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TIKTOK MICRO-RHYTHMS AND NEUROPLASTIC LEARNING: THE NEUROSOCIOLOGICAL REPRODUCTION OF DIGITAL HABITUS

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Abstract: *This review explores how TikTok's short-video micro-rhythms shape digital habitus by connecting platform practices with Bourdieu's habitus and field, Giddens's structuration theory, and experience-based neuroplasticity. Using qualitative document analysis and a theoretical approach, 42 Turkish and English studies published between 2009 and 2025 were examined and coded under key themes such as platform logic, attention and reward cycles, behavioural synchrony, enriched environments, and child/adolescent development. The review suggests that "hook in the first second," fast scrolling, and looping viewing narrow attention spans, link reward expectations to speed and repetition, and support more fragmented and emotion-driven learning habits. To describe the tension between platform rhythms and institutional rhythms, the study uses the ideas of "rhythm transmission" and "counter-rhythm" and proposes rhythm-sensitive principles that aim to rescale attention rather than copy platform speed.*

Keywords: *Neurosociology, Habitus, Neuroplasticity, Rhythm, TikTok.*

JEL Classification: Z13; D83; L86; I21; Z18.

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INTRODUCTION

In the contemporary convergence of education, culture, and technology, rhythm is increasingly becoming a sociological, pedagogical, and neurobiological category. Beyond a metaphor for music or timing, rhythm functions as an analytical tool for understanding how social practices are embodied, at what speeds they are reproduced, and how digital platforms reorganize bodily–temporal patterns. This article proposes a neurosociological explanatory model that links rhythm to Bourdieu's habitus–field–capital framework, Giddens' structuration theory, and the literature on experience-dependent neuroplasticity. In line with gene–culture coevolution approaches that conceptualize biological, cognitive, and cultural patterns as mutually shaping feedback loops

(Maddox, Wilson, Quintan, Turner, & Bowker, 1984), rhythm is treated as a joint unit of analysis for bodily, neural, and social ordering. However, the rhythmic logic of short video platforms such as TikTok has not been examined through an integrated framework that simultaneously addresses social structures and neural adaptation; sociological, pedagogical, and neurobiological discussions largely proceed in isolation (Dursun, 2018; Yıldırım & Ergun, 2017). The primary aim of this study is to analyze the structural, affective, and neurobiological effects that arise when TikTok's accelerated micro-rhythms collide with the institutional rhythms of educational environments, and to propose a neurosociological framework that fills this theoretical gap.

Bourdieu's concept of habitus provides the sociological foundation of the rhythmic perspective adopted here. Habitus denotes the embodied state of an individual's social history and explains how practices are internalized as neural and bodily patterns through historical accumulation (Palabıyık, 2011). Through repetition, this internalization generates a rhythmic order that both enables everyday action and reinforces cultural practices. The educational field constitutes a key arena in which these rhythms are reconstructed: the tempo of lessons, assessment cycles, teacher–student interaction patterns, and collective attention are all regulated by institutional time. The classroom becomes the point at which students' historically shaped habitus meets institutional rhythms. Yet the tension between the new rhythm expectations students carry from digital platforms and the established rhythms of educational institutions has not been systematically analyzed within a habitus framework, revealing a significant gap in the literature.

Giddens' structuration theory complements this approach by conceptualizing rhythm as a dynamic process rather than a fixed structure. The duality of structure posits that social arrangements are both constraining and productive in action (Giddens, 1984). From this angle, rhythm is continually reconstructed through practice: the tempo of a lesson shifts with students' attention levels; teachers readjust classroom pacing based on feedback; and in the digital age, students' expectations of speed reshape pedagogical flow. Integrating this structure–action cycle with the rhythmic logic of TikTok clarifies how platform architectures constrain individual actions while micro-actions such as scrolling, skipping, and replaying simultaneously reproduce structural order (Çetinkaya & Dondurucu, 2023; Bahçecioğlu, 2023; Koç, 2023). Studies in the Turkish context show that TikTok accelerates the rhythm of legitimization in the visibility economy and speeds up the circulation and naturalization of norms (Bahçecioğlu, 2023; Çetinkaya & Dondurucu, 2023), yet these findings have not been linked to neuroplasticity and in-class rhythm design.

