



The Brain Rot Phenomenon in TikTok Usage and Its Impact on Students Critical Thinking Skills in Semarang

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ARTICLE INFO

Article history

Received 2026-07-17

Revised 2026-08-25

Accepted 2026-09-02

Keywords

Brain rot;
Critical thinking;
Phenomenon;
Tiktok.

ABSTRACT

TikTok's dominance in Indonesia's social media landscape has intensified concern over brain rot, a popularly termed condition associated with cognitive fatigue and diminished analytical capacity linked to excessive short-form video consumption, particularly among university students whose academic work depends on sustained critical thinking. However, how this phenomenon relates to students' critical thinking, and why its apparent effects appear to differ between individuals with similarly high TikTok exposure, remains underexplored in the Indonesian context. This study aims to examine how Semarang university students subjectively experience TikTok-related brain rot and how that experience relates to their information-verification behavior as a dimension of critical thinking. Using a descriptive qualitative approach, in-depth interviews were conducted with 11 purposively selected heavy-viewer informants (TikTok use exceeding four hours daily), triangulated with observation and screen-time data, and analyzed using the Miles and Huberman interactive model within a cultivation-theory framework. Findings indicate that informants' accounts of reduced concentration, superficial information processing, and diminished depth in critical analysis were associated with three recurring factors: purpose of TikTok use, information-verification habits, and engagement in academic activities beyond social media; informants who verified information consistently and remained academically engaged tended to describe less pronounced effects, while those without these habits described more pronounced ones. Based on these patterns, this study proposes a typology of three informant groups, ranging from consistent verifiers to passive recipients who circulate information without cross-checking, offering a more contextual, evidence-grounded basis for designing targeted digital literacy interventions than blanket TikTok-use restrictions.

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1. Introduction

Advances in digital technology have reshaped public communication, shifting media's role from entertainment to the primary source of information for young generations ([Chan et al., 2025](#); [McQuail, 2011](#); [Peruško, 2025](#)). TikTok exemplifies this shift most concretely through algorithm-based, fast, repetitive short-video content that accelerates instant information consumption ([Hadinata et al., 2026](#); [Wati, 2024](#)). In Indonesia, TikTok has reached 109.9 million users with 64.91% of active users aged 18–34 ([Kemp \(2025\)](#); [Murtiningrum & Pujiastuti \(2025\)](#)), placing college students squarely among its heaviest consumers, and making the platform's cognitive effects on this group a pressing, rather than speculative, concern.



This intensity of consumption is increasingly linked to what is popularly termed brain rot, Oxford's 2024 Word of the Year. It is important to note that the term remains conceptually fluid and is not yet an established clinical diagnosis or formally recognized cognitive condition; rather, it functions as a popular label capturing a perceived degradation of cognitive ability and mental fatigue from excessive exposure to low-quality digital content. Within this evolving conceptual space, scholars have associated TikTok's dopamine-stimulating, rapidly-shifting format with conditioning the brain to resist slower, more complex stimulation, and with triggering cognitive overload that impairs working memory, planning, and decision-making, functions closely tied to critical thinking (Montag et al., 2021; Xie et al., 2023). The academic stakes nonetheless appear concrete: in Indonesia, TikTok use has been associated with a measurable drop in learning productivity and academic scores Surawan (2025), while students experiencing brain rot report difficulty concentrating and reduced critical thinking, often trapped in a cycle of digital procrastination (Aysi et al., 2025; Rochuffaisal Nastiari Al Najib et al., 2025).

This empirical condition (*das sein*) clashes directly with the ideal demands placed on students as an academic group. In reality, Generation Z has made social media its primary information source, displacing conventional media, and lives amid high-intensity, fast, repetitive TikTok consumption; repeated, simultaneous media exposure has been linked to reduced cognitive control, with heavy digital media users more susceptible to distraction and less able to sustain focus (Evita et al., 2023; Ophir et al., 2009; Parry & Roux, 2021). Yet ideally (*das sollen*), students are expected to possess strong critical thinking: the reflective capacity to interpret, analyze, evaluate, and draw inferences from information systematically, a competence proven relevant and measurable in the context of students' social media use. This competence is affirmed as fundamental to solving problems in both academic and real-world contexts, with media literacy, understanding, evaluating, and responding critically to information, positioned as essential in the digital era Jenkins et al., 2009; 2018, and social media literacy shown to shape individuals' critical thinking directly (Galindo-Domínguez et al., 2025; Valle et al., 2025). Critical thinking is, moreover, a necessity for student capacity development Witarsa & Muhammad (2023) framed as the most needed skill in the world of work Baghdadchi (2025) and a job-proof skill that artificial intelligence cannot replicate (Dumitru & Halpern, 2023).

At the same time, TikTok offers real value as an educational medium, a creative outlet, and a means of mass information dissemination. It is precisely the dominance of research on TikTok's positive impact, however, that has left its potential negative side, brain rot and its effect on students' critical thinking, comparatively understudied (Izzatika et al., 2025; Majidz et al., 2026; Oktavia, 2026). This gap is threefold. First, existing brain rot research targets adolescents and students in general, without isolating students as an academic population with distinct critical-thinking demands. Second, studies linking brain rot specifically to TikTok remain confined to philosophical-theoretical framing or workplace productivity, not academic critical thinking in college life (Ahmad et al., 2026; Romadhon et al., 2025). Third, and most crucially, prior research has yet to explain how Indonesian students, as active TikTok users, subjectively interpret and experience brain rot, and how this experience relates to their information verification habits, a component of critical thinking directly relevant to how students evaluate the content they consume (Ihsan et al., 2026; Ngari et al., 2026). It is precisely this subjective mechanism, and its link to verification behavior, that remains unaddressed, even though understanding it is what is needed to design contextual, effective digital literacy interventions.

