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***Learning in the Feed: Educational Platforms,
Algorithmic Memory, and the Fragmentation
of Knowledge***

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ABSTRACT

This paper examines how learning platforms such as YouTube EDU, TikTok's StudyTok initiative, and artificial-intelligence-based tutoring tools reorganize the spatio-canonical structure of knowledge delivery. Rather than relying on curriculum-driven principles that traditionally govern how knowledge should be sequenced, presented, and acquired, these platforms increasingly function based on the logic of algorithmic memory. Under conventional instructional settings, whether through structured programmes on YouTube EDU, StudyTok, or AI-supported tutoring systems such as CAPS, knowledge was typically ordered based on disciplinary progression and pedagogical coherence. However, learning on contemporary platforms has become more preference-driven, shaped by visually appealing or algorithmically optimized knowledge fragments that gain visibility through engagement-based metrics rather than curricular logic. As a result, the delivery and acquisition of knowledge on platforms such as CAPS or StudyTok increasingly depend on patterns determined by algorithmic prediction and user engagement. Most importantly, visually striking explanations and algorithmically selected "knowledge bits" often take precedence over systematically structured instruction sequences. This marks a significant change from classical, curriculum-based models of learning, revealing how algorithmically structured forms of knowledge presentation are gradually displacing the coherent, gradual progression associated with traditional systems of education.

Keywords: algorithmic memory; educational platforms; recommendation systems; knowledge fragmentation; digital pedagogy; platformized learning.

INTRODUCTION

Digital platforms have become dominant environments through which learners' access, revisit, and reinterpret knowledge. Over the last decade, YouTube, TikTok, Coursera, or Udemy platforms with artificial-intelligence–based tutoring systems have increasingly begin to shift patterns of knowledge sequencing among students. Recent studies now emphasize students' tendency to resort to algorithmically guided platforms rather than text or teacher instruction for problem solving in conceptual knowledge (Li & Zhao, 2021; Chen, 2023). Conversely, more algorithmically supported processes increasingly begin to drive attempts at knowledge retrieval or access or alerting students to more popular explanations instead of more logical ones labeled “related” (Sharples, 2020; Doffman & Karpinski, 2022).

These transformations raise important questions about how digital platforms reorganize educational memory, defined not only as an individual's recall of content but as the broader cultural logic through which societies determine what educational materials remain visible, relevant, and canonical. There now exists research showing how individual knowledge production on these media constructs individual learning paths using algorithmic systems, which could promote accessibility but would impair conceptual integrity (Henderson, 2024; Kizilcec et al., 2020). The project engages with, but goes beyond, existing research on algorithmic mediation and education to examine how algorithmic memory, a process whereby platforms dynamically retrieve and prioritize knowledge, which affects educational continuity, identity, and notions of epistemic organization. By investigating how knowledge encounters occur under conditions of algorithmically mediated learning, this project hopes to illuminate algorithmic learning's repercussions for conceptual organization and disciplinary integrity at the level of individual meaning-making.

The objective of this research paper is to explore how algorithmic memory on an e-learning platform transforms the experience of knowledge acquisition with respect to time, instruction, and cognition, and to determine how knowledge fragmentation occurs with the help of recommendation systems. For this purpose, the research study considers the following research questions:

- How do learning platform algorithmic processes identify and retrieve learning content for sequencing and resurfacing, and what kinds of “algorithmic memory” arise?
- In what ways does algorithmic curation break up or warp disciplinary knowledge or conceptual unity?
- To what extent can learners make meaning of and negotiate feed-based learning experiences with more traditional curriculum-based models of educational

remembering/memory?

By doing so, this introduction reveals how algorithmically driven infrastructural systems transform learning processes into non-linear processes with knowledge flows that could seem disjointed or fragmented at times.

2. Literature Review

2.1 The Platformization of Learning

The growing trend of using digital platforms for engaging with education has brought about a paradigm shift not only in how knowledge can or should be accessed but also in how it can and should be organized and authenticated. Platformization can be understood as finding ways and means to incorporate platform thinking into other areas like education that were hitherto not associated with platforms (van Dijck et al., 2020). Contemporary scholarship draws attention to how platforms such as YouTube, TikTok, or artificial-intelligence–based tutoring tools have become major knowledge gatekeepers for students (Pires & Simon, 2022; Henderson, 2024).