The impact of such digital micro-rhythms on young people's attention windows, reward expectations, and motivational patterns is supported by experience-dependent neuroplasticity research. Neuroplasticity refers to the brain's capacity to reorganize itself and form new connections in response to experience, a lifelong adaptation process (Turhan & Özbay, 2016). Adolescence and early adulthood are periods of heightened sensitivity to digital stimuli, when the prefrontal cortex is still maturing and reward sensitivity is elevated. Under these conditions, attention, speed, and "unexpected reward"—for example, virality or a sudden increase in likes—can strengthen synaptic pathways more rapidly (Yüce, Karahan, & Pamir, 2024). TikTok's short and intense rhythmic stimuli may thus foster rapid habit cycles particularly in this age group (Lukyanchikova et al., 2023). Yet the relationship between short-video rhythms and neuroplasticity is usually treated at the clinical or individual level; its links to educational sociology and classroom rhythm design remain underexplored. Research on enriched environments and behavioral synchronization further underscores the social and pedagogical significance of rhythm. Enriched environments enhance synaptic potentiation, raise BDNF levels, and improve attention–memory performance, consistent

with the view that long-term potentiation in hippocampal circuits is a core mechanism of memory formation (Bliss & Collingridge, 1993; Akıllıoğlu et al., 2009; Turhan & Özbay, 2016). Pedagogical practices such as spaced repetition, rhythmic task routines, recall cycles, and movement accompaniment are techniques directly recommended by neuroplasticity research (Özbay & Memiş, 2015). At the same time, studies of interpersonal synchrony show that shared tempo, call-and-response, and moving together strengthen motor coordination, affect, and social bonding (Duranton & Gaunet, 2016), while classroom micro-synchrony practices support belonging and classroom climate (Bayındır, 2022). Yet the tension between digital rhythms and in-class synchronization practices, as well as possible "counter-rhythm" strategies, has not been theorized within an integrated framework.

Building on these gaps, the article advances a neurosociological approach to examine how rhythm operates as a social, cultural, and neurobiological category; how the accelerated rhythms of digital platforms generate norms; and how classroom rhythm design should be reconsidered. TikTok's "hook in the first second" logic, similar to hook–loop systems in engineering, pulls users into repetition cycles that, when combined with algorithmic personalization, accelerate social rhythm (Haraldsson, 2004). These cycles do not remain confined to the digital domain; they infiltrate education through attention spans, expectations of speed, and reward circuits. By positioning rhythm as a multi-layered unit of analysis, the article moves beyond reductionist debates focused solely on "attention deficit" or "screen time." Habitus explains the history of rhythms embedded in students' bodies; structuration captures the ongoing re-formation of rhythm through action; neuroplasticity describes the synaptic adaptation mechanisms reinforced by repetition. TikTok's micro-rhythms intervene in all three dimensions simultaneously, rendering the speed of norm production and temporal legitimation visible as both a cultural and neurobiological process (Yıldırım & Ergun, 2017). In doing so, the study aims to address a significant theoretical gap in national and international literature at the intersection of digital platforms, sociology of education, and neuroscience.

MAIN TEXT

Method

Research Design

This study was designed as a qualitative document analysis conducted within the framework of the theoretical construction method. Theoretical construction aims to develop an explanatory model by reorganizing selected concepts from the existing interdisciplinary literature around a new theoretical framework (Charmaz, 2014). Document analysis, on the other hand, is based on the systematic collection, selection, and analysis of texts that constitute the primary data source of this process (Bowen, 2009).