Building on this gap, this study aims to explore in depth how the phenomenon of brain rot in TikTok use affects the critical thinking ability of students in Semarang City, through a descriptive qualitative approach that captures subjective experiences, consumption patterns, and cognitive strategies holistically. The novelty of this study lies in examining how Indonesian college students' subjective experiences of TikTok-related brain rot relate to their information-verification behavior as a dimension of critical thinking, an aspect prior research has documented separately but not connected. Beyond this, the study examines how students' purpose of use and engagement in academic activities beyond social media jointly shape this relationship. Accordingly, this study contributes a typology of TikTok users based on their vulnerability to brain rot, offering a more contextual basis than blanket usage restrictions for designing digital literacy interventions targeted at university students.

2. Theoretical Framework

This study uses Cultivation Theory in [Gerbner \(1998\)](#) as its main analytical framework, adapted to the context of digital social media through the concept of algorithmic cultivation ([Romann & Oeldorf-Hirsch, 2025](#)). Classical cultivation theory holds that repeated, cumulative media exposure gradually shapes how individuals perceive reality and form their mindset. In TikTok's case, the For You Page (FYP) algorithm takes over the role that repeated television exposure once played, but through a far more intensive mechanism: rather than exposing all viewers passively and uniformly, it actively curates personalized, homogeneous content based on each user's behavior, creating cumulative exposure conditions that narrow the user's perspective faster and more deeply ([Morgan & Shanahan, 2010](#)). Users do not merely receive content passively; they become caught in a cycle of algorithmic exposure that continually reinforces their existing consumption patterns and ways of thinking a condition this study terms algorithmic cultivation.

To operationalize this framework for data coding, four constructs were used as analytical indicators. Algorithmic cultivation refers to the FYP's personalized, homogeneous content curation based on user behavior, coded when informants describe content that narrows toward a consistent theme without deliberate searching. Mainstreaming refers to the convergence of informants' perceptions toward a shared, algorithmically reinforced viewpoint regardless of their prior orientation, coded when an informant's stated views align closely with the dominant framing of their FYP content rather than with independently formed opinions. Resonance refers to the amplification of cultivation effects when content matches an informant's personal experience, coded when informants report heightened trust or emotional agreement specifically tied to content that echoes their own lived experience, rather than to content generally. Cultivation acceptance refers to the degree to which an informant internalizes these algorithmically shaped perceptions as their own understanding of reality, coded through shifts in stated beliefs, reduced critical distance from FYP content, or adoption of algorithmically reinforced viewpoints as personal conclusions. All informants met the baseline exposure threshold for cultivation effects to occur, using TikTok between 4 and 12 hours daily, exceeding the four-hour threshold established in prior research [Gerbner \(1998\)](#); [Hermann et al. \(2023\)](#), which qualifies them for analysis under this framework.

These repeated algorithmic exposures do not stop at shaping perception; they directly affect the ability to think critically. [Ma & Jiang \(2024\)](#) demonstrated experimentally that using short-video apps like TikTok predicts declining analytical thinking, as the platform's algorithmic architecture reinforces pre-existing opinions and preferences, thereby limiting exposure to the alternative perspectives necessary for evaluative, reflective thought. This study terms that decline in cognitive processing quality, driven by shallow and continuous digital content exposure, brain rot. Unlike the

classical cultivation approach typically used in quantitative research to measure mass media's long-term effects, this study adapts a qualitative cultivation perspective to explore how the process of algorithmic cultivation is interpreted and subjectively experienced by active student TikTok users in Semarang City. Because algorithmic cultivation personalizes exposure per user rather than exposing all viewers uniformly, this study further proposes differential cultivation acceptance, a concept developed in this study, rather than an established term from prior literature, to analyze how cultivation acceptance is expected to vary systematically between individuals rather than occur uniformly, a variation examined empirically in the Results and Discussion.

3. Method

This study uses a qualitative approach with a descriptive method to understand the phenomenon of brain rot in TikTok use and its implications for the critical thinking ability of students in Semarang City. This approach was chosen because the study aims to explore, in depth, the subjects' experiences, perceptions, and the meanings they attach to the phenomenon (Creswell & Creswell, 2018).

Semarang City was chosen as the research location because it is one of Central Java's largest higher-education centers, with a significant student population. Data show the city's student population will exceed 237.000 by 2024, reflecting a high concentration of digitally active young people; the presence of dozens of universities forms a dynamic, heterogeneous academic ecosystem relevant to studying short-form digital media consumption such as TikTok.

The study's subjects were students in Semarang City who actively used TikTok with high intensity, determined through purposive sampling. The number of informants was not fixed in advance but determined by the principle of data saturation: informants were selected based on criteria relevant to the study's purpose, namely using TikTok more than four hours per day, yielding 11 participants in total. This number was considered adequate because the data obtained showed a recurring pattern with no significant new information emerging, indicating that saturation had been reached. Informant profiles are presented in Table 1 below.

