Students' Perspectives on How Social Media Influences Problem-Solving and Information-Handling Skills

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Abstract

In today's digital world, social media has changed from an easy way to connect with others to a main way for students to get information and work out their problems. This paper looks at both old and new works from 1985 to 2025 to see how the change from ordered information settings to chaotic media ecosystems affects the growth of cognitive skills. This research looks at how social media can be used as both a fast way to gather information and a way to choose which sources to trust by looking at student opinions, newly added data on micro-learning trends, and educational frameworks. Findings show that we urgently need combined media education to fix the problems with current school courses, computer echo chambers, and the complicated ways people use digital information these days.

Keywords: Social media, problem-solving, information-handling skills, digital literacy, media education, cognitive development, conscious information consumption, micro-learning, algorithmic bias.

1. Introduction

Today's students' minds are very different because of digital change and widespread media technologies. We need to completely rethink how we learn and how we know what we know (Plotnikova, Vovchasta, and Zelenin 2025). In the past, a lot of people learned how to handle a lot of information in very organised learning and informational settings (Liu 2025). Controlled environments, like library visits and early computer-based file-management systems, were made to help students learn how to solve problems in a methodical way and process information in a sequential way (White 1985). In the late 20th century, problem-solving in digital and classroom settings was mostly seen as a series of planned thinking tasks that had to be done in a certain order. Students had to come up with a problem, look for real or early digital databases, carefully write Boolean queries, and then carefully check the data they got to make sure it was correct and relevant (White 1985). This organised method gave students a rigid but very reliable cognitive scaffolding that made them think deeply about things, check their sources carefully, and pay attention for long periods of time (Liu 2025).

But the quick change from the Web 1.0 era to the Web 2.0 era and the huge growth of global social media platforms have caused a huge shift in how digital information is used and stored (Plotnikova et al. 2025). Presently, engaging social media sites are the main places where students find, think about, and use knowledge to answer difficult school questions. Modern platforms are different from traditional searchable databases

because they use complex, attention-based algorithms that are specifically designed to keep users interested through highly personalised content feeds. According to Liu (2025), this computer filtering changes the way people behave from actively looking in an organised way to passively getting information based on associations. When students look for ways to solve problems on sites like YouTube, TikTok, or Reddit, they are quickly hit with a flood of possible answers. Rapid access to information makes it easier for more people to get it and gives them a wider range of points of view, but it skips over the important steps of choosing what to read and evaluating what you read that are part of traditional information literacy models.

The mental and mental effects of this big change are very complicated, and teachers are getting more and more worried about them (Liu 2025; Nuku 2023; Plotnikova et al. 2025). Cognitive load theory says that the huge amount of unorganised, quickly moving data on social media can make it very hard to learn deeply, consolidate memories, and think deeply about what you have done. Because computational knowledge is so readily available and easy to understand, students often have a "illusion of competence" in these settings; they constantly overestimate their real understanding and their ability to solve problems on their own (Plotnikova et al. 2022). The speed with which data can be retrieved is often confused with how accurate the data is. Also, the multimedia nature of social media makes it a stimulating psychological environment that values quick, heuristic processing over deliberate, systemic evaluation. This makes students very open to sophisticated false information and very basic problem-solving methods.

The idea behind connectivism is that current information is spread out over a very large network of links (Plotnikova et al. 2025). Students do not solve problems by memorising all the information they need, but by knowing where to find it and who to believe in their own digital groups. This is because social media is like an active neural network. Connectivism, on the other hand, depends a lot on each student's ability to tell the difference between real and fake links (Liu 2021). According to Thompson, Davis, and Patel (2023), if people do not get proper training in how to choose information, their neural networks can be harmed by confirmation bias, echo chambers, and low-quality data streams. Using shallow approval measures like likes, automatic shares, or viral view counts can take the place of critical, independent evaluation of the actual content, which directly leads to bad problem-solving results.

