

THE DIGITAL LITERACY PARADOX: GEN Z, INFORMATION OVERCONFIDENCE, AND THE EROSION OF TRUST IN SCIENTIFIC AUTHORITY

Fikri Reza^{1a*}, Metha Madonna^{2b}

^{1,2} Faculty of Communication, Universitas Bhayangkara Jakarta Raya, Jln. Perjuangan No. 81, Kota Bekasi 17142, Indonesia

^aE-mail: fikri.reza@dsn.ubharajaya.ac.id

^bE-mail: metha.madonna@dsn.ubharajaya.ac.id

(*) Corresponding Author

fikri.reza@dsn.ubharajaya.ac.id

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ABSTRACT

Generation Z is widely perceived as digitally competent, yet extensive access to information does not necessarily translate into critical evaluation skills. This systematic literature review examines the digital literacy paradox—the gap between perceived and actual information literacy—and its implications for trust in scientific authority. Following the PRISMA 2020 guidelines, literature published between 2015 and 2026 was identified from six databases. Of 1,226 records, 20 studies met the inclusion criteria for thematic synthesis. The review identifies four findings: assumptions of innate digital competence lack consistent empirical support; perceived literacy often exceeds actual competence, reflecting the Dunning–Kruger effect and the illusion of knowledge from online search; platform-driven information practices encourage reliance on non-authoritative sources; and interventions based on critical digital literacy, lateral reading, and psychological inoculation remain underdeveloped in Indonesia. The review concludes that declining trust in science is fundamentally a metacognitive and epistemic challenge requiring educational approaches that foster intellectual humility.

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INTRODUCTION

Generation Z—the cohort commonly defined as born between the mid-1990s and the early 2010s—has grown up in a fully digitalized ecosystem. Since the term digital native was popularized by Prensky (2001), an assumption has emerged that the cohort born alongside the internet intrinsically “thinks and processes information in a fundamentally different way” and is, therefore, more adept at navigating the information world. This assumption has underpinned education policy and public communication for two decades. Yet behind this technical fluency in operating devices and platforms lies a far more fundamental question: does familiarity with digital technology truly equate to the ability to assess the quality, credibility, and truth of information?

This question becomes increasingly urgent in an era that many scholars call the post-truth era—a condition in which objective facts carry less influence than emotional appeals and personal beliefs in shaping public opinion (McIntyre, 2018). Importantly, “post-truth” is not merely a symptom of individual cognition; Farkas and Schou (2020) show that the term is politically contested and concerns discursive practices and power relations in defining truth. Amid an almost limitless flow of information, Gen Z is not only a consumer but also a producer and curator of information. Massive exposure to content from social media, video channels, and online forums often fosters the belief that they have

“adequately understood” a field, even to the point of feeling authorized to refute expert opinion. This phenomenon underlies the paradox at the center of this article: rather than producing an enlightened public, the democratization of information may instead produce confidence that exceeds actual competence (Nichols, 2017).

A relevant contemporary illustration in Indonesia is the public debate over whether gastroesophageal reflux disease (GERD) can cause sudden death. When a number of cardiologists and internal medicine specialists asserted—based on clinical evidence—that stomach acid does not cause cardiac arrest and that the similarity of symptoms is often misinterpreted by the public (CNN Indonesia, 2021; RRI, 2026), this clarification was instead disputed by a segment of young netizens who held fast to narratives circulating on social media. This case clearly illustrates how beliefs formed from non-comprehensive digital sources can rival, and even displace, scientific authority in the public sphere. Similar phenomena have been documented regarding vaccines, nutrition, mental health, and climate change.

Theoretically, this paradox can be understood through several lenses. First, the Dunning–Kruger effect explains that individuals with low competence in a domain tend to overestimate their ability because of the same metacognitive limitations that cause their incompetence (Kruger & Dunning, 1999). Second, experimental research shows that the act of online searching itself inflates a person’s estimate of their internal knowledge—people believe they “know” when what they actually have is only access (Fisher, Goddu, & Keil, 2015). Third, the perspective of motivated reasoning and identity-protective cognition shows that the acceptance of information is not solely a function of ability, but also a function of the need to defend group identity (Kahan, 2013). Fourth, platform architecture—algorithmic personalization, echo chambers, and virality dynamics—accelerates the spread of false information further and faster than true information (Pariser, 2011; Vosoughi, Roy, & Aral, 2018).