Table 1. Characteristics of Informant Research

No.	Informant Code	Educational Background	University	Tiktok Usage Duration/day
1.	P1	Midwifery	Health Polytechnic of the Ministry of Health Semarang	6+ jam
2.	P2	Visual Communication Design	Dian Nuswantoro University	12+ jam
3.	P3	Fishery Product Technology	Diponegoro University	5+ jam
4.	P4	Management	Bina Nusantara University	7+ jam
5.	P5	Apotek	Sultan Agung Islamic University	4+ jam
6.	P6	Apotek	Sultan Agung Islamic University	6+ jam
7.	P7	Accountant	University of Semarang	4+ jam
8.	P8	Management	PGRI University Semarang	4+ jam
9.	P9	Food Technology	University of Muhammadiyah Semarang	5+ jam
10.	P10	Psychology	Akiko University Semarang	4+ jam
11.	P11	Public Health	Semarang State University	4+ hours

Data collection was conducted over a two-week period, from May 20 to June 1, 2026. Interviews were conducted with all 11 informants, totaling approximately 6.15 hours of cumulative interview time, averaging roughly 33–34 minutes per session. Ten interviews were conducted via Google Meet to accommodate informants' schedules and locations across different universities in Semarang, while one interview was conducted face-to-face following an incidental meeting with the informant at a campus activity.

Data were collected through in-depth interviews, observation, and documentation. Interviews used a semi-structured guide organized around cultivation theory concepts, particularly long-term media exposure, algorithmic content curation, and the formation of reality perceptions, allowing questions to explore informants' TikTok usage patterns, content consumption intensity, and their perceptions of their own critical thinking skills, while remaining flexible enough to follow up on themes that emerged during each session. Observation was conducted by examining informants' scrolling habits and FYP content directly on their devices during the heavy-viewer exposure window of approximately four or more hours daily, to identify whether this pattern of prolonged, repetitive content consumption corresponded with behavioral or cognitive indications of brain rot.

Data were analyzed using [Miles & Huberman \(1994\)](#) interactive model, applied across three iterative stages specific to this study's dataset. In the data reduction stage, the researcher reviewed all 11 interview transcripts (totaling approximately 6.15 hours), together with observation notes on informants' scrolling behavior and screen-time verification records, selecting and coding segments relevant to four analytical foci: TikTok usage intensity, content consumption patterns, self-reported cognitive symptoms, and information verification habits, while setting aside content unrelated to the research questions.

In the data presentation stage, the reduced data were organized into descriptive matrices grouping informants by usage duration, content preference, and self-reported cognitive impact, which allowed patterns and contradictions across informants, including those who reported no brain rot symptoms despite heavy use, to be systematically compared; this process surfaced the study's recurring themes. In the conclusion drawing/verification stage, tentative interpretations were continuously checked against cultivation theory's four operational constructs, algorithmic cultivation, mainstreaming, resonance, and cultivation acceptance, and cross-verified against observation data and screen-time records until the interpretations were confirmed as stable and adequately grounded in the data ([Miles & Huberman, 1994](#)).

To ensure data validity, this study distinguishes between method triangulation and data verification. Method triangulation follows [Denzin \(2012\)](#), combining in-depth interviews and observation as two independent methods for understanding the same phenomenon: interviews captured informants' subjective interpretation of their TikTok use and its denzinperceived cognitive effects, while observation of informants' actual scrolling habits and FYP content provided a behavioral counterpart to these self-reports, allowing the two data sources to be compared for convergence in identifying cultivation-related patterns. Separately, data verification was conducted using informants' device screen-time records to confirm the accuracy of self-reported usage duration, ensuring that all informants genuinely met the heavy-viewer threshold of more than four hours daily [Gerbner \(1998\)](#) before their interview data was analyzed. The consistency across interview accounts, observed scrolling behavior, and screen-time records together strengthened the credibility of the findings and minimized the potential for subjectivity bias ([Priest, 2016](#)).

All interviews were conducted in accordance with ethical research conduct and with informants' informed consent. Prior to participation, each informant received an explanation of the study's purpose, procedures, and use of the data, and voluntarily agreed to be interviewed and to have their

responses used for research purposes. Confidentiality was maintained throughout the study by referring to informants using anonymized codes (P1–P11) rather than their real names. Informants retained the right to decline any question or withdraw from the interview at any point without consequence.

4. Result and Discussion

Results

Based on in-depth interviews with 11 informants and screen-time verification, this study identifies five themes describing the brain rot phenomenon in TikTok use and its impact on students' critical thinking.

The TikTok Use Patterns - Intensity and Habits

All informants displayed habitual, compulsive TikTok use, opening the app spontaneously and finding it hard to stop, with daily use ranging from 4 to 12 hours in Table 2.

Table 2. TikTok Intensity Patterns and Usage Habits

Informant Code	Duration/day	Main Objectives	Long-Term Use Factors
P1	6+ hours	Health education & hobbies	The effect of dopamine, opening even when you are doing other activities
P2	12+ hours	Entertainment & creative references	The first 3 seconds of hook determines whether or not to continue
P4	7+ hours	Entertainment & fill your free time	Random content that keeps changing
P7	4+ hours	Entertainment & relaxation	ASMR and A Day In My Life content flowing
P8	4+ hours	Entertainment when you are bored	Often forgetting time while watching
P9	5+ hours on vacation	Entertainment & information	Use continues until sleep at night
P3	5+ hours	Entertainment, trending info, and environmental education campaigns	The algorithm adjusts the feed to the user's interests; Short content that matches your interests is watched to the end
P5	4+ hours	Entertainment and tutorial references (make-up, skincare) in leisure time	The algorithm displays trends that keep changing every day; Scroll quickly when content isn't interesting
P6	6+ hours	Entertainment and motivational content (mountain rides, memes) in your spare time	The algorithm makes users feel comfortable and at home scrolling for a long time
P10	4+ hours	Looking for inspiration/motivation for self-development and educational insights	Algorithms provide the impetus to grow
P11	4+ hours	Religious entertainment and information (prayer/religious content)	The algorithm displays repetitive religious content that is perceived to motivate you to keep learning

Informants consistently attributed their extended use to the platform's algorithmic design. P1 described dopamine-driven urges to open the app mid-activity.

