The Role of Analytic Thinking in Resisting Misinformation and Propaganda on Social Media

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Prepared for
Professionals in Digital Communication and Media Literacy Education

Transmittal Memo

TO: Digital Communication and Media Literacy Educators
FROM: Martin Chavez
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SUBJECT: Revised Formal Report on Analytic Thinking and Misinformation Resistance

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I am pleased to submit a revised version of my formal report, “The Role of Analytic Thinking in Resisting Misinformation and Propaganda on Social Media.” The report addresses a pressing problem in our society: the spread of misinformation online, and the thinking habits that make people easier to mislead.

The report draws on research in psychology, education, and data science to show how analytic thinking helps people resist misinformation. It presents educational and technological solutions and argues that they work best together: education builds critical thinking over time, while AI-based detection tools can limit exposure in the meantime.

This revision corrects the citations so that every claim matches its source, and replaces the original charts with summary tables drawn directly from the cited studies. I hope the report is useful to your work in protecting people from misinformation on social media. Please feel free to reach out if you would like to discuss it further.

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Executive Summary

This report examines how analytic thinking helps people resist misinformation and propaganda on social media. Research shows that people who are willing to slow down and question their first impressions are less likely to accept false claims (Stanley et al., 2021; Hubeny et al., 2025). Education that builds critical thinking, media literacy, and emotional awareness offers a long-term solution, while technology such as AI-based detection tools can reduce exposure to misinformation in the short term.

Recent events show what is at stake. During the 2024 riots in England, a false claim that a Muslim was responsible for killing three children in Southport spread online and was followed by violence, including the firebombing of a mosque (Hamad et al., 2025). During the war in Ukraine, pro-Russian propaganda has spread widely on platforms such as Twitter and Telegram (Bezliudnyi et al., 2023).

This report recommends a layered approach: build analytic thinking and emotional awareness through education, and use transparent, human-supervised technology to limit the spread of misinformation while that education takes hold. Each approach covers a weakness of the other.

Introduction

The Weaponization of Social Platforms

In what many call the digital age, social media platforms have become central to communication, community, and information sharing. The same platforms are also used to spread misinformation and propaganda, sometimes with dangerous consequences in the real world. Misinformation is false or misleading information, regardless of the intent behind it, while propaganda is communication designed to influence an audience, often in service of a biased agenda.

Misinformation is especially harmful during crises such as pandemics and armed conflicts, when people urgently need reliable information. Because misleading content often looks like legitimate news, it blurs the line between truth and falsehood and erodes trust in science, in government, and in each other. This report examines the role of analytic thinking in resisting misinformation and propaganda on social media platforms.

Examples of Real-World Consequences

On July 29, 2024, three young girls were fatally stabbed at a dance workshop in Southport, England. A false claim that the attacker was a Muslim spread quickly online, and riots followed in dozens of towns across England, Wales, Scotland, and Northern Ireland. Vehicles, shops, and

buildings were set on fire, people were assaulted, and a mosque in Northern Ireland was firebombed (Hamad et al., 2025). The case shows how quickly a single unverified claim, amplified by social media, can turn into real-world violence.

The war in Ukraine offers another example. Pro-Russian propaganda has circulated widely on platforms such as Twitter and Telegram, to the point that researchers have built machine learning systems specifically to recognize it and track where it spreads (Bezliudnyi et al., 2023). Propaganda of this kind aims to shape opinion about who is responsible for the conflict.

Why Analytic Thinking Is Important

Both examples show how emotional triggers such as fear, anger, and group loyalty can lead people to accept claims without evaluating them. Analytic thinking counters this vulnerability. It takes effort and intent: pausing to question a first impression, checking whether a source is reliable, and looking for evidence before sharing. People who think this way are better positioned to recognize misinformation and resist manipulation.

Analytic thinking matters even when information looks objective. Jackson (2016) argues that analysis persuades largely because its conclusions appear objective and logical, whether or not they are accurate, and that analysis can therefore function as a form of propaganda inside organizations. Data and charts can mislead as easily as headlines, so the habit of asking where a claim comes from applies to numbers as much as to news.

Traits of Misinformation Vulnerability

Cognitive Reflection

One of the strongest predictors of who falls for misinformation is cognitive reflection: the tendency to question an intuitive answer and reason through it deliberately. In a study conducted in March 2020, as COVID-19 cases rose sharply in the United States, Stanley et al. (2021) found that people less willing to engage in effortful, reflective thinking were more likely to believe the pandemic was a hoax, and less likely to report social distancing and hand-washing.

These findings suggest that vulnerability is not simply a matter of education or intelligence. It depends on whether someone is willing to stop and think before accepting what they see. Misinformation thrives on social media because it moves fast and appeals to emotion, a mental shortcut people use to make quick decisions.

Psychological Predictors

Hubeny et al. (2025) studied susceptibility to misinformation about politics and COVID-19 vaccines across two studies with participants in the United States and the United Kingdom. People higher in cognitive reflection and in actively open-minded thinking were less likely to judge misinformation as true. People higher in conspiracy mentality, and those more receptive to statements that sound profound but are meaningless, were more likely to accept it.

Who Is Most Vulnerable

Notably, Hubeny et al. (2025) found no reliable link between susceptibility and broad personality traits such as the Big Five, self-esteem, narcissism, or intellectual humility. In other words, how people think matters more than who they are. That is encouraging, because thinking habits can be taught, which is the focus of the next section.