In this regard, platforms exert their impact on learning not through systematic learning design but rather through autonomous curation (Chen, 2023). For instance, lesson delivery recommendations, concept reviews, and resource promotion are determined algorithmically (Chen, 2023). As a result, a platform-based system transforms the epistemic environment of learning, with commercial and computational concerns now informing learning paths.

2.2 Algorithmic Curation and Educational Attention

Algorithmic recommendation systems aim at optimal engagement and retention rates based on predictions of what viewers would ideally watch next. In this case, such recommendations affect how students navigate topics because they tend to interfere with or disrupt the traditional curriculum structure that works cumulatively (Kizilcec et al., 2020; König et al., 2023).

There are two main forces at work with regard to algorithmic curation. First, predictive personalization: these systems focus on adjusting learning materials to behavioral patterns rather than to educational needs (Sharples, 2020). Second, engagement-based ordering: highly engaged explanations or tutorials can easily receive more promotion regardless of how fitting they are for instruction (Doffman & Karpinski, 2022).

Consequently, students receive knowledge dissected into fragmented chunks based on algorithmic patterns of attention rather than on conceptual organization.

2.3 Defining Algorithmic Memory

Although traditional classroom-based memory involved curricular sequencing, teacher-mediated revision, and cumulative mastery, new infrastructures for carrying out this process now appear in digital environments. Algorithmic memory is described as “processes that platforms use to store, retrieve, and rearrange items or contents based on user activities or patterns within specific cycles or times” (Andersen, 2021).

Important features include:

- Dynamic resurfacing: old or previously viewed content returns to the user’s feed.
- Behavioral recall: the system “remembers” the behavior of visitors and re-generates similar materials.
- Context collapse: examples from different levels or historical periods appear together without indicating distinction (Hui, 2021).
- Personalized historical reconstruction: each learner has his or her own learning history constructed algorithmically.

Algorithmic memory, consequently, far from being passive retention, becomes active and automatic reconstruction of what is educationally significant at every instant.

2.4 Fragmentation of Knowledge in Digital Education

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Many studies indicate that learning platforms could lead to disjointed conceptual knowledge (Koehler & Green, 2021; Reimers & Kostal, 2022). The causes behind this discontinuity involve:

- Micro-learning: TikTok’s “StudyTok” culture and explainers encourage isolated chunks of knowledge (Zhang, 2022).
- Lack of disciplinary continuum: In applications where engagement metrics lead to algorithmic rearrangement of subject ordering, fundamentals can now be sidestepped for more engaging or affective content (Li & Zhao, 2021).
- Viral explanations: These become trendy not because they’re true but because they match popular media or aesthetic templates (Morris and Rintel, 2023).
- Restoration of obsolete knowledge: Sometimes obsolete knowledge reappears algorithmically with an indication that it was previously replaced (König et al., 2023).

In other words, this fragmentation impedes the internalization of disciplinary knowledge among students; instead, they now experience “patchwork knowledge.”

2.5 The Emerging Role of AI-Powered Educational Systems AI tutoring

systems and learning applications now increasingly function as algorithmic intermediaries between students and knowledge. These applications provide recommendations and generate summaries using real-time behavioral inference (Holmes & Tuomi, 2022). Contemporary studies emphasize two aspects. First, they enable improved adaptability but simultaneously lower conceptual clarity (Park & Lee, 2023). Second, they increase learner autonomy but can compromise meta-cognitive abilities when algorithm-supported learning becomes dominant (Castro & Marín, 2024). By incorporating autonomous architectures of memory into daily learning processes, AI systems perpetuate platformization.

2.6 Knowledge, Temporality, and Feed-Based Learning

There is an emerging field of research examining how digital feeds reorganize temporality—what appears “now,” what resurfaces “again,” and what is no longer displayed (Henderson, 2024). In an educational setup, this looks like: non-linear conceptual encounters, using algorithms instead of conceptual overhaul, and relentless presentification of decontextualized knowledge. It therefore raises concerns about conceptual memory development among students when their learning environment emphasis is on engaging with concepts instead of progressing conceptually.

2.7 Summary of Gaps in the Existing Literature

Although research studies exist on platformization, algorithmic curation, and digital learning, none investigates:

- how algorithms construct systems of memory that influence learning processes;
- how resurfacing, recycling, and personalization reorganize notions of educational relevance;
- and how knowledge fragmentation arises from interactions between memory and recommendation systems.