"Yeah, I do feel addicted to TikTok, haha. I suddenly open TikTok even when I'm doing something else" (*iya aku ngerasain sih ketergantungan tiktok, hehe. tiba-tiba buka Tiktok walau ada kegiatan lain*) (Personal interview with P1 Informant, 1 June 2026)

P2 pointed to the decisive first three-second hook, P7 noted the algorithm's mood-adaptive content, and P9 reported scrolling that continued until bedtime, especially during holidays.

Content Consumption Patterns - Exposure and Influence of Algorithms

Building on the habitual exposure pattern identified above, this theme examines how that exposure is algorithmically shaped. All informants recognized that TikTok's FYP algorithm actively shapes their daily content diet, adapting continuously to their interaction history.

Table 3. Content Consumption Patterns and Algorithm Influences

Informant Code	Content Preferences	Algorithm Perception	Scroll Patterns
P1	Health education, hiking	Amplify liked content, bring up similar content	Watch 2–10 minutes of content that is considered more credible
P2	Design, hangout, creative	Forming a common view in a circle of friends	Rate the content of a 3-second hook
P3	Case content and short trends	Shape <i>your feed</i> according to the duration and type of content watched	Tend to watch to the end if it suits your interests
P4	Random and comedic content	Greatly affects daily content, content changes quickly	Not watching long content because it's boring
P5	Tutorial makeup, <i>review</i> skincare	Shows trends that change frequently every day	Scroll quickly, skip to the next video if it's not interesting
P9	Tutorial makeup, drama Korea	Influence mindset even if the user maintains a stance	60–70% of content is <i>skipped</i> without being watched
P6	Mountain climbing, memes, and motivational content	Make users feel comfortable and at home scrolling for a long time	40% of videos are watched to completion, 60% are skipped; tend to consume quickly
P7	ASMR, A Day in My Life, Words and Quotes	Content varies but revolves around a specific theme according to the mood and user interaction	Watch to the end if the content is interesting and relate to the mood
P8	funny/random video, comedy creator; Occasional long content such as mukbang	Content that is frequently skipped doesn't appear anymore; Adapting to user interactions	Watch to the end when interesting; often forgetting time while scrolling
P10	Inspirational achievement/educational content; also exposed to negative/controversial content	TikTok content only reflects about 45-65% of the reality due to personal branding	Watch to the end if relate
P11	Prayer and religious content	Filter and display religious content based on interests; felt to motivate positively	Watch to the end depending on the appeal of the content; admits that it is not easily distracted

As Table 3 shows, content preferences, algorithm perception, and scroll patterns varied by informant, yet all agreed the FYP algorithm actively shapes their daily content diet, adapting to interaction history and mood while narrowing what they see toward familiar themes. P2 described this dynamic directly:

"Content that is often viewed with friends causes the algorithm to display similar content, which reinforces the similarity of views among users in a group" (Konten yang sering dilihat bersama teman-teman, menyebabkan algoritma menampilkan konten yang sama, hal ini memperkuat kesamaan pandangan di antara pengguna dalam satu grup) (Personal interview with P2 Informant, 1 June 2026)

Brain Rot Experience - The Cognitive Impact of TikTok Use

While the previous theme traced how exposure reshapes perception, this theme turns to its cognitive cost, the symptoms informants directly experience. Most informants reported cognitive symptoms tied directly to their TikTok consumption intensity in Table 4.

Table 4. Symptoms of Brain Rot Reported by Informants

Informant Code	Difficulty Focusing	Boredom of Long Content	Cognitive Fatigue
P1	Multitasking with TikTok causes concentration difficulties.	Long content is accepted if informative, entertainment content prefers short	<i>"Tired of thinking because I receive a lot of information at once. Doom scrolling causes overthinking"</i> (Personal interview with P1 Informant, 1 June 2026)
P4	Can't focus in class if there are TikTok distractions. Distracted and difficult to focus	Don't like to read, prefer to watch interesting content	Didn't report mental fatigue, but acknowledged a drop in focus in class due to TikTok habits
P5	because of the desire to keep opening TikTok After scrolling, you can still focus but get bored reading faster	Watching short content makes it easy to get bored on long content	<i>"The combination of scrolling and deep searching makes me tired and dizzy quickly"</i> (Personal interview with P5 Informant, 30 May 2026)
P7	Difficulty focusing after watching short, fast-changing content	Getting bored faster than watching videos	Feeling tired and confused after a long scroll
P9	Fatigue due to excessive negative content affects mood	Long content is watched if the creator's behavior is interesting	<i>"The duration of 5 hours on the holidays contributes to mental fatigue the next day"</i> (Personal interview with P9 Informant, 20 Mei 2026)
P10	Not reporting significant focus difficulties; Scrolling is	Prefer quick information, delving into it only when relevant	Negative content lowers energy and worldview
P2		Prefer short content that goes straight to the core; Long content is considered long-winded	Admitting that he did not experience brain drain even though he often consumed superficial and repetitive content