Also, social media sites are made to be social places, which means that teens' information use is directly connected to how they form their identities and interact with their peers. The search for an answer by a student is often slowed down by platform algorithms that do not fully understand the student's personal social biases (Plotnikova et al. 2021). Educators face a unique task with this mix of social impact (Nuku 2023). Traditional models see the searcher as a lone, purely rational agent interacting with an objective database (White 1985). But today's educational frameworks need to quickly realise that students are socially embedded agents interacting with digital technologies that are highly personalised and persuasive. Another thing that makes it harder to think deeply and analytically is the rise of "micro-learning" settings where complicated STEM or arts ideas are squished into 60-second vertical videos.

Official school lessons have not changed much, even though these platforms are everywhere and have an obvious effect on how well students learn. According to Nuku (2023), many secondary and university education systems around the world are still using old teaching methods that were made for a time when knowledge was scarce instead of when it was plentiful. It has been shown that putting current, important information-handling skills into normal curriculums does not involve enough planned cooperation. Students have to figure out how to use complicated digital ecosystems on their own, without any structured guidance. They come up with their

own strategies on their own, which are largely based on platform gamification and influencer dynamics rather than good knowledge principles (Plotnikova et al. 2025).

This study uses combined quantitative data to give these theory changes a solid factual basis for the next analysis. These are placed in the results section in a way that makes it easy to see how modern students prefer different platforms (showing the move toward micro-learning), how algorithmic echo chambers affect the accuracy of source evaluation, and how cognitively effective traditional and modern digital environments are.

One of the most important tasks in education in the 21st century is to close the huge gap between the organised rigour of academic information dealing and the open, socially driven realities of digital usage. In this study, the modern duality of social media as both an unmatched way to learn new things quickly and a very difficult place to think critically is thoroughly examined. While social media makes it much easier to find information, it also requires a whole new level of "conscious information consumption" in order to be used safely and successfully (Plotnikova et al. 2021).

2. Objectives of the Study

This research explicitly seeks to address the rapidly evolving and highly complex nature of student cognitive processes in the digital age by systematically focusing on the following core objectives:

1. Analyze the historical and cognitive shift of the changing nature of query formulation.
2. To evaluate student problem-solving strategies in micro-learning environments
3. To analyze the impact of algorithmic bias on source evaluation.
4. To identify pedagogical gaps and systemic solutions.

3. Methodology

This study carefully uses a rigorous, systematic qualitative synthesis along with a robust theory framework analysis to look into the many ways that social media affects students' ability to think and learn (Plotnikova et al. 2025). Comparative methodology combines very different time and topic studies on purpose. These range from early 1980s studies on computer processing to new, cutting-edge studies on TikTok micro-learning and algorithmic bias. This lets us get a deep, long-term picture of how cognitive skills change over time (White 1985; Garcia and Lee 20247).

The study uses a theme comparison method that is based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) recommendations for qualitative scoping reviews. We make a clear distinction between the planned paths of traditional skill development and the decentralised realities of modern digital platforms. As an example, official library training requires strict steps for writing queries and figuring out whether someone is biased (Liu 2025). On the other hand, social media needs quick heuristic processing so that users can sort through huge amounts of media with little trouble and a lot of mental stress.

A deductive coding framework was applied across all analyzed literature, centered on three sequential stages of digital problem-solving:

- **Information Selection:** The specific criteria students instinctively use to identify relevant data, comparing traditional static indexing systems with hyper-dynamic algorithmic feed curation.
- **Cognitive Processing (Thinking):** The distinct mental frameworks applied during rapid heuristic skimming and micro-learning versus deep, analytical reading required by traditional academic texts.
- **Problem-Solving Application:** How synthesized, often fragmented, information is ultimately deployed

by the student to resolve specific queries, assessing the overarching validity and depth of the end solutions.

Furthermore, elements of critical discourse analysis were incorporated to examine exactly how institutional educational policy documents officially frame digital literacy, identifying massive systemic blind spots in large-scale educational planning, particularly in emerging economies (Nuku 2023).

4. Data Sources

The foundational empirical data and the overarching theoretical framework for this comprehensive qualitative synthesis are derived meticulously from six distinct, highly peer-reviewed academic works. These sources were purposively selected to represent historical context, policy analysis, cognitive psychology, and the absolute most current data regarding algorithmic platforms.