This study fills these gaps by examining algorithmic memory as the primary instrument influencing conceptual coherence within platformized educational milieus.

3. Methodology and Research Design

In this research work, I am using a qualitative, multi-layered research design that encompasses digital ethnography combined with theme-based content analysis to explore how learning platforms shape algorithmic memory and knowledge fragmentation processes. Taking into account that learning algorithms continually evolve and that recommendation processes cannot easily be reverse-engineered due to their opaque nature, this study's design places greater emphasis on tracking learner-experience processes rather than attempting to decode algorithmic mechanisms directly.

There are three methodological principles guiding this design:

- studying platforms “in action”;
- centering learner–platform interactions;
- analyzing how memory is built through resurfacing, curation, and repetition.

3.1 Research Approach

The research follows a qualitative model of interpretation grounded in studies of digital culture and platform analysis because algorithmic memory is simultaneously a socio-technical phenomenon that requires attention to user experience and platform affordances. Three complementary methods were used:

- Digital Ethnography: immersive observation of educational video content on YouTube, TikTok, and AI learning tools over six weeks.
- Algorithmic Trace Analysis: It is a systematic recording of how platforms retrieve, suggest, and rearrange learning content according to patterns of user behavior.
- Thematic Content Analysis: coding of 150 educational videos and learning clips to identify patterns of fragmentation, repetition, and conceptual disorganization.

This triangulated research design enables a holistic analysis of platform-based learning environments.

4. Main Results

There were three main findings that emerged from this study and that were confirmed through descriptive statistics drawn from the coded data set (N = 150 units of educational content). These findings are discussed below, together with observable trends that illustrate the extent of algorithmic memory, fragmentation patterns, and learner–platform interactions.

4.1 Result 1: Educational Platforms Construct Distinct Forms of Algorithmic Memory

Across different platforms, algorithmic processes showed strong tendencies for recalling previous content, triggering individualized recall patterns, and creating alternate paths of learning. This demonstrates that educational platforms do not only present information but actively construct unique forms of algorithmic memory that reorganize how learners encounter, revisit, and sequence knowledge.

Table 1. Resurfacing Patterns Across Platforms (N = 150)

Platform		% of Videos Resurfaced at Least Once	Average Age of Resurfaced Content	% Marked as Outdated
YouTube (n=80)	EDU	58%	4.2 years old	12%
TikTok (n=50)	StudyTok	41%	1.8 years old	4%
AI Learning Tools (n=20)		73%	Regenerated prompts	0%

The analysis revealed several notable trends. On AI tools, 73% of prompts induced explanations that referred back to themselves within a single explanation session. The YouTube channel demonstrated the strongest resurfacing of old content, with no indication of its quality or freshness. By contrast, TikTok recycled fewer viral videos but repeatedly pushed viral educational content.

Interpretation

Taken together, these patterns reinforce the idea that algorithmic memory functions as an anticipatory and engagement-based system that favors content with established performance metrics, irrespective of instructional ordering or pedagogical coherence.

4.2 Result 2: Algorithmic Curation Produces Significant Knowledge Fragmentation

Quantitative code analysis showed prominent signs of non-linear sequencing, conceptual fragmentation, and level blending, indicating that algorithmic curation significantly disrupts the coherence of disciplinary knowledge.

Table 2. Fragmentation Indicators (N = 150)

Fragmentation Indicator	Frequency	% of Total Sample
Non-linear topic sequencing	92	61.3%
Conceptual isolation (micro-learning)	105	70.0%
Mixing of beginner & advanced levels	67	44.7%
Aesthetic-first explanations	58	38.7%
Revival of obsolete/outdated content	23	15.3%

- Seventy percent of content lacked conceptual bridges, confirming *fragmented micro-learning* as the dominant structure.
- 61% presented topics in a non-curricular order.
- Nearly 45% mixed levels (e.g., advanced physics following basic arithmetic).
- 38% of popular clips had high aesthetic value but low pedagogical rigor.

Interpretation

Fragmentation is not incidental, it is a structural consequence of recommendation logic, which optimizes for engagement rather than disciplinary coherence.

4.3 Result 3: Learners Develop Hybrid, Feed-Based Learning Identities

Algorithmic cues shaped learner behaviors, identities, and perceived progress.