Informant Code	Difficulty Focusing	Boredom of Long Content	Cognitive Fatigue
	considered not to hinder deep thinking if the content is well filtered		
P3	Prolonged use lowers focus and leads to laziness in other activities; Fast scrolling affects concentration. He admitted that he did not	Prefer to watch long videos rather than read long texts; visuals are considered more attractive	Informants highlight the risk of cognitive decline/'brain rot' due to superficial content in general, rather than personal experiences
P6	experience a focus disorder despite receiving a lot of instant information.	Prefer short videos; Speed-up long videos to keep them finished	Feeling tired of thinking because of a lot of instant information, but still able to focus
P8	Highlighting thinking fatigue due to conflicting information).	Short content is preferred because it is easy to complete; Long content like mukbang is still watched when it's interesting	Conflicting information leads to thinking fatigue and laziness to continue watching
P11	Admitted that he did not experience significant focus difficulties	Short content is preferred because it comes from Youtube snippets or other apps	Admitting that he did not experience mental fatigue after a session of use

Reported symptoms included difficulty focusing, boredom with longer content, and mental fatigue, though intensity varied widely. P1 described a doomscrolling pattern that triggered overthinking. P5 reported a more significant decline in critical thinking, becoming hesitant and fearful of mistakes when answering questions in presentations, alongside mental tiredness after heavy consumption. P4 and P7 both reported reduced interest in reading long text in favor of video, with P4 unable to focus in class amid TikTok distractions. P9 described severe mental fatigue after a five-hour holiday scrolling session, with lingering difficulty focusing the next day, while P10 reported fatigue triggered specifically by negative and controversial content that lowered his energy and mood in Table 4. Not all informants felt this impact, however. P2 reported no cognitive drain despite up to 12 hours of daily use, attributing this to actively filtering and verifying content; P6 and P11 likewise reported no significant focus impairment or mental fatigue; and P3 and P8 occupied a middle position, acknowledging the general risk of cognitive decline from repetitive content without feeling it personally.

Perception of Reality - The Effects of Algorithmic Cultivation

This theme addresses how TikTok use shapes informants' perception of the social reality around them. All informants showed in Table 5, signs that repeated TikTok exposure shaped their perception of reality.

Table 5. Perception of Reality and the Effects of cultivation on Informants

Informant Code	The Influence of TikTok on the Way of Perception	Resonance Effect	Similarities of Views with Friends
P1	TikTok influences the way we see the world but is not the absolute standard	Relatable content is used as validation, not public standards	The view is generally harmonious, differing only in small details
P2	It affects the worldview by about 30–40%.	Algorithms form trust in emerging content	Frequently viewed content together reinforces common opinion
P3	Enrich the point of view and make it more critical of the issue.	Content that relates to personal conditions makes it feel heard	Opinions are often similar because they access the same content and comments
P4	Content sometimes confirms a point of view, making you feel like you have something in common with others	The virality of content is used as an indicator of the truth	Views are often aligned with friends who view the same content
P5	Influencing the way of looking at political and social issues	TikTok content changes views to be more skeptical and passive	Similarities of views often occur after watching similar content
P7	Changing the perspective on controversial issues after seeing the negative impact	Content that relates to emotional states increases trust	Limited discussions with close friends, not open to everyone
P6	Motivational content gives a new perspective and calmness in the face of problems	Content that relates to personal experiences strengthens acceptance	The view is often similar to that of a friend who sees the same content, differing only in small details
P8	Affecting views on certain issues, such as marriage feeling more scary after exposure to themed content	Content that relates to personal concerns reinforces perceptions	Similar to friends on political/news issues; differs in personal matters such as clothing styles
P9	Opening up new perspectives, considered as an alternative to traditional media that is considered government-controlled	Comment columns reinforce opinions; The framing in the comments is sometimes considered more convincing than the video itself	Users feel that sometimes they have different opinions
P10	Get new vocabulary and insights from educational styles on TikTok that improve analytical skills.	Negative/controversial content that resonates reinforces a decrease in energy and a more negative worldview	Sometimes there are similarities, by questioning the same theme as the theme of the discussion
P11	Does not significantly change vision even if used for 3-4 hours/day; It is considered to be 'passing' only.	Religious content that is relevant to personal experience gives a sense of connection, without drastically changing views	There are similar views with friends on some things, but still maintain healthy differences of opinion

TikTok's influence on perception varied in strength and direction. P1 and P2 described a moderate, bounded influence, P2 estimating it at roughly 30–40% of his perspective, weighed against personal experience rather than accepted outright. P5 and P8 showed a more pronounced shift: both grew more skeptical about marriage after repeated exposure to marriage is scary content, while P9 described how repeated exposure reshaped her trust in mainstream media:

"TikTok really helps open up new perspectives and gives alternative information, unlike TV, which, as we all know, is sometimes controlled by the government" (Tiktok membantu banget buat membuka sudut pandang baru dan kasih informasi alternatif, daripada tv yang kadang ya kita tahu sendiri dikendalikan sama pemerintah) (Personal interview with P9 Informant, 20 Mei 2026)

Other effects ran positive: P3 became more critical of social issues, including conditions in Papua she had previously known little about; P6 found motivational content offered calm and a new perspective; and P10 gained vocabulary and analytical insight from educational content. P7 noted that the algorithm's mood-adaptive content made viewing feel deeply personal, while P11 was the sole informant who reported no meaningful shift in worldview despite 3–4 hours of daily use, describing TikTok's influence as merely passing. Resonance was also evident: content matching personal experience intensified this shift, clearest in P3 and P5, content tied to P3's own emotional experiences made her feel digitally heard, while P5's anxiety about the future was reinforced, rather than neutralized, by content that confirmed it.