Educational Solutions

Critical Thinking in Academics

Schools and universities play a central role in building analytic thinking. Curricula that emphasize reasoning and evaluation can strengthen students' ability to detect misinformation from an early age. Courses in philosophy and debate, for example, build the habit of examining arguments and assumptions. Students should learn to identify false information, verify sources, and recognize when content is designed to provoke an emotional reaction.

Evidence from Psychology

Emotional skills and thinking skills develop together. In a study of children and preadolescents, Agnoli et al. (2019) found that trait emotional intelligence helped explain differences in emotional awareness, the ability to identify and describe one's own and others' emotions, beyond what cognitive ability alone explained.

Emotional regulation matters for young people online as well. Yen et al. (2018) found that young adults with Internet gaming disorder were less likely to use cognitive reappraisal, rethinking a situation to change how it feels, and more likely to suppress their emotions, patterns linked to depression, anxiety, and hostility. Together, these studies suggest that teaching students to recognize and manage their emotions belongs alongside teaching them to reason, because emotionally charged content is exactly what misinformation relies on.

Examples of Curriculum Reform

Some countries have already built media literacy into their schools. Finland is widely cited as a model, with media literacy woven into its national curriculum so that students practice evaluating

sources and analyzing propaganda across subjects. Taiwan and Sweden have also expanded media literacy and source evaluation in schools in response to online disinformation. These programs fall outside the studies reviewed in this report, so their effects should be measured carefully before other systems adopt them, but they show that this kind of reform is practical.

Table 1. Research at a Glance

Study	Participants	Key finding
Stanley et al. (2021)	U.S. adults, March 2020	Less reflective thinkers were more likely to believe COVID-19 was a hoax and less likely to social distance or wash their hands.
Hubeny et al. (2025)	Two studies, U.S. and U.K. adults	Cognitive reflection and open-minded thinking predicted rejecting misinformation; conspiracy mentality predicted accepting it; broad personality traits did not.
Agnoli et al. (2019)	Children and preadolescents	Trait emotional intelligence explained emotional awareness beyond cognitive ability.
Yen et al. (2018)	Young adults with Internet gaming disorder	Less cognitive reappraisal and more emotional suppression, linked to depression, anxiety, and hostility.

Across these studies, the common thread is the willingness to slow down and reflect, which supports making critical thinking and emotional awareness a core part of education.

Technological Solutions

AI-Based Monitoring Systems

Education is a long-term solution; technology can help in the meantime. SMART 2.0, developed at the University of Oklahoma, is a social media analytics tool that lets analysts monitor social media in near real time alongside weather, traffic, and emergency service data, using map-based and AI-powered features (Hamad et al., 2025). Its developers tested it on geotagged posts from cities in the United Kingdom during the 2024 riots and found that it effectively tracked and classified misinformation.

SMART 2.0 uses a human-in-the-loop approach: after the system classifies a post as misinformation or not, people can review and correct that classification, which helps the model improve over time.

Recognition Algorithms

Machine learning can also recognize propaganda directly from text. Bezliudnyi et al. (2023) built a neural network that classifies the political leaning of text, trained it on a purpose-built database, and connected it to an analytics system for pro-Russian propaganda. The system produces

statistics about message sources and maps networks of popular Twitter hashtags and Telegram channels related to the war, helping users navigate the information space and avoid propaganda.

Ethical Limitations

These tools are powerful, but they need oversight. As Jackson (2016) argues, analysis tends to be trusted because it looks objective, even when it serves a particular agenda. An automated system that labels content as true or false carries the same risk: its outputs can feel authoritative while reflecting the choices and biases of whoever built it. Detection tools should be transparent about how they work, and humans should stay involved in moderation decisions, as SMART 2.0's human-in-the-loop design does.

Table 2. Comparing the Approaches

Approach	Timeframe	Strengths	Limitations
Education (critical thinking, media literacy, emotional awareness)	Long term	Builds lasting habits; people learn to evaluate information on their own	Slow to show results; depends on schools adopting it
AI monitoring tools (e.g., SMART 2.0)	Short term	Tracks misinformation as it spreads; supports emergency response	Needs human review; outputs can be over-trusted
Recognition models (e.g., Bezliudnyi et al., 2023)	Short term	Classifies large volumes of text quickly	Limited to patterns in its training data; needs transparency

This comparison is qualitative and based on the sources reviewed; it does not measure the effectiveness of each approach.

Conclusion and Recommendations

Misinformation and propaganda on social media threaten politics, public health, and public safety. The Southport riots, the war in Ukraine, and the COVID-19 pandemic show how damaging misinformation can be, especially when it reaches people who accept claims without reflecting on them. The research reviewed here points to the same conclusion: the willingness to question first impressions is one of the best defenses against misinformation, and it is a habit that can be taught.

Education should be the foundation of the response, but it will take years to change habits across a society, and technology alone cannot change how people think. Combining the two lets each cover the other's limitations. Compared with approaches that rely only on fact-checking or on removing content, this approach also teaches people to evaluate information on their own. No

single solution will be enough, but coordinated work by educators, developers, and policymakers can build a safer information environment. This report recommends the following:

1. Make critical thinking, media literacy, and emotional awareness a standard part of school curricula.
2. Use AI-based monitoring and detection tools to limit the spread of misinformation, especially during crises.
3. Require transparency from detection tools and keep humans in the loop on moderation decisions.
4. Measure results: evaluate curriculum programs and detection tools with data before scaling them up.

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