Although each of these lenses has been extensively studied separately, gaps remain in the literature. First, studies that explicitly link the three constructs—Gen Z’s digital literacy, information overconfidence, and the erosion of trust in scientific authority—within a single synthetic framework remain limited, particularly in the Indonesian context. Second, many studies stop at describing behavior without integrating metacognitive and epistemic explanations. Third, systematic syntheses bringing together evidence from cognitive psychology, communication studies, and information science have not been widely conducted. This article seeks to fill this gap through a transparent and replicable systematic literature review (SLR).

Based on this background, this research is guided by four research questions (RQ):

(RQ1) How does the literature conceptualize digital literacy and Gen Z’s “digital native” status, and to what extent is the assumption of innate digital competence supported by empirical evidence? (RQ2) How does the phenomenon of information overconfidence manifest in Gen Z, and how large is the gap between perceived and actual literacy? (RQ3) How do Gen Z’s digital information consumption patterns contribute to the erosion of trust in scientific authority? (RQ4) What interventions are identified in the literature to mitigate this digital literacy paradox?

The aims of this article are (a) to synthesize cross-disciplinary evidence on the digital literacy paradox among Gen Z; (b) to explain the underlying metacognitive, social, and epistemic mechanisms; and (c) to formulate implications for education, science communication, and platform governance in Indonesia. The article’s main contribution lies in integrating the cognitive psychology framework (Dunning–Kruger, the illusion of knowledge), post-truth studies, and information literacy into a single explanatory model, while linking it to an empirical case familiar to Indonesian readers.

METHOD

Research Design

This research uses a systematic literature review (SLR) approach, a systematic, transparent, and replicable review method for identifying, selecting, and synthesizing evidence relevant to specific research questions. Reporting follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (Page et al., 2021), which cover the stages of identification, screening, eligibility assessment, and inclusion. The SLR approach was chosen because it enables the structured integration of cross-disciplinary findings (cognitive psychology, communication studies, and information science) while minimizing the selection bias common in conventional narrative reviews.

Search Strategy and Data Sources

The literature search was conducted in June 2026 across six sources: Scopus, Web of Science, ScienceDirect, PubMed, the Directory of Open Access Journals (DOAJ), and Portal Garuda and Google Scholar to capture Indonesian-language publications. The time range was limited to 2015–2026, given that this period marks the intensification of post-

truth discourse after 2016 while also covering the most recent studies on Gen Z's digital literacy. Search strings were constructed using Boolean operators and adapted for each database, with the following core formula:

("Gen Z" OR "Generation Z" OR "digital native" OR "Gen-Z" OR "generasi Z") AND ("post-truth" OR misinformation OR disinformation OR "fake news" OR hoax OR misinformasi OR hoaks) AND ("digital literacy" OR "media literacy" OR overconfidence OR "trust in science" OR expert* OR "scientific authority" OR "otoritas ilmiah" OR "literasi digital")

The search was complemented with citation chaining (forward and backward searches of key studies' reference lists) and hand-searching of the authors' curated literature corpus to capture relevant records not indexed in the main databases.