The interdisciplinary originality of the study lies in its first-time integration of Bourdieu's theory of sociological practice, Giddens' structuration theory, experience-dependent neuroplasticity research, and digital platform analytics around the concept of "rhythm". In this context, documents have been evaluated not only for their content but also with regard to their historical-institutional context, conceptual positioning, and methodological choices; the resulting inferences have been integrated within a neurosociological rhythm reading.

Corpus and Inclusion Criteria

The analysis corpus consists of 42 scientific documents systematically compiled by the researcher. These include peer-reviewed journal articles, n = 27; books and book chapters, n = 8; theses and reports, n = 3; and extensive data reviews and compilation studies, n = 4. Most of the documents were published between 2009–2025, and cover themes such as neuroplasticity, habitus and structuration, TikTok and digital platforms, behavioral synchronization as well as child and adolescent development in both Turkish and English literature.

Inclusion Criteria for The Corpus

1. Conceptual coherence: Contains at least two of the following themes—habitus, structuration, neuroplasticity, rhythm, digital platform architecture, neurosociology

2. Methodological adequacy: The study's method, sample, and analysis process are clearly reported

3. Source traceability: Complete information about author(s), publication venue, date, DOI/URL

4. Theoretical contribution: Provides a distinct or original contribution to ongoing academic debates

5. National-international balance: Balanced representation of national studies (n=16) and international studies (n=26)

6. Time limit: Predominantly studies published in the last 15 years (to ensure the currency of digital and neuroplasticity research)

Exclusion Criteria

Unreported hypotheses, editorial writings without methodological explanations, technical reports (except meta-analyses). This selection ensured systematic access to the intersections of habitus-rhythm, structuration-digital order, and neuroplasticity-education.

Data Analysis Process

The analysis was carried out in four stages.

Stage 1: Preliminary Screening and Verification (n=58)

For each document, the following information was recorded:

- Type of publication (journal, book, thesis, report)
- Publication status (Scopus/Web of Science indexed, peer-reviewed, h-index)
- Main discipline (sociology, psychology, neuroscience, media studies, education)
- Authors' areas of expertise
- Text's alignment with the neurosociological framework (Aligned/Partially aligned/Supportive)

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At this stage, preliminary screening was performed in terms of scientific reliability and conceptual coherence.

Stage 2: Code Development and Thematic Organization

The documents were read using a deductive (pre-determined) and inductive (emerging from the texts) coding system.

Deductive coding (theoretical framework):

- Habitus, field, capital (Bourdieu)
- Duality of structure, structuration (Giddens)
- Neuroplasticity, experience-dependent learning, enriched environment
- Digital micro-rhythms, personalization cycles
- Behavioral synchronization, joint tempo, simultaneity

Inductive coding (emerging from texts):

- "Alrhythmic interaction ritual chains" (Bazan Royuela, 2025)
- "Rhythm transmission" (novel entry)
- "Counter-rhythm strategies"
- "Neurosociological timing" (structure-action-neuroplasticity intersection)

Each document was scanned using a coding matrix and noted under the relevant themes.

Stage 3: Content and Discourse Analysis

Two techniques were applied simultaneously on the coded content

Content Analysis: The explicit textual content (definition, finding, discussion) of the documents was systematically classified. Discourse Analysis: An analysis was conducted on how documents position concepts, which metaphors and rhythm images they employ, and which normative assumptions they rely on. For example:

- Is neuroplasticity framed as "neural bonding" or as "habit formation"?
- Is habitus defined as "fixed" or "dynamic"?
- Is rhythm presented as "external pressure on the individual" or as something "reconstructed through action"?

Stage 4: Synthesis and Theoretical Integration

Coded data have been reorganized around a rhythm-centered theoretical backbone

1. Habitus × Rhythm: Temporalization of bodily dispositions
2. Structuring × Rhythm: Rhythmic reproduction of intra-class practices
3. Neuroplasticity × Rhythm: Repetition-reinforcement-synaptic pathways

4. Digital Micro-Rhythms: Platform architecture-body-culture connections
   Neurosociological Outcomes: Brain-social-rhythm triad

At this stage, sociological practice theory, neuroplasticity findings, and digital platform analyses have been integrated into a single theoretical framework for the first time.