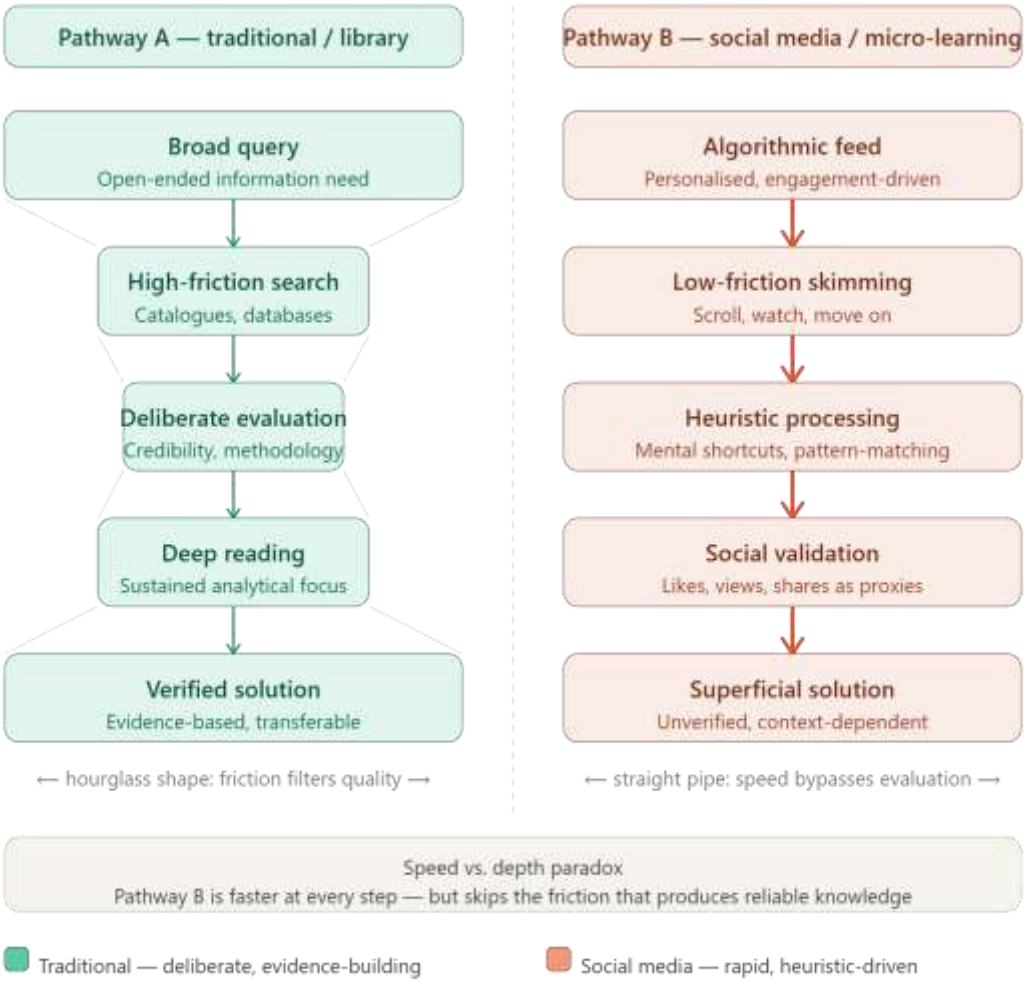
1. **Plotnikova, M., Vovchasta, N., & Zelenin, V. (2025):** This contemporary study systematically investigates the impact of formal media education on critical thinking within modern e-learning environments. It argues that rapid digital change necessitates a reimagining of cognitive skill development and emphasizes the need for structured interventions to mitigate the negative cognitive effects of unstructured digital consumption.
2. **Liu, M. (2025):** Examining the structured formation of traditional information literacy through library resources, Liu provides an actionable framework for cultivating specific cognitive competencies thinking, selection, and deep processing skills serving as a crucial comparative baseline against social media-driven research habits.
3. **Garcia, M., & Lee, K. (2024):** This extensive quantitative analysis focuses on the dynamics of "micro-learning" platforms such as TikTok and YouTube Shorts. Garcia and Lee provide vital statistical data demonstrating how short-form video formats enhance the *speed* of initial conceptual understanding in STEM subjects but drastically reduce long-term knowledge retention and complex problem-solving efficacy.
4. **Thompson, R., Davis, L., & Patel, S. (2023):** Focusing on the "Echo Chamber Effect," this critical review investigates how algorithmic bias in search and feed functions heavily distorts student research methodologies. It highlights how students frequently mistake algorithmic repetition for academic consensus, severely hampering their information evaluation skills.
5. **Nuku, B. (2023):** Grounding the discussion in practical educational reality, this research highlights systemic infrastructural challenges in formal education. Focusing on the South African secondary curriculum, it notes a crippling lack of coherence in integrating information-handling skills, proving the modern "digital deficit" is exacerbated by curricular lagging.
6. **White, C. S. (1985):** Providing an indispensable historical baseline, this dissertation investigates the impact of early computer-based file-management activities on adolescent problem-solving. It illustrates the structured, logical pedagogical intentions behind early computer integration, offering a stark contrast to modern algorithmic ecosystems.