Inclusion and Exclusion Criteria

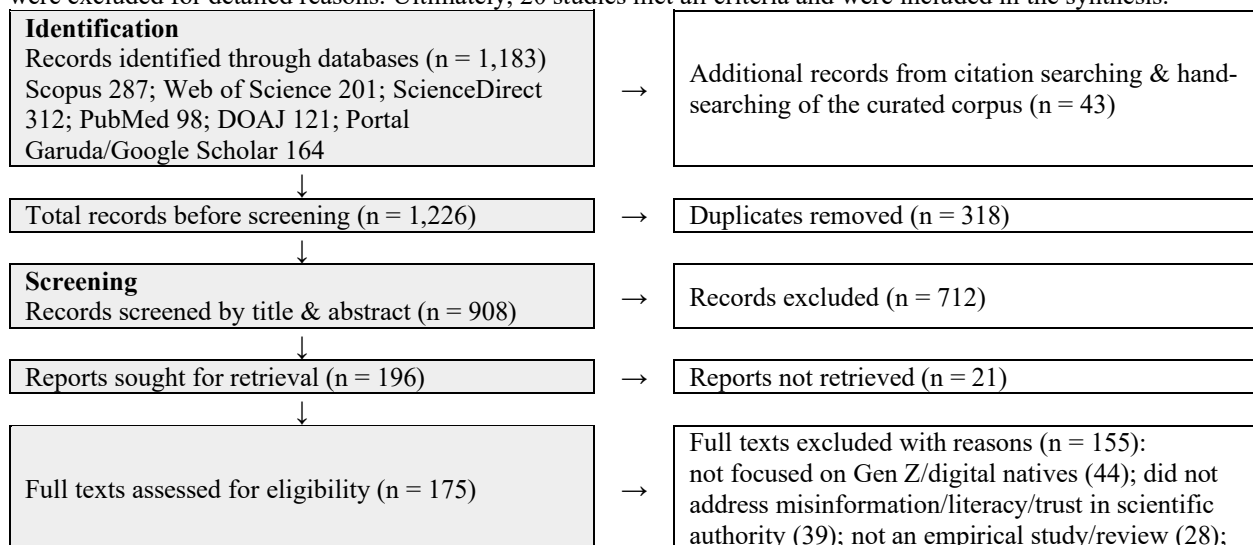
Eligibility criteria were established prior to screening and are summarized in Table 1.

Table 1. Inclusion and Exclusion Criteria

Aspect	Inclusion Criteria	Exclusion Criteria
Population	Focuses on Generation Z / digital natives / young adults and adolescents as digital information users	Does not focus on Gen Z or does not separate generational cohorts
Topic	Addresses digital literacy/competence, information overconfidence, misinformation, or trust in science/scientific authority	Addresses technology in general only, without an epistemic or trust dimension
Study type	Empirical studies (quantitative, qualitative, mixed methods) or evidence-based systematic/narrative reviews	Opinion pieces, editorials, popular news, abstracts without full text
Time range	Published 2015–2026	Before 2015 (except foundational theoretical works cited as background)
Language	English or Indonesian	Other languages that cannot be fully reviewed
Access	Full text available and accessible	Full text could not be obtained

Selection Process

The process from identification to inclusion is summarized in Figure 1. Of the 1,183 records identified through databases and 43 records from citation searching and hand-searching of the curated corpus (total 1,226), 318 duplicates were removed, leaving 908 records. Title and abstract screening excluded 712 records; 196 reports were sought for retrieval, 21 of which could not be accessed in full text. A total of 175 full texts were assessed for eligibility, and 155 were excluded for detailed reasons. Ultimately, 20 studies met all criteria and were included in the synthesis.



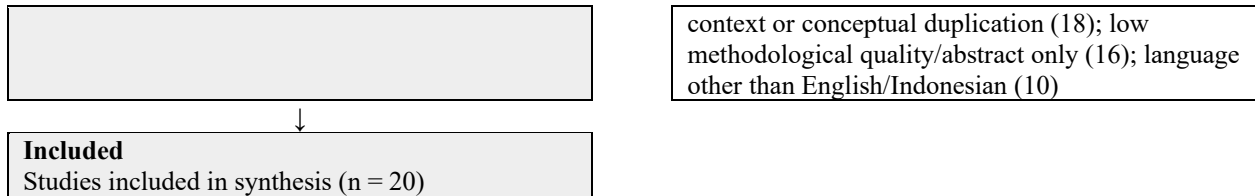


Figure 1. PRISMA 2020 Flow Diagram

Data Extraction and Quality Assessment

Data were extracted into a structured sheet containing authors and year, country/context, design and methods, sample, and key findings relevant to the four RQs (see Table 2). Methodological quality assessment was conducted by adapting the principles of the Mixed Methods Appraisal Tool (MMAT), which assesses the clarity of research questions, the appropriateness of design, the adequacy of data, and the accuracy of interpretation. Studies with severe methodological weaknesses were excluded at the eligibility assessment stage. To minimize bias, the selection and extraction process was conducted in layers, with cross-checking between reviewers and resolution through discussion.

