavioral impacts, cognitive fortification targets higher mental processes, making both dimensions integrated in addressing digital age challenges.

c- Ethical Regulation:

Forms the ethical framework guiding AI use in educational spaces through entrenching values of responsibility, mutual respect, and commitment to digital privacy. AI-reliant educational environments require value clarity to protect learners from exploitation and ensure these tools serve ethical and cognitive growth rather than the reverse. UNESCO's report (2023) introduces the concept of "digital psychological citizenship," which goes beyond mere responsible technology use to encompass understanding the impact of digital behavior on self, others, and society. Here, ethical regulation differs from cognitive fortification and psychological awareness: while the former shapes guiding principles for behavior, the latter builds mental and

psychological tools for confronting influences. Yet, what unites these three axes is a single goal: forming aware, active learners capable of exercising cognitive and ethical independence in an algorithm-dominated world.

Arabic studies also affirm this vision, showing clear alignment with global trends in understanding AI's role in educational environments. For example, Nasra Shahin's study (2024) addressed the concept of exploitable teachable moments within smart digital environments, explaining how AI-based systems can capture precise indicators in learner behavior—such as hesitation, engagement, or disengagement—and transform them into emergent educational opportunities that enhance critical thinking skills. Shahin demonstrated that these moments do not arise spontaneously but require conscious educational design capable of turning instantaneous interactions into processes of cognitive analysis and inquiry, making learners active participants rather than passive content recipients. From this perspective, Shahin's findings integrate with those of Jalil (2025), which focused on pedagogical challenges in integrating AI into schools. Jalil revealed that while this technology supports self-directed learning and improves assessments, it poses risks of undermining learner independence if not regulated by clear educational values, and may create digital competency gaps

between students and teachers alike. The intersection of the two studies highlights AI as a double-edged tool: capable of nurturing critical thinking if used to activate awareness and analysis, but potentially creating structural challenges if imposed on educational institutions without considering psychological, cognitive, and pedagogical variables. Thus, Shahin's focus on leveraging precise learning moments complements Jalil's warnings about pedagogical pitfalls, together affirming that AI's success in education depends on a conscious framework balancing technological potentials with learners' human needs.

7. Human-Algorithm Interaction and Strategies for Attention and Emotion

Recent literature indicates that digital algorithms re-engineer attention and emotion through multiple strategies, such as real-time personalization of digital

experiences, adaptive feedback, and digital choice architecture (Yeung, 2017; Faraoni, 2023). These tools enable intelligent systems to precisely understand user behavior, then adjust content to align with their interaction patterns and emotions, thereby increasing engagement and attention levels. From an educational perspective, these strategies can enhance active learning, such as by delivering progressively tailored content based on the student's level and stimulating critical thinking. However, the risk emerges when these mechanisms are used to subjugate behavior or direct emotions beyond the learner's awareness—i.e., in the context of digital psychological manipulation. Therefore, it is crucial to develop a balanced understanding of human-algorithm interactions and regulate these mechanisms within clear educational and ethical goals, transforming them from mere influence tools into means of cognitive and emotional empowerment.

Mechanism	Explanation	Practical Example
Personalization	Displaying content that aligns with the user's past interests, which increases engagement and time spent.	YouTube video recommendations based on viewing history.
Instant Feedback / Variable Reward	Receiving immediate notifications or rewards upon interaction, which reinforces behavior and creates a habit.	Likes and comments on social media posts
Hypernudging	Guiding behavior subconsciously by adjusting the order of content based on data	Sorting news feeds to stimulate curiosity or emotions to increase engagement.
Fragmented Attention	Designing content to be short and intermittent, which reduces long-term focus and increases distraction.	Stories on Instagram and Snapchat; short tweets.

Comment: The core idea is that these mechanisms use augmented psychology and behavioral reinforcement to shape strong digital habits, often without the user's awareness.

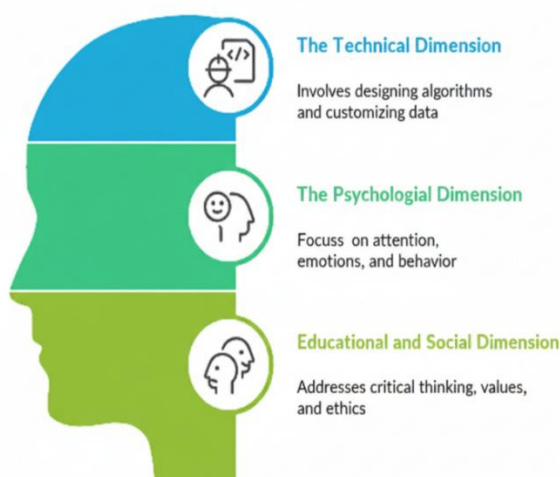
8. Ethics of Artificial Intelligence in Education

Integrating artificial intelligence into education requires clear institutional policies that balance AI's educational potentials with the risk of psychological manipulation (Zuboff, 2019; UNESCO, 2023). These policies include standards

institutional accountability, and protecting learners' freedom of thought. Ethics here are not mere theoretical rules but practical tools to ensure algorithms serve conscious learning and cognitive motivation, rather than subjugating emotions or controlling behavior. This ethical dimension is part of educational media psychology, which links understanding of emotion and behavior with technical analysis of algorithms, enabling the design of safe and effective digital environments that promote self-directed learning and critical awareness among learners.