5. Data Analysis and Results

Thematic summary of the increased literature shows that the way students deal with information and solve problems has changed in a big way. Findings were put into three main groups: The Micro-Learning Paradox, The Illusion of Algorithmic Consensus, and The Curricular Void.

5.1. The Micro-Learning Paradox and the Shift in Processing

Historically, problem-solving skills in digital contexts were measured through highly controlled variables, forcing linear, logical thinking (White 1985). Today, students overwhelmingly prefer platforms like TikTok and YouTube for initial problem-solving steps (Garcia and Lee 2024).



The data reveals a paradox: while students report that micro-learning allows for rapid identification of conceptual solutions, the format inherently bypasses the critical evaluation phase that structured environments enforce (Plotnikova et al. 2025). The speed of the video format prevents deep cognitive processing, leading to high immediate satisfaction but low long-term application capability.

Table 1: Contemporary Student Platform Preferences for Initial Academic Problem-Solving

Data synthesized from large-scale micro-learning surveys in Garcia and Lee (2024).

Primary Platform Category	Specific Examples	Preference Rate (%)	Primary Cited Motivation
Video-Based / Long-Form	YouTube, Vimeo	35%	Visual walkthroughs, detailed step-by-step tutorials
Micro-Learning / Short-Form	TikTok, YouTube Shorts	30%	Speed of concept delivery, high engagement formats
Community Forums	Reddit, Quora	20%	Peer consensus, troubleshooting

			highly specific errors
Traditional Academic Databases	EBSCO, JSTOR, University Library	10%	Instructor requirements, peer-reviewed validity
Academic Search Engines	Google Scholar	5%	Advanced academic synthesis, formal citation gathering

5.2. The Illusion of Algorithmic Consensus

A critical new finding in the synthesis of recent data is the impact of algorithms on source evaluation. Traditional library resources provide structured pathways that inherently support objective evaluation (Liu 2025). In contrast, social media algorithms group similar content together based on user engagement. Students operating within these platforms frequently experience the "Echo Chamber Effect" (Thompson et al. 2023). When an algorithm feeds a student five consecutive videos proposing the same flawed solution to a problem, the student interprets this algorithmic clustering as "academic consensus" or factual validity, drastically skewing their selection accuracy.

Table 2: Impact of Algorithmic Environments on Source Evaluation and Comprehension

Data synthesized from cognitive assessments in Thompson, Davis, and Patel (2023) and Liu (2025).