Synthesis Strategy

Given the heterogeneity of study designs, synthesis was conducted through thematic (narrative) synthesis rather than statistical meta-analysis. The stages included coding findings, grouping codes into analytical themes, and mapping themes onto the RQs. Five analytical themes emerged from this process, presented in the Results section.

RESULTS AND DISCUSSION

Characteristics of Included Studies

Twenty studies met the inclusion criteria. Chronologically, the distribution of publications shows a sharp increase in research interest since 2018, concentrated in the 2019–2026 period, in line with growing academic attention to misinformation following the 2016 U.S. general election and the COVID-19 pandemic. Geographically, the majority of studies originate from the United States and Europe, with several large-scale cross-country studies (Kyrychenko et al., 2025; Newman et al., 2024; Roozenbeek & van der Linden, 2019); Asian representation, including Indonesia (Komara & Widjaya, 2024; Soefijanto, 2025) and Vietnam (Le et al., 2026), is now also represented, though still limited. Methodologically, the corpus includes experiments, representative surveys, cross-country psychometric studies, Bayesian analyses, qualitative ethnographic research, and narrative/systematic reviews. This heterogeneity reinforces the justification for using thematic synthesis. Table 2 presents the full data extraction.

Table 2. Data Extraction of Included Studies (n = 20)

No	Author(s) (Year)	Context	Method	Key Relevant Findings
1	Fisher, Goddu, & Keil (2015)	US	Experimental (9 studies)	Online search activity inflates estimates of internal knowledge; people mistake "access" for "understanding."
2	Lewandowsky, Ecker, & Cook (2017)	International	Conceptual review	Characterizes the post-truth era; psychological mechanisms enable misinformation to persist and self-propagate.
3	Vosoughi, Roy, & Aral (2018)	US (Twitter)	Big-data analysis (~126,000 cascades)	False news spreads farther, faster, deeper, and more broadly than true news; novelty drives the spread of information.
4	Scheufele & Krause (2019)	US/International	Review (PNAS)	Science misinformation is a function of individual ability and motivation as well as social network and information ecology factors.
5	Wineburg & McGrew (2019)	US	Think-aloud experiment	Professional fact-checkers assess credibility via lateral reading; college students & academics read "vertically" and are easily fooled by site appearance.

6	Roozenbeek & van der Linden (2019)	International (n=15,000)	Pre-post experiment (Bad News game)	Psychological inoculation improves the ability to recognize manipulation techniques, across age, education, and ideology.
7	Guess et al. (2020)	AS & India	Preregistered survey experiment	Digital media literacy intervention improves discernment of mainstream vs. fake news (US +26.5%; India +17.5%).
8	Lyons et al. (2021)	US (n=8,285)	Nationally representative survey	About three in four respondents overestimate their ability to judge news; overconfidence is associated with vulnerability and visits to fake-news sites.
9	Pennycook & Rand (2021)	International	Review (Trends in Cognitive Sciences)	Susceptibility to fake news is driven more by a lack of analytical thinking (cognitive laziness) than by partisan bias alone.
10	Breakstone et al. (2021)	US (n=3,446 students)	Assessment survey (civic online reasoning)	Most students fail to assess the credibility of online sources; a "bleak" portrait of evaluation skills.
11	van der Linden (2022)	International	Review (Nature Medicine)	Synthesizes three dimensions of the infodemic—susceptibility, spread, and psychological "immunization" interventions.
12	Ecker et al. (2022)	International	Review (Nature Reviews Psychology)	Cognitive, social, and affective drivers of misinformation belief and its resistance to correction; effectiveness of prebunking/debunking.
13	Ma & Chen (2023)	Digital natives	Quantitative survey	No significant correlation between subjective and objective privacy literacy; overconfidence moderates privacy protection behavior.
14	Hassoun et al. (2023)	US (35 Gen Z)	Qualitative (interviews & observation)	Gen Z tends to "encounter" rather than seek information; evaluation is shaped by social-identity motivations, not truth-seeking (the concept of information sensibility).
15	Komara & Widjaya (2024)	Indonesia	Literature review	Gen Z's information behavior and strategies against disinformation; information literacy influences the ability to critically analyze news authenticity.
16	Newman et al. (2024)	47 countries	Cross-country survey (Reuters DNR)	Young people rely on TikTok/YouTube/Instagram for news; trust in traditional media weakens; video is perceived as more "authentic."
17	Podara et al. (2025)	Greece/Europe	Gen Z perception study	Tension between trust in science and consumption of social media content; vulnerability to pseudoscience.
18	Soefijanto (2025)	Indonesia	Media preference study (qualitative)	Gen Z actively chooses digital platforms for accessibility & multitasking-lifestyle fit; content consumption meets social, cognitive, entertainment, and identity needs (uses and gratifications).
19	Kyrychenko et al. (2025)	24 countries (n>66,000)	Cross-country psychometric survey (MIST)	Gen Z is the most vulnerable generation to misinformation compared to older generations; education, ideology, and gender also play a role.
20	Le et al. (2026)	Vietnam (n=1.422)	Bayesian analysis	Use of open science resources is determined by technical self-efficacy & institutional support, not "digital native speaker" status—challenging the digital native assumption.