Critical Thinking Skills – Between Verification and Instant Acceptance

The study's most significant finding is the variation in critical-thinking capacity among informants, who fell into three distinct patterns of information verification. The first typology (P1, P2, P3, P9, P11) conducts layered verification: P1 seeking journal references to validate health content, P2 tracing original sources before trusting a video, P3 cross-checking against X and Instagram, P9 investigating causes and consequences behind stories, and P11 consulting official or trusted accounts. The second typology (P6, P7, P10) verifies only issues they consider personally significant: P10 scrutinizes legal and regulatory matters while passively accepting entertainment content, P7 follows viral issues gradually, and P6 checks only sufficiently significant issues.

Table 6. Typology of Critical Thinking Patterns and Information Verification

Code	Verification Tendency	Verification Characteristics	Examples of Critical Behavior
First Typology	P1, P2, P3, P9, P11	Layered verification: comments → Google Scholar → other platforms	P1 is looking for journals to validate health education content; P9 looking for cause and effect before disseminating information
Second Typology	P6, P7, P10	Verify only for issues that are considered important	P10 delves into legal/regulatory issues, ignoring entertainment issues; P7 follows a gradual update of viral issues
Third Typology	P4, P5, P8	Receive information based on virality and personal relevance without in-depth verification	P4 spreads fire news from TikTok directly to friends without checking the source; P5 admits it is rare to look for other sources if the information is not considered important

As seen in [Table 6](#), the third typology (P4, P5, P8) receives and disseminates information based on virality and personal relevance without systematic verification: P4 admits to spreading unverified news directly to friends, P5 rarely seeks other sources for information deemed unimportant, and P8 treats virality and comment counts as a proxy for truth. P4 put it directly.

"I am quicker to receive and disseminate information that passes on TikTok without looking for other sources" (Aku lebih cepat menerima dan menyebarkan informasi yang lewat di TikTok tanpa mencari sumber lain) (Personal interview with P4 Informant, 31 May 2026)

while P5 describes the academic consequences.

"Critical thinking is reduced because we are used to getting quick information... In presentation situations, I tend to be hesitant and afraid of being wrong when answering questions" (Berpikir kritis berkurang karena terbiasa mendapatkan informasi cepat... dalam situasi presentasi, saya cenderung ragu dan takut salah saat menjawab pertanyaan) (Personal interview with P5 Informant, 30 May 2026)

Discussion

The findings of this study present a more complex picture than typically assumed in digital media research: the relationship between TikTok use, brain rot, and students' critical thinking is not linear or deterministic, but layered, following mechanisms cultivation theory postulates. This discussion is organized around three layers of cultivation mechanisms, exposure conditions, first-order effects, and second-order effects in Gerbner (1998); Hermann et al. (2023); Romann & Oeldorf-Hirsch (2025) chosen because they are consistently identified as cultivation's core structure in contemporary social media research and are the layers most directly observable through qualitative interview data. It also outlines how algorithmic cultivation modifies each layer in TikTok's context.

The Cultivation Mechanism of Brain Rot in TikTok Use

Cultivation theory treats intensive, habitual, repetitive exposure as an absolute precondition for cultivation effects Gerbner (1998), without meeting the heavy-viewer threshold, no such effects could be observed. This first layer is therefore a prerequisite rather than an analytical finding, and in this study, it is fully satisfied. As established in the Results, all 11 informants qualified as digital heavy viewers (4–12 hours daily), with exposure that was not merely long but habitual and automatic, as P1, P7, and P9 described, consistent with the accumulated, non-instantaneous exposure Morgan & Shanahan (2010) identify as cultivation's core mechanism. An important implication is that every effect in the layers below is inseparable from these exposure conditions: brain rot is not instant, but the cumulative result of TikTok's symbolic environment built over months or years.

First-order cultivation effects distort users' factual beliefs about how common a phenomenon is in reality (Gerbner, 1998). On classic television, this is best known as mean world syndrome, heavy viewers overestimating crime and danger due to frequent violent content. On TikTok, the same mechanism operates through content that repeatedly dominates the FYP, forming reality estimates from content frequency rather than fact.

First-order effects were clearest in P5, P8, and P9: P8 and P5 both grew to see marriage as something frightening based on content frequency rather than direct experience, and P9 grew distrustful of traditional media after repeated exposure to TikTok content questioning its credibility. This is consistent with the cultivation proposition that heavy viewers estimate social reality from the dominant image in their media symbolic environment rather than from actual statistical reality (Gerbner, 1998). Brain rot's relevance here lies in this basic distortion: users stop distinguishing between a theme's frequency on their FYP and its frequency in the real world. Repeated exposure creates an algorithmically conditioned availability heuristic, the more often a theme appears, the more accurate it seems (Yousef et al., 2025).

Second-order cultivation effects run deeper than first-order ones: not factual beliefs, but shifts in values, attitudes, and general worldview. This deeper effect is subtler but more durable, touching the basic framework individuals use to interpret information and experience (Gerbner, 1998). Here, the clearest shift was in cognitive preference: almost all informants, including those without severe brain rot symptoms, showed increased preference for short-form content, reduced tolerance for longer material, and a tilt toward heuristic over systematic processing. P4 found long content long-winded P7 preferred video to text, and P5 reported this instant-consumption habit spilling into academic life, becoming hesitant and fearful of mistakes in presentations from being accustomed to processing information superficially.