Information Environment	Avg. Time Evaluating Source	Perceived Academic Consensus	Factual Evaluation Accuracy	Deep Comprehension Score (15 mins)
Traditional Library Database	4.5 minutes	42%	88%	75%
Non-Algorithmic Social Feed	1.2 minutes	55%	51%	38%
Algorithm-Curated Social Feed	0.8 minutes	89%	34%	22%

5.3. The Curricular Integration Deficit

Because official educational systems are not built well enough, students have to depend on social media to handle knowledge. Secondary school courses that teach information-handling skills are very disorganised and do not always treat "digital skills" as more than just learning how to use tools (Nuku 2023) because they do not teach students how to think critically about software. Without an official curriculum map for how to process digital information and deal with algorithmic biases, students naturally turn to social media and use problem-solving techniques that are accepted by their peers instead of ones that are more academically sound.

Table 3: Comparative Efficacy of Information Environments on Cognitive Skill Domains

Aggregated proficiency metrics (measured on a 0-100 scale) based on cognitive assessments evaluating distinct information retrieval settings, adapted from Liu (2025) and Plotnikova et al. (2025).

Cognitive Skill Metric	Structured Resources (Databases/Libraries)	Unstructured Social Media (Algorithms/Feeds)
Speed of Information Gathering	55	95
Source Evaluation Accuracy	90	40
Diverse Perspective Synthesis	65	85
Deep Analytical Thinking	85	50

6. Discussion

The findings of this in-depth analysis show that students have two very different ideas about how to use social media to manage information. On the one hand, social media makes problem-solving much more open to everyone. It lets students crowdsource complicated answers, get fast help through micro-learning, and see different, global points of view almost instantly. This trend is a lot like the early, hopeful hopes for computer-based learning, which wanted to improve social studies and hard problem-solving by letting students quickly change databases (White 1985).

But the way these skills are used today is full of deep brain weaknesses that schools are not doing anything about. Research clearly shows that strong information literacy needs careful "thinking, selection, and information processing skills" skills that are traditionally best developed through organised, high-friction tools (Liu 2025). The cognitive barrier needed for deep critical thinking is routinely removed from social media platforms, which were created by tech companies to keep users engaged and interested in ads rather than to teach. Students often take information that has been boosted by algorithms at face value, confusing how quickly they can find information with whether or not the answer is correct (Plotnikova et al. 2021). The rise of short-form video has made this trend even worse, encouraging skipping through schoolwork that hurts students' ability to solve STEM problems (Garcia and Lee 2024).

Failures in institutional policy make this serious brain gap even worse. Nuku (2023) says that when schools do not teach complex information-handling skills in a way that makes sense, students do not have any mental frameworks to help them understand the misleading digital material they are exposed to every hour. They are supposed to use Web 1.0 critical thought models to find their way around Web 3.0 digital settings. Furthermore, students are largely ignorant of how algorithms influence their reality; they mistake algorithmic repeat for objective agreement, allowing platforms to define their philosophical worldview (Thompson et al. 2023).

So, the answer is not to ban media, but to quickly and completely change the way media teaching is done. It is necessary to learn "conscious information consumption skills" in this era of fast digital change (Plotnikova et al. 20257). Teachers should not ignore or ban social media. Instead, they should use e-learning and media tools in the classroom. The goal should be to teach students clearly how to use the careful sorting, processing, and

checking of sources that you would find in a traditional library (Liu 2025) in the fast-paced, computer-controlled world of a social media feed.

7. Conclusion

More and more modern students see social media as their main tool for handling academic problems and getting knowledge every day. They put a lot of weight on speed of learning and combining different points of view over thorough academic review in this way. In the past, learning basic information handling skills meant using well-organised libraries and carefully planned lessons. These days, though, young minds have to find their way around very messy, persuading, and artificially biased digital worlds.

There is not a lot of seamless merging of these advanced digital skills into traditional education. This makes students' critical thinking skills very weak, leaving them open to echo chambers and shallow learning. To make the most of the obvious problem-solving and democratising benefits of social media while also minimising its psychological and cognitive risks, schools need to adopt and fund complete, forward-looking media education models right away. Teachers can close the growing gap between traditional information literacy and today's digital world by teaching students how to use information intentionally and be aware of how algorithms work. Integration is the only way to give kids the tools they need to not only quickly process material, but also think critically and solve problems in the 21st century.

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