In qualitative research, validity is addressed within the framework of Lincoln and Guba's (1985) criteria of credibility, transferability, dependability, and confirmability.

Criterion	**Strategy**	**Implementation**
Credibility	Data triangulation Integrating sociological, psychological, neuroscientific, media studies and educational research sources.	Data triangulation Integrating sociological, psychological, neuroscientific, media studies and educational research sources.
Credibility	Expert review Comparing interpretations with domain experts and with the key studies cited in this paper.	Expert review Comparing interpretations with domain experts and with the key studies cited in this paper.
Credibility	Consistency check Explicitly discussing deviant or alternative interpretations within the text.	Consistency check Explicitly discussing deviant or alternative interpretations within the text.
Transferability	Thick description of Providing a detailed account of the Turkish education system and patterns of TikTok use.	Thick description of Providing a detailed account of the Turkish education system and patterns of TikTok use.
Dependability	Methodological Transparency	Describing the codebook, selection criteria and stages of analysis in detail.
Confirmability	Audit Trail	Ensuring that each inference is explicitly linked to APA 7 in-text citations and the reference list.

Table 1. Data Quality and Validity Strategies Applied in the Study

Limitations

This study is subject to the following limitations:

1. Theoretical Nature: The findings do not claim experimental causality; they are presented as context-sensitive theoretical interpretations. Neuroimaging data, longitudinal behavioral measurements, or large-scale user datasets are outside the scope of this study.

2. Document-Based Limitations: The production purposes, institutional positioning, and methodological shortcomings of the documents examined constitute an indirect limitation of the study. The internal biases and underreporting within the texts may be reflected to a certain extent in the theoretical framework.

3. Language and Publication Network: The corpus is limited to English and Turkish publications; studies conducted in other languages are not represented. Therefore, the study does not claim to cover the entire global literature.

4. Time Frame: While the emphasis on the last 15 years has included older classic sociology works (e.g., Bourdieu 1977) for their archival value, very recent (2024-2025) digital platform research has not yet become well-established.

5. Turkey Context: Although the study emphasizes TikTok usage patterns and the education system in Turkey, the generalizability of the findings to other cultures and educational contexts is limited.

Theoretical Background

This study rethinks the culture–education relationship around rhythm by bringing together three axes: Bourdieu's habitus–field–capital framework, Giddens's structuration theory, and experience-dependent neuroplasticity and enriched-environment research. Together, they offer a shared ground for explaining how TikTok's accelerated micro-rhythms are taken up, negotiated, and transformed within education, in line with gene–culture coevolution views that see neural architectures, cognitive schemas, and cultural practices as mutually shaping systems (Maddox et al., 1984).

Habitus, Field, and Rhythm

Habitus can be read as a set of historically produced rhythmic patterns that become automatic through repetition and guide perceptions of what is "natural" or "possible" (Bourdieu & Wacquant, 2003). Temporal arrangements such as lesson flows, exam cycles, or daily scrolling practices are thus embodied rhythms stabilized over time. The notion of field highlights that these rhythms emerge within specific, power-laden temporal regimes: the school field operates with relatively slow, linear repetitions, whereas digital fields such as TikTok privilege speed, interruption, and "first-second attention capture" (Kaplan & Yardımcıoğlu, 2020).

When these regimes intersect, habitus functions as a negotiation mechanism. Young people whose bodies are tuned to digital acceleration bring new expectations of tempo, novelty, and reward into the classroom, and educational rhythms may partially adapt while still seeking to preserve institutional continuity. In this sense, habitus is dynamic: digital micro-rhythms—fast scrolling, instant rewards, looping content—become part of students' temporal repertoires, reshaping boredom thresholds and attention spans. Rhythm therefore appears not as a cosmetic issue of "pace," but as a core mechanism of social learning and a key modality through which culture is inscribed in the body (Bourdieu & Wacquant, 2003; Markus & Kitayama, 1991).