The cognitive symptoms reported in the Results, difficulty focusing, boredom with longer content, and mental fatigue experienced by P1, P5, P7, and P9, reflect a cognitive-overload mechanism, in which rapid, repeated exposure conditions the brain toward heuristic (shallow) rather than systematic (deep) processing, eroding the analytical capacity academic life demands Ma & Jiang (2024); Yousef et al. (2025), consistent with broader evidence that heavy short-video users report significantly greater focus difficulty than moderate users Haliti-Sylaj & Sadiku (2024), and with studies linking brain rot to attention deficits, mental fog, and reduced time efficiency among college students more generally (Gül, 2025; Özbay, 2026). This second-order effect is brain rot's core mechanism within cultivation theory: cognitive degradation does not occur because TikTok content directly damages the brain but because cumulative exposure gradually lowers users' threshold for sufficient depth in processing information in Ma & Jiang (2024), a serious concern where shifted cognitive values collide with academic work's demand for depth.

Mainstreaming and Resonance in the Perception of Reality

The content-consumption pattern reported in the Results also shapes informants' perception of reality through two cultivation mechanisms: mainstreaming and resonance. The FYP algorithm actively homogenizes content, functionally equivalent to television mainstreaming but personal and adaptive rather than uniform and passive, each user receives a distinctly curated symbolic world yet the outcome remains homogeneous within their particular interest cluster Gerbaudo (2026), this is illustrated in P2's account of how content frequently viewed with friends reinforces shared opinion within the group, exemplifying the mainstreaming proposition that repeated exposure within the same symbolic environment tends to converge users' views across demographic lines. The concept of algorithmic cultivation Romann & Oeldorf-Hirsch (2025), reinforces this, algorithms do not simply display content but actively construct an algorithmic reality that gradually and cumulatively shapes how users perceive their social world.

This mainstreaming mechanism extends into measurable shifts in worldview, evident in P2 and P4's alignment with their algorithmic peers. Resonance operates as its amplifier: content matching personal experience intensifies this shift, clearest in P3 and P5, content tied to P3's own emotional experiences made her feel digitally heard while P5's anxiety about the future was reinforced, rather than neutralized, by content that confirmed it. These findings confirm that repetitive, algorithmic TikTok exposure gradually shapes how students perceive social reality, extending evidence that content convergence on digital platforms actively reinforces particular perception patterns through massive, repetitive distribution (Setiawan et al., 2023). What distinguishes algorithmic from classical television cultivation is its personalized nature: each user's algorithmic reality is uniquely constructed Romann & Oeldorf-Hirsch (2025), making the resulting effects more fragmented across users but, for any individual, potentially more profound given personally curated content's higher resonance potential.

Algorithmic Cultivation

These three layers operate simultaneously on TikTok, but algorithmic cultivation modifies them significantly. Classical television cultivation exposes all viewers to roughly the same symbolic world; algorithmic cultivation instead gives each user a personally curated symbolic world via the FYP, so the intensity of each layer varies from person to person (Romann & Oeldorf-Hirsch, 2025). This finding aligns with Romann & Oeldorf-Hirsch (2025) theoretical account of algorithmic personalization diversifying cultivation intensity, where this study diverges in showing, through informants' own accounts, how that variation is subjectively experienced and behaviorally expressed, a dimension their largely conceptual treatment does not empirically trace.

This variation can be conceptually framed, as this study proposes, as differential cultivation acceptance: a conceptual proposition, not an empirically tested causal mechanism, describing systematic differences in individual susceptibility across all three layers. Read this way, the typology identified is not merely a description of verification behavior, but an interpretive lens on these differing susceptibilities operating simultaneously.

The first typology shows the highest resistance across all three layers, consciously limiting exposure, verifying facts against first-order distortion, and applying deliberate systematic processing against second-order drift. The third typology shows the opposite: intensive, uncontrolled exposure, reality estimates shifted by content frequency, and significantly altered cognitive values. This pattern of uneven susceptibility echoes Hermann et al. (2023) observation that younger users vary in cultivation vulnerability, but extends it by proposing purpose of use, verification habits, and academic engagement as the specific differentiating factors underlying that variation, factors Hermann et al. (2023) did not identify in this combination.

The three differentiating factors identified, purpose of use, verification habits, and academic engagement, can be read as differentiating conditions across all three layers, rather than statistically confirmed protective mechanisms. Informants' accounts suggest productive-use goals coincide with preserved deep-processing values at the second-order layer; verification habits appear, in these accounts, to counter first-order distortion by testing algorithmic reality estimates against outside facts; and academic engagement seems associated with resistance at the exposure layer, through time reserved for non-algorithmic, depth-sustaining activity. These associations are consistent with Galindo-Domínguez et al. (2025); Wineburg & McGrew (2017) findings on verification and academic engagement as protective of critical thinking, though this study reframes them specifically within a cultivation-theory structure, situating them against distortion at each layer rather than as generic protective habits, which these earlier studies did not do.