Note: US = United States; MIST = Misinformation Susceptibility Test; DNR = Digital News Report.

Theme 1: The "Digital Native" Myth and the Skills Gap (RQ1)

The synthesized evidence consistently corrects the assumption that familiarity with technology equates to information competence. From the outset, the notion of the digital native (Prensky, 2001) was criticized for lacking empirical grounding; Hargittai (2010) showed that internet skills are not evenly distributed even among “fully connected” college students, but are instead shaped by socioeconomic and educational background. boyd (2014) added that adolescents may be comfortable using social media without automatically understanding how it works, whose interests it serves, or how to evaluate the information within it. More recent studies reinforce this correction: Breakstone et al. (2021) found that most students fail to perform basic civic online reasoning, while Wineburg and McGrew (2019) showed that college students—even academics—tend to assess credibility through “vertical reading” (fixating on a page’s appearance and content) rather than “lateral reading” as professional fact-checkers do. Evidence from the Southeast Asian context reinforces this correction: Le et al. (2026), in a Bayesian study of 1,422 Gen Z university students in Vietnam, found that the use of open science resources is determined more by technical self-efficacy and institutional support than by “digital native” status, explicitly challenging the digital native assumption. Thus, “digital native” status is more a generational label than a description of competence; the skill of evaluating information must be taught, not assumed innate.

Theme 2: Information Overconfidence and the Literacy Paradox (RQ2)

The second theme lies at the heart of the paradox. Metacognitively, the Dunning–Kruger effect predicts that a lack of competence is accompanied by inflated self-assessment (Kruger & Dunning, 1999). This pattern is confirmed in the information domain: Lyons et al. (2021) found that about three in four people rate their ability to distinguish real from fake news far above where it should be, and that those most confident are, in fact, more likely to visit and trust fake news sites. This mechanism is reinforced by the illusion of knowledge: Fisher et al. (2015) experimentally showed that merely conducting an online search increases a person’s confidence in their internal knowledge—even when the search yields no answer. A similar discrepancy is documented in the domain of privacy literacy, where perceived literacy does not correlate with actual literacy among digital natives (Ma & Chen, 2023). Pennycook and Rand (2021) add that this vulnerability is often not the result of low intelligence, but a failure to engage analytical thinking—people are “lazy” rather than “unable” to check. Together, these findings explain why abundant access to information can foster a false sense of “expertise”: what increases is confidence, not the calibration between belief and competence. (The methodological debate over the strong form of the Dunning–Kruger effect is discussed in Subsection 3.10.)