Structuration and the Duality of Structure

Giddens defines structure as rules and resources that both enable and are reproduced by social practices; this "duality of structure" means that everyday action simultaneously draws on and reshapes structural conditions (Giddens, 1979, 1984; Palabıyık, 2011). In education, lesson times, assessment cycles and teacher–student interaction patterns are not just external constraints; they are continuously re-enacted through classroom routines. Rhythmic decisions on how a lesson starts, how long lectures last, when questions are invited or breaks are taken recompose the time–space organization of schooling in each session.

Expectations of speed and repetition carried from digital platforms enter this structuration process as new rhythmic inputs. Students accustomed to TikTok may seek shorter explanation blocks, quick feedback and intense audiovisual stimulation; teachers may adjust tempo, segmentation and activity distribution accordingly. Digital rhythms thus become part of the negotiated organization of classroom time rather than remaining outside it (Dursun, 2018). The logic of speed in digital culture transforms everyday temporality and recalibrates the rhythm of the structure–action cycle, so that classroom rhythms emerge as products of ongoing structuration in dialogue with platform-based time regimes.

Simultaneity, Joint Attention, and the Ethological Bridge

Ethological research conceptualizes behavioral synchronization as performing the same or functionally related behaviors in the same place at the same time, and treats temporal, activity, and local simultaneity as components of a broader form of social harmony (Duranton & Gaunet, 2016). Across species, such synchrony is associated with shared attention, danger perception, group integration, and cooperation. Examples such as group feeding, coordinated vigilance, and collective responses to threats show how a common rhythm can reduce cognitive load and strengthen social bonds. Transferred to the classroom, these findings suggest that rhythmically organized activities—short clapping sequences, simultaneous start–end cues, brief breathing routines or pause rituals—open windows of joint attention and belonging rather than leaving focus solely to individual effort. Neurosociological and social neuroscience studies further argue that joint attention and mutual understanding may be linked to the synchronization of oscillatory activity at the brain level (Hoehl, Fairhurst, & Schirmer, 2021; Neugnot-Cerioli & Laurenty, 2024). In this light, small synchrony modules are consistent both with ethological evidence and with frameworks such as the Pyramid Model, which emphasize predictable, emotionally safe micro-rhythms to support children's social–emotional development (Kalkan, 2021).

Experience-Dependent Neuroplasticity and Enriched Environments

Experience-dependent neuroplasticity refers to the brain's capacity to change its structure and function in response to sensory input and task demands across the life span (Pascual-Leone, Amedi, Fregni, & Merabet, 2005; Yüce et al., 2024). Early childhood is a particularly sensitive phase in which dense synaptic activity and stimulus richness critically support domains such as attention, memory, language, and reasoning; enriched-environment studies show increases in neuronal growth, synapse density, and neurotrophic factors associated with learning and exploration, effects that continue into adulthood through ongoing neurogenesis and synaptic restructuring (Akıllıoğlu et al., 2009; Pascual-Leone et al., 2005; Turhan & Özbay, 2016). For education, these findings imply that learning environments should be designed as rhythmic, multisensory experiences rather than purely cognitive tasks. Structured repetition, movement-based activities, and predictable routines (Turhan & Özbay, 2016; Kalkan, 2021) can be read as pedagogical rhythms aligned with synaptic-strengthening mechanisms such as hippocampal long-term potentiation (Bliss & Collingridge, 1993); Sabır Taştan's (2020) "Sweeping Technique," which couples meaningful tasks with rhythmic breathing and focused attention, exemplifies how such designs may enhance both neuroplasticity awareness and subjective well-being.

Digital Micro-Rhythms and Personalization Loops

TikTok's architecture is built around short clips, "hook in the first second," dense sound/effect use and rapid cuts that organize content consumption along axes of speed and repetition (Çetinkaya & Dondurucu, 2023). News content is re-formatted into entertaining, visually rich segments, making "instant attention capture" a platform norm.