Integration of the Effects of Using TikTok, Brain Rot, and Critical Thinking

These findings suggest a layered, interpretive pattern connecting TikTok use intensity, the emergence of brain rot symptoms, and declining critical thinking, not a statistically tested causal chain, but a pattern consistently traceable across informants' accounts. Habitual, cumulative exposure to short-form content (4–12 hours daily) creates the algorithmic cultivation conditions described above Gerbner (1998); Romann & Oeldorf-Hirsch (2025), gradually forming an all-instant information consumption pattern that manifests, as the Brain Rot Experience theme showed, as decreased focus, cognitive fatigue, and digital procrastination in most informants.

Brain rot's effects do not appear to stop at cognitive symptoms: informants' accounts suggest they extend into critical thinking, particularly information verification and evaluation. The Passive-Instant typology is the clearest instance of this thematic pattern, combining the most intensive exposure, the most severe brain rot symptoms, and the weakest verification capacity. The Critical-Adaptive typology, by contrast, illustrates how this pattern can diverge through consistent

verification habits [Wineburg & McGrew \(2019\)](#) and academic engagement that sustains deep-processing norms ([Galindo-Domínguez et al., 2025](#); [Hermann et al., 2023](#)).

Read together, TikTok use, purpose of use, verification habits, and academic engagement interact in a way that resists a simple linear narrative: TikTok use does not automatically or uniformly reduce critical thinking, and its relationship to critical thinking appears, in these informants' experiences, to run through brain rot as an interpretive rather than statistically confirmed link. This is consistent with [Ma & Jiang \(2024\)](#) experimental evidence that TikTok use predicts declining analytical thinking, while this study's qualitative approach offers a complementary, experience-near account of why and how informants describe that relationship unfolding, rather than establishing it as a tested causal or mediating mechanism.

This interpretive pattern still carries practical implications: rather than treating brain rot as a confirmed intermediate variable, mitigation efforts might reasonably target the conditions this study identifies as recurring across informants' accounts, strengthening verification habits and encouraging academic engagement that sustains deep-processing capacity. This typology reveals an algorithmic paradox specific to these eleven informants: the same platform appears to produce markedly different impacts on different users, challenging any single narrative that treats the TikTok–cognition relationship as simple linear cause and effect.

Within an algorithmic cultivation framework, this paradox reflects the interaction between mainstreaming and resonance effects operating differently by user. Digitally literate informants such as P1, P2, and P9 use TikTok as confirmation and expansion of existing perspectives, so their cultivation effects appear additive rather than a replacement for critical thinking. Informants without that foundation appear more susceptible to passive mainstreaming, where algorithmic content becomes their primary reference for reality, a vulnerability pattern consistent with cultivation research on young users, and one that may help explain why the Passive-Instant typology shows markedly higher cultivation susceptibility than the other two in this sample, an effect a 460-study meta-analysis found strongest among young users generally ([Hermann et al., 2023](#); [Parry & Roux, 2021](#)).

5. Conclusion

This study aimed to explore how the brain rot phenomenon in TikTok use affects the critical thinking of students in Semarang City. The findings show that the degree of this impact is shaped by three differentiating factors: purpose of TikTok use, information-verification habits, and academic engagement beyond social media, informants who verified information consistently and stayed engaged academically showed greater resistance to brain rot, while those lacking these buffers showed the most pronounced decline in critical thinking. This study contributes to digital communication studies through a typology of TikTok users based on their vulnerability to brain rot (Critical-Adaptive, Selective-Conditional, Passive-Instant), and extends cultivation theory into the algorithmic media context through the concept of differential cultivation acceptance, explaining why cultivation effects vary across individuals exposed to personalized algorithmic content.

Given the qualitative, exploratory nature of these findings, future research is recommended to adopt a mixed-methods approach, combining this study's typology with quantitative measures to test the relationships between TikTok use, brain rot, and critical thinking more rigorously and across a broader population. These findings should be read as contextual: they reflect the subjective experiences of 11 purposively selected heavy-viewer informants in Semarang City, interpreted through a qualitative, exploratory lens rather than a statistically representative or generalizable sample. The typology and the concept of differential cultivation acceptance are accordingly offered

as context-grounded interpretive tools, not as claims established across the broader population of Indonesian university students. Beyond the call for mixed-methods follow-up above, the patterns observed here point toward several practical directions worth testing further: strengthening algorithmic literacy so students better recognize how the FYP shapes their content diet, structured training in information-verification habits such as source cross-checking, and deliberate reinforcement of academic reading and engagement outside social media. These are offered as directions suggested by the patterns in this study's data, not as interventions this study has tested.

Acknowledgment

The author thanks all parties who supported this research, especially Dr. Gita Aprinta, E.B., S.Sos., M.Si., Head of the Study Program and research supervisor, for her direction, guidance, and constructive input, and the eleven informants who generously gave their time and shared valuable information. Thanks are also due to family and friends for their moral support. It is hoped that this research contributes to the development of communication science, particularly in the study of digital media and youth behavior.

Author contribution	: George Calvin Kenda was responsible for the entire research project, including conceptualization, methodology, and validation. He conducted the in-depth interviews, data collection, transcription, and analysis, and led the writing of the manuscript. Gita Aprinta E. Betseba supervised the research process, contributed to the methodology and validation, and provided critical revision of the manuscript for important intellectual content. Both authors approved the final manuscript.
Funding statement	: This research did not receive any specific grant or funding from any funding agency in the public, commercial, or not-for-profit sectors.
Conflict of interest	: Both authors declare that they have no competing interests.
Ethics Approval	: Information on Ethics Approval and informed consent statements are required for all articles published in COMMICAST since 2026.

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