Theme 3: Gen Z’s Information Consumption Patterns and Platform Logic (RQ2–RQ3)

The third theme links the individual dimension with the structural dimension. Hassoun et al.’s (2023) qualitative research shows that Gen Z’s information journeys often do not begin with truth-seeking queries, but with incidental encounters shaped by social and identity needs—they develop an “information sensibility” based on social cues (like counts, perceived credibility, community resonance) rather than source verification. At the ecosystem level, Newman et al. (2024) document a shift in young people’s news consumption toward TikTok, YouTube, and Instagram, accompanied by weakening attachment to mainstream news brands and the perception that “unfiltered” video formats feel more authentic. In Indonesia, Soefijanto (2025) confirms a similar shift: Gen Z actively chooses digital platforms (social media, YouTube, streaming services) for their accessibility and fit with a multitasking lifestyle, consuming content to meet social, cognitive, entertainment, and identity needs—consistent with the uses and gratifications framework. Platform logic reinforces this vulnerability: algorithmic personalization creates filter bubbles and echo chambers (Pariser, 2011; Sunstein, 2017), while the incentive structure of virality causes novel, emotionally arousing false information to spread further and faster than the corrections that follow it (Allcott & Gentzkow, 2017; Vosoughi et al., 2018). In other words, the preference for non-authoritative sources is not merely an individual choice, but the result of an interaction between psychological disposition and technological architecture.

Theme 4: The Erosion of Trust in Scientific Authority (RQ3)

The fourth theme centers on epistemic consequences. Scheufele and Krause (2019) argue that science misinformation cannot be understood without accounting for the social networks and information ecology that determine a person’s exposure to accurate information. At the motivational level, Kahan (2013) shows that reasoning is often identity-protective: evidence that contradicts group beliefs tends to be rejected, and—ironically—higher cognitive ability can amplify, rather than reduce, this bias. Socioculturally, Nichols (2017) labels this phenomenon the “death of expertise,” in which easy access to information breeds the mistaken belief that ordinary citizens stand on intellectual footing equal to experts. Prasad (2022) adds an important dimension: anti-science narratives often borrow the credibility of science

itself—using the language, data, and claims of “research”—so that they appear scientific while rejecting scientific consensus. Recent studies place Gen Z at the center of this vortex: Kyrychenko et al. (2025), testing more than 66,000 participants across 24 countries, found that Gen Z is in fact the most vulnerable generation to misinformation—a finding that challenges the assumption that being “digitally literate” means being “immune to misinformation.” Podara et al. (2025) describe a characteristic tension in Gen Z between valuing science and simultaneously consuming pseudoscientific content on social media. Taken together, within the post-truth framework (Farkas & Schou, 2020; Lewandowsky et al., 2017; McIntyre, 2018), this pattern explains how scientific authority can be exchanged for the perceived authority of online creators or communities.

Theme 5: Interventions to Mitigate the Paradox (RQ4)

The fifth theme maps promising responses. First, brief and actionable digital media literacy has been shown to improve news discernment: a “spot fake news” tip intervention increased the ability to distinguish mainstream from fake news, both in the United States and India (Guess et al., 2020). Second, inoculation (prebunking) approaches that expose manipulation techniques before a person encounters them—for example, through the game *Bad News*—build resistance across groups (Roozenbeek & van der Linden, 2019; van der Linden, 2022). Third, teaching lateral reading shifts learners’ evaluation strategies closer to the practices of professional fact-checkers (Wineburg & McGrew, 2019). Fourth, critical literacy approaches, which invite learners to question the interests, ideologies, and power relations behind media texts, complement technical verification skills (Barton, 2019). Fifth, Ecker et al.’s (2022) review confirms that a well-designed combination of prebunking and debunking can reduce the continued influence of misinformation, although corrections face cognitive resistance. In the Indonesian context, Komara and Widjaya (2024) underscore the role of information literacy as a key strategy against disinformation among Gen Z, while also indicating that locally adapted, validated interventions remain limited. The common thread across interventions is a shift in focus: from merely adding information to building metacognitive skills and habits of verification.