Recommendation algorithms reinforce this logic. Users' micro-actions—watching, replaying, skipping—are collected as signals and feed back into the composition and tempo of subsequent content, forming "algorithmic interaction ritual chains" (Bazan Royuela, 2025). Digital ethnography shows that music-based performance templates, trends and choreographies create shared rhythms and global simultaneity, especially through playback and synchronized movement (Yarar Koçer, 2021).

The resulting short clip–hook–loop cycle constitutes an algorithmic time regime in which moving to a new stimulus every few seconds becomes normal. Repeated sounds, filters and templates shape a ritual economy that configures curiosity, boredom thresholds and affect in micro-loops (Bazan Royuela, 2025; Yarar Koçer, 2021). TikTok's micro-rhythms and personalization loops thus normalize expectations of speed and instant engagement, reshaping digital habitus within a time space co-produced by algorithms and interaction signals (Çetinkaya & Dondurucu, 2023).

Rhythm Transmission: Habitus × Structuration × Plasticity

When digital micro-rhythms are carried into the classroom, they are not merely individual habits but elements of a structuring process. Habitus explains how short focus blocks, rapid switching and preference for intense stimuli, learned in digital environments, create new expectations about lesson tempo and are re-negotiated within the educational field (Bourdieu, 1992). Structuration theory shows that these expectations feed into the ongoing reorganization of classroom time (Giddens, 1984).

Counter-rhythm strategies—micro-segmentation of content, collective micro-breaks, movement-assisted recall—offer ways to transform rather than suppress digital rhythms. They are supported by findings that synchrony enhances shared attention (Duranton & Gaunet, 2016) and that meaningful repetition plus multisensory stimulation strengthens learning networks (Akıllıoğlu et al., 2009; Turhan & Özbay, 2016). In this sense, classroom rhythm becomes a collective regulatory system that redistributes the speed of individual digital habits into a shared pedagogical tempo, consistent with neuroplasticity principles.

Practice-Oriented Conclusions and Sociological Context

Designs that combine structured repetition with rhythmic, multimodal tasks offer a learning tempo compatible with both neuroscientific and sociological insights. Programs built on rhythmic, meaningful activities—such as Sabır Taştan's (2020) work—show that rhythm can regulate mood, widen attention windows, and reorganize the subject–environment relationship, in line with findings that music-based synchrony strengthens social bonding and emotional alignment (Tarr, Launay, & Dunbar, 2014; Akıllıoğlu et al., 2009; Turhan & Özbay, 2016). At the same time, TikTok and similar platforms generate algorithmic ritual chains through hooks, loops, and sound/tempo templates, tying scrolling practices to specific micro-rhythms (Çetinkaya & Dondurucu, 2023; Bazan Royuela, 2025; Yarar Koçer, 2021). Students' expectations of "speed, repetition, and hook" can therefore be read as internalized digital rituals rather than isolated preferences. Counter-rhythm principles such as micro-segmentation, collective breaks, accompanied recall, and rhythmic closures align with neuroplasticity findings and digital interaction research, and can be tracked through indicators like speaking-turn distribution or synchronous start–end rates (Akıllıoğlu et al., 2009; Turhan & Özbay, 2016; Bazan Royuela, 2025; Yıldırım, 1999). In this perspective, rhythm becomes a central neurosociological concept for analyzing how cultural practices, digital infrastructures, and neural adaptation converge in concrete, schedulable classroom practices (Bahçecioğlu, 2023; Çetinkaya & Dondurucu, 2023; Vázquez-Herrero, 2022; Bourdieu, 1977/1990; Giddens, 1984). The educational field can thus be reframed as an active actor capable of recoding rhythm, synchrony, and repetition—rescheduling platform micro-rhythms into pedagogical counter-rhythms that are both neuroplastically informed and sociologically grounded.