Table 3. Learner Response Patterns Related to Feed Observation (N = 150 content interactions)

Learner-Platform Behavior	Frequency	% of Interactions	Observed
Following algorithmic sequence as “study plan”	54	36%	
Trusting resurfaced content as revision	47	31%	
Choosing viral explanations over textbook methods	60	40%	
Imitating aesthetic study practices	44	29%	
Expressing confusion due to mixed difficulty levels	33	22%	

Forty percent of learner interactions favored viral or visually appealing content over academically validated explanations. Meanwhile, 36% treated algorithmic

recommendations as structured learning pathways, and 22% reported confusion caused by mixed difficulty levels.

Interpretation

The feed thus acts as a pedagogical agent, shaping identity (e.g., “aesthetic learner,” “fast learner,” “hack-driven student”) and influencing how learners understand progress.

4.4 Summary of Main Results

The findings demonstrate that:

1. Algorithmic memory is dynamic, showing viewers old or popular videos regardless of their educational value.
2. There is widespread knowledge fragmentation, with statistical evidence of conceptual separation, non-linear ordering, and level fusion.
3. Learners form hybrid identities that are significantly shaped by algorithmic cues and that cause them to confuse engagement-based content with relevance to curriculum studies.

These patterns demonstrate not only that learning platforms function as more than mere repositories but also that they actively reinforce and reorganize what students remember, prioritize, and integrate as knowledge.

5. Discussion

The findings of this research reveal how educational platforms equipped with algorithmic memory impact the conceptual structure of learning, reflecting recent studies that suggest that platforms now circumscribe "knowledge visibility, relevance, and ordering" (Henderson, 2024; van Dijck et al., 2020). In particular, the fact that more than half (58 percent) of YouTube videos resurfaced at least once, while AI systems restated explanations 73 percent of the time, supports Andersen's (2021) argument that algorithmic systems now function not merely to record but to significantly reorganize knowledge spaces on an ongoing basis. Algorithmic memory therefore not only regulates knowledge production but also constructs individual learner knowledge pasts that differ considerably from those produced within traditional learning spaces.

The prevalence of algorithmic sequencing was also associated with high fragmentation of disciplinary knowledge, confirming concerns about non-linear learning paths expressed by Sharples (2020) and Kizilcec et al. (2020). The findings showed that 61

percent of learning content was arranged in non-linear fashion and 70 percent was micro-fragmented to its barest minimum. These findings largely resonate with Zhang's (2022) work on short-form learning episodes, where increasingly compressed explanations violate the additive pattern necessary for meaningful comprehension. It can therefore be generalized that fragmentation becomes more than just an aesthetic of short-form media but increasingly becomes inherent to algorithmic sequencing, where engagement and predictive outcomes take precedence over foundational or stepwise stages of knowledge acquisition. As a result, learners construct knowledge fragments rather than conceptual paths.

There is also an important trend related to the aestheticization of learning processes, where 38 percent of high-engagement content can be characterized by aesthetic formats not directly linked to learning robustness. These trends correspond with Morris and Rintel's (2023) notion of "aesthetic epistemology," which reflects a growing reliance on students' aesthetic rather than methodological judgment when evaluating explanations. The present findings appear to support the view that aesthetic criteria have become an algorithmic advantage, allowing attractive and viral content to prevail regardless of methodological depth. These processes further relate to the creation of "surface-level" learning identities constructed around trends and platform aesthetics rather than systematic learning engagement. Such patterns were also observed in StudyTok culture, where engagement with productivity and study identities appears linked more to algorithmic constructs than to learner needs (Pires & Simon, 2022).

Learner–algorithm interactions can further elucidate how students establish "algorithmic trust," which corresponds to their propensity to treat video recommendations as intentional learning paths (Doffman & Karpinski, 2022). For instance, 36 percent of learners viewed recommendations as structured learning paths, and 31 percent interpreted videos resurfaced for revision not as algorithmic optimization but as intentional pedagogical revision. These findings illustrate how metacognition decreases when learner paths fall under algorithmically facilitated systems. Such trends help clarify how AI-based learning environments can increase adaptability but simultaneously weaken learners' planning and evaluative capacities for controlling their own learning processes (Park & Lee, 2023).

Altogether, these findings indicate that algorithmic memory is more than a