Synthesis: Why the Digital Literacy Paradox Occurs

Bringing the five themes together, the digital literacy paradox can be explained as the convergence of three mutually reinforcing layers of mechanisms: metacognitive, social-motivational, and structural-technological. At the metacognitive layer, the combination of the Dunning–Kruger effect (Kruger & Dunning, 1999) and the search-induced illusion of knowledge (Fisher et al., 2015) produces poor calibration between belief and competence: the easier information is to access, the greater the subjective confidence, without a commensurate increase in evaluative ability (Lyons et al., 2021; Ma & Chen, 2023). At the social-motivational layer, Gen Z’s information consumption is driven by needs for identity and group affiliation, so that judgments of truth are subject to identity-protective reasoning (Kahan, 2013; Hassoun et al., 2023; Soefijanto, 2025). At the structural-technological layer, platform architecture—personalization, echo chambers, and virality incentives—optimizes engagement rather than accuracy, giving false information a distributional advantage (Pariser, 2011; Vosoughi et al., 2018; Newman et al., 2024).

The conceptual implication of this synthesis is important: the erosion of trust in scientific authority is not merely a symptom of an “information deficit” that can be remedied by adding more facts. In fact, increasing access to information without building metacognitive skills may worsen the paradox, since what increases is confidence, not the accuracy of judgment. The post-truth framework (Farkas & Schou, 2020; Lewandowsky et al., 2017; McIntyre, 2018) helps situate this finding: when truth is judged based on emotional resonance and identity fit, epistemic authority shifts from institutionalized experts to figures perceived as authentic. At the philosophical level, Chouraqi (2026) argues that post-truth politics transforms the classical belief–desire model: belief no longer merely represents the world to guide action, but instead becomes a marker of affiliation and identity desire. In this logic, disputing a specialist physician is not a sign of an information deficit, but an expression of an alternative epistemic system that judges credibility by different criteria.

Case Study: The GERD Debate as a Microcosm of Post-Truth

Public debate in Indonesia over whether GERD can cause sudden death offers a concise illustration of the mechanisms described above. When cardiologists and internal medicine specialists asserted that stomach acid does not cause cardiac arrest, and that the similarity of chest pain symptoms is often misinterpreted as a causal relationship (CNN Indonesia, 2021; RRI, 2026), a segment of young netizens instead maintained the opposite belief based on narratives circulating on social media. This pattern maps neatly onto the three-layer framework. Metacognitively, repeated exposure to brief, anecdotal content fosters an illusion of understanding that exceeds actual competence (Fisher et al., 2015; Lyons et al., 2021). Socio-motivationally, personal stories and testimonials feel more convincing than clinical explanations because of emotional resonance and community trust (Kahan, 2013; Hassoun et al., 2023). Structurally, algorithms tend

to amplify content that triggers health anxiety and novelty, so that expert clarifications lose reach to viral narratives (Vosoughi et al., 2018).

Importantly, the public's error here is not pure "ignorance," but a failure of calibration and a shift in the criteria of authority. The similarity between GERD symptoms and a heart attack is an objectively complex area; it is precisely in such complex areas that overconfidence is most dangerous, because high confidence meets shallow understanding. This case underscores that science communication interventions cannot simply "correct the facts," but must navigate emotional, social, and trust dimensions—as emphasized in the literature on resistance to correction (Ecker et al., 2022).

Implications

For education. The findings suggest a need to shift the digital literacy curriculum from tool mastery toward epistemic reasoning. Teaching lateral reading (Wineburg & McGrew, 2019), civic online reasoning (Breakstone et al., 2021), and critical literacy (Barton, 2019) should be integrated from secondary education onward, accompanied by exercises that explicitly cultivate intellectual humility—awareness of the limits of one's own knowledge. Because overconfidence is metacognitive in nature, interventions that provide calibration feedback (confronting learners with the gap between their confidence and the accuracy of their answers) are likely to be more effective than simply adding more material.

For science communication. Scientific authority needs to be communicated in ways that meet Gen Z's need for closeness and authenticity (Newman et al., 2024; Soefijanto, 2025), without sacrificing accuracy. Inoculation/prebunking strategies (Roizenbeek & van der Linden, 2019; van der Linden, 2022) can be adopted by health institutions and scientists to equip the public to recognize manipulation techniques before exposure. Collaboration with credible, expertise-backed creators can help bridge the trust gap.