9. Psychological Challenges for Vulnerable Groups

Groups such as adolescents and those with learning difficulties face heightened risks of psychological manipulation if AI use is not consciously directed (Abdel Rahman, 2023; Tahraoui & Tashma, 2022). These users may exhibit greater sensitivity to the emotional impacts of digital content and be more susceptible to psychological pressure or excessive dependence on digital platforms. On the other hand, teachers face challenges in integrating these tools while maintaining ethical and humanistic guidance, necessitating specialized training programs to enhance digital psychological education skills. Providing such programs empowers teachers to monitor learners' emotional responses, design balanced educational experiences that combine digital interaction with cognitive stimulation, and protect the mental health of the most vulnerable groups.



The Importance of Balancing Dimensions to Overcome Challenges

1. Integrated Systemic Framework for Educational-Technological-Psychological Integration

This framework proposes a model that balances the psychological influence power of artificial intelligence, the educational empowerment of learners, and institutional ethical values. It enables measuring the effectiveness of smart educational programs in promoting conscious learning, critical thinking, and digital psychological citizenship, while providing clear evaluation tools for learning outcomes and their psychological and social impacts. Its importance lies in integrating the educational, psychological, and technological dimensions into a cohesive whole, allowing teachers and institutions to comprehensively assess programs, refine content and algorithm design, and ensure that intelligent AI use supports learners' cognitive and ethical development without veering into psychological manipulation.

To analyze digital manipulation and behavioral guidance, a three-dimensional systemic framework can be adopted, combining technology, psychology, and education/society:

A. The Technological Dimension

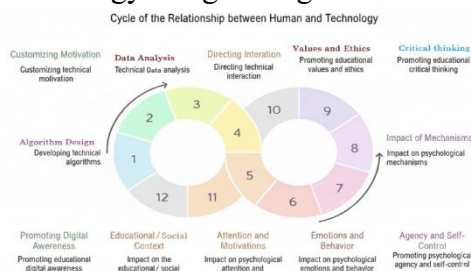
- Study how algorithms are designed, including personalization and motivation mechanisms.
- Understand the role of big data and analytics in predicting user behavior.
- Focus on how digital platforms direct attention and interaction.

B. The Psychological Dimension

- Understand user responses: attention, motivations, emotions, and decision-making capacity.
- Analyze the impact of digital mechanisms (e.g., instant feedback or fragmented attention) on behavior and habits.
- Examine elements of agency and self-control to mitigate negative algorithmic influences.

C. The Educational and Social Dimension

- Study the educational or social context in which digital interaction occurs.
- Promote critical thinking skills and digital awareness among users.
- Focus on ethical and social values in technology design and guidance.



This framework enables a comprehensive understanding of human-technology

interaction in terms of influence, guidance, and awareness, while allowing the design of more responsible and intelligent digital environments.

2. Recommendations

Training Programs for Teachers

- Develop training workshops and ongoing courses on digital psychological education, familiarizing teachers with AI mechanisms, human-algorithm interaction strategies, and ethics of digital data use.
- Focus on critical thinking and the ability to distinguish between educational content and content designed for psychological manipulation, providing practical tools for evaluating students' digital interactions.

Integrating Digital Awareness into Curricula

- Incorporate digital psychological citizenship skills into school curricula, such as students' awareness of digital emotions, screen time management, and information source verification.
- Design educational units that integrate AI into classroom activities in ways that stimulate intellectual independence rather than controlling learner behavior.
- Establishing Clear Institutional Policies
- Create regulatory frameworks in schools defining how digital platforms and educational algorithms are used,

emphasizing transparency and privacy protection.

- Develop an ethical guide for teachers and students on AI use, clarifying boundaries between educational guidance and psychological manipulation.

Monitoring and Protecting Vulnerable Groups

- Provide psychological support and special monitoring for students most susceptible to digital influence, such as adolescents and those with learning difficulties.
- Implement cognitive fortification programs through training in critical thinking, research skills, and digital information verification.

Encouraging Experimental Educational Projects

- Support pilot projects in Algerian schools using AI to enhance personalized learning, with follow-up on students' psychological and cognitive outcomes.
- Provide evaluation tools to measure the effectiveness of digital platforms in promoting intellectual independence and ethical awareness.

Collaboration Between Public and Private Sectors

- Encourage partnerships between the Ministry of Education, universities, and

local tech companies to develop smart educational solutions that consider psychological and educational dimensions, adaptable to Algerian cultural and social contexts.

Community Awareness Campaigns

- Launch educational campaigns for parents on the psychological risks of AI and the importance of digital guidance at home.
- Distribute simple, illustrated guides explaining how to monitor children's digital content use mindfully.

Conclusion

- Artificial intelligence and digital media are not merely technological tools or channels for information exchange but complex systems capable of profoundly influencing psyche, emotions, and collective consciousness. Their danger lies in the potential for covert psychological manipulation, where algorithms can direct attention, stimulate emotions, and reshape users' thinking patterns without their full awareness. Yet, hope emerges in redirecting these technological systems toward noble educational goals through critical awareness, ethical education, and psychological fortification for learners and society as a whole. Controlling their impact is not achieved through prohibition or bans but through deep

knowledge of their operations, building resilience against pre-designed emotional influences, and cultivating critical evaluation and self-accountability skills.

- From this perspective, humanity's future in the digital age hinges on its ability to rebuild the relationship between technology and human consciousness, transforming algorithms from directors of individual behavior into servants of the mind that enhance cognitive growth, critical analysis, and ethical awareness. Realizing this balance not only safeguards the psyche from psychological manipulation but paves the way for more responsible educational and societal environments, where technology supports conscious thinking, strengthens digital psychological citizenship, and fosters free, enlightened decision-making. Ultimately, the challenge and opportunity lie in teaching future generations to interact with artificial intelligence not as victims of algorithmic schemes but as digital citizens capable of using these tools with awareness, wisdom, and responsibility.

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