Discussion: Societal Time Shaped by TikTok's Micro-Rhythms

This study shows that the micro-rhythms generated by TikTok's short-video architecture are not just interface details. They are woven into the rhythmic components of habitus, the practice-internal cycles of structuration, and experience-dependent neuroplastic adaptations. Second-long hook–loop mechanisms, rapid cuts, and personalization cycles create a hybrid space that simultaneously reshapes neural timing and cultural action patterns, extending beyond classic cultivation models (Bahçecioğlu, 2023; Çetinkaya & Dondurucu, 2023; Yarar Koçer, 2021; Bazan Royuela, 2025; Akıllıoğlu et al., 2009; Turhan & Özbay, 2016; Yüce et al., 2024). In Bourdieu's terms, these micro-rhythms infiltrate temporal perception and action dispositions, forming a specifically digital habitus, especially among young users (Bourdieu, 1992). Turkish studies documenting rapid transitions, instant echoes, personalized flows, and an accelerated visibility economy support this diagnosis: expectations of speed, repetition, and "hook" redefine what counts as boring or worth following (Çetinkaya & Dondurucu, 2023; Bahçecioğlu, 2023; Koç, 2023; Yarar Koçer, 2021).

From this angle, shortened attention spans should not be framed simply as "impatience," but as the internalized outcome of a rhythm regime. The mismatch between digitalized habitus and classroom tempo offers an alternative explanation for what is often labeled a discipline or motivation problem. Giddens's duality of structure helps clarify this tension: TikTok rhythms do not enter the classroom unchanged, but are renegotiated in lesson openings, activity durations, and feedback intervals (Giddens, 1984; Dursun, 2018). Students appear not merely as content consumers but as carriers and reproducers of rhythm. Educational institutions, in turn, face the risk of either rejecting digital rhythms altogether or uncritically synchronizing classroom tempo with TikTok speeds. This article argues instead for counter-rhythm designs that negotiate with digital rhythms without abandoning pedagogical purpose.

Neuroplasticity research deepens this discussion. Repetition and multisensory input strengthen learning–memory circuits via synaptic mechanisms such as long-term potentiation (Bliss & Collingridge, 1993; Akıllıoğlu et al., 2009; Turhan & Özbay, 2016). TikTok's short, intense, high-contrast stimulus sequences intersect with these mechanisms through speed, variability, dense stimulation, and repetitive micro-rewards (likes, views, trend participation). The platform thus produces stimulation patterns that resemble enriched environments, yet these rhythms are largely disconnected from educational aims. Because neuroplasticity is a neutral capacity, synaptic strengthening may consolidate habit circuits rather than functional learning when rhythm is not embedded in a pedagogical context (Yüce, Karahan, & Pamir, 2024). Cognitive risks associated with TikTok therefore cannot be captured by addiction rhetoric alone; they require analysis in terms of neural timing, habit formation, and the redirection of plasticity.

Ethological and neurosociological work on synchrony illuminates the social dimension of these processes. Rhythmic synchronization expands shared attention windows, reduces cognitive load, and strengthens social bonds (Duranton & Gaunet, 2016). TikTok transports these mechanisms into the digital sphere through shared music tracks, trending rhythms, sound memes, and accompanied movements. Joining a trend "with the same rhythm" rests on the same bio-social principles as classroom tempo accompaniments. Through shared rhythm and micro-coordination, TikTok produces mass synchronization and an "algorithmic synchronization regime" that intersects with crowd psychology and neurosociological debates. The key question is how far this synchrony reflects genuine collaboration and how far it constitutes an algorithmically directed illusion of shared rhythm. In this sense, the recommendation system is not merely a sequencing tool but a feedback

mechanism that keeps time with the user (Bazan Royuela, 2025). Watch time, skips, replays, and pause points allow the algorithm to construct user-specific rhythm sets; even when users feel they control the flow, the tempo is largely pre-structured. This article names this invisible force an algorithmic rhythm regime, and treats personalization as the imposition of specific temporal patterns on attention, affect, and learning expectations. Algorithmic manipulation debates thus extend from privacy and misinformation to the level of timing and rhythm. The encounter between relatively steady classroom rhythms and TikTok's accelerated tempo can yield either productive adaptations—where micro-rhythms are pedagogically reframed—or superficial learning, where rapid switching and narrow attention windows hinder deep processing. Counter-rhythm practices such as micro-breaks, spaced recall, shared breathing, and tempo accompaniments, supported by neuroplasticity and synchrony research, are therefore best understood not as attempts to suppress digital rhythms but as strategies to redirect them in favor of learning (Akıllıoğlu et al., 2009; Turhan & Özbay, 2016; Duranton & Gaunet, 2016; Sabır Taştan, 2020). Taken together, the evidence suggests that TikTok's micro-rhythms reshape neural attunement, transform the rhythmic structure of habitus, generate structural cycles reconstructed in practice, produce shared attention and synchronization, and establish a rhythm-based sociality through personalization. TikTok should thus be conceptualized not merely as a content platform but as a rhythm-based cultural field at the intersection of nervous-system timing and the temporal structures of cultural practice. The article's original contribution is to theorize this field through the concept of rhythm transmission: how digital micro-rhythms are carried into the organization of classroom time via habitus and structuration, and how rhythm becomes a central mechanism of social coordination circulating among cultural practices, instruction, and neural synchrony (Bourdieu, 1977/1990; Giddens, 1984; Bahçecioğlu, 2023; Çetinkaya & Dondurucu, 2023). TikTok's personalized attention cycles are discussed alongside experience-dependent neuroplasticity and enriched environments, conceptualizing neuroplasticity as a learning infrastructure that can be steered—productively or not—by algorithmic rhythms (Akıllıoğlu et al., 2009; Turhan & Özbay, 2016; Yüce et al., 2024). Trend adaptation, playback, and tempo-accompanied performances are linked to "algorithmic interaction ritual chains" and collective emotional energy, while classroom voice/tempo-accompanied practices are reframed as social synchronization strategies that rescale dispersed attention and fragmented belonging (Bazan Royuela, 2025; Yarar Koçer, 2021; Duranton & Gaunet, 2016; Sabır Taştan, 2020). Short-video ecosystems thus appear as an algorithmic rhythm regime that simultaneously shapes screen behavior, social interaction, learning processes, and neurocognitive alignment.

Policy And Design Recommendations

Rhythm-level cognitive security.

Cognitive security should be extended beyond cybersecurity and fact-checking. Regulatory debates need to address algorithmic rhythms directly: transparency in recommendation systems, limits on autoplay and infinite scroll, and the design of deliberate rhythm-breaking pauses, especially for younger users (Floridi, 2018). Such measures treat temporal architecture as a dimension of cognitive protection rather than a neutral background.

Counter-rhythm based pedagogical design.

The impact of TikTok should not be reduced to a general narrative of "attention disruption." Classroom rhythms must be rethought through counter-rhythm strategies that redirect, rather than simply reject, digital tempos. Micro-breaks, spaced retrieval, collective synchronization, movement-accompanied learning, and cognitive-load management can harness neuroplastic mechanisms

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without reproducing TikTok's pace wholesale (Akıllıoğlu et al., 2009; Turhan & Özbay, 2016; Sabır Taştan, 2020). This requires schools to position themselves as active institutional actors capable of recoding rhythm instead of passive recipients of the digital rhythm economy.

Neurosociological media literacy.

Media literacy programs should go beyond content verification and incorporate modules on the cognitive and emotional mechanisms of algorithmic manipulation. Educational materials that explain cognitive biases, confirmation processes, emotional contagion, artificial consensus, and groupthink can help individuals manage both their platform interactions and their own attention economies more consciously (Festinger, 1957; Nickerson, 1998). Small-scale manipulative examples, analyzed through "cognitive inoculation" approaches, may foster mental immunity against broader disinformation waves and against the subtle temporal steering embedded in algorithmic rhythm regimes.

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