For platform governance and policy. Because some mechanisms are structural in nature, individual-level interventions will be insufficient without changes in platform design that reduce incentives for the virality of false information and increase the visibility of corrections (Vosoughi et al., 2018). In Indonesia, developing culturally adapted, evidence-based literacy interventions remains an unfinished task (Komara & Widjaya, 2024).

Critical Note: The Debate over the Dunning–Kruger Effect

To build a more robust argument, it is important to consider critiques suggesting that some of the patterns interpreted as the Dunning–Kruger effect may be influenced by statistical artefacts. Based on an analysis of individual-differences data, Gignac and Zajenkowski (2020) show that the relationship between actual ability and self-assessment tends to be linear, with a moderate positive correlation. According to them, the asymmetric pattern often displayed in classic visualizations of the Dunning–Kruger effect may not fully reflect metacognitive bias, but may also be influenced by regression to the mean and the tendency of individuals to rate themselves as better than average (the better-than-average effect). These findings indicate that the popular assumption that individuals with the lowest competence always have the highest confidence needs to be interpreted more cautiously, with attention to the methodological aspects of the research.

Nevertheless, various studies continue to show empirical evidence of miscalibration between belief and ability, particularly among low-competence individuals. In a longitudinal study of second-language pronunciation learning, Saito, Trofimovich, Abe, and In'nami (2020) found that high-ability participants increasingly aligned their self-assessment with actual performance over time. In contrast, low-ability participants showed only limited improvement in achieving this calibration. Similar results were reported by Lyons et al. (2021) in the context of news credibility evaluation and by Ma & Chen (2023) in the field of digital privacy literacy. Both studies used research designs relatively more resistant to critiques of statistical artefacts, strengthening the argument that self-assessment miscalibration is a genuine phenomenon.

On this basis, this article does not adopt the extreme interpretation of the Dunning–Kruger effect, which claims that individuals with the lowest competence are always the most confident. Instead, this article proposes a more moderate, empirically supported position: that there is a calibration gap between an individual's level of confidence and their information competence. This gap has the potential to increase individuals' vulnerability to both accepting and spreading misinformation.

Limitations

Several limitations must be acknowledged. First, although Asian representation has been increased (Indonesia and Vietnam), the corpus remains dominated by United States and European contexts; generalization to the Indonesian context must still be made cautiously, given differences in media ecosystems, language, and epistemic culture. Second, the heterogeneity of study designs precludes quantitative meta-analysis, so the synthesis is narrative in nature and susceptible

to reviewer interpretation. Third, the operational definition of “Generation Z” varies across studies, and some studies do not clearly separate generational cohorts. Fourth, restricting the language to English and Indonesian may introduce language bias. Fifth, the GERD case illustration relies on media sources rather than primary studies, and thus serves as a phenomenological example rather than causal evidence.

Future Research Agenda

Future research is recommended to: (a) conduct empirical studies in Indonesia that directly measure the gap between perceived and actual digital literacy among Gen Z, ideally using validated instruments such as MIST (Kyrychenko et al., 2025); (b) test the effectiveness of inoculation and lateral-reading interventions culturally and linguistically adapted for the Indonesian context; (c) examine the role of creators and online communities as “alternative authorities” in the health domain; and (d) develop measures of intellectual humility as a moderating variable between information access and judgment quality.

CONCLUSION

This systematic review shows that the “digital literacy paradox” among Gen Z is real and multilayered: digital native status does not guarantee evaluative competence (RQ1); there is a systematic gap between belief and ability consistent with the Dunning–Kruger effect and the illusion of knowledge (RQ2); information consumption patterns driven by social needs and reinforced by platform logic encourage a preference for non-authoritative sources and erode trust in science (RQ3); yet interventions based on critical literacy, lateral reading, and psychological inoculation offer a promising path to mitigation (RQ4). The most important implication is a paradigm shift: countering the erosion of trust in scientific authority is not about adding more information, but about building metacognitive capacity and intellectual humility—the ability to know the limits of what we know. For Indonesia, the pressing agenda is to translate this global evidence into contextual, validated, and sustainable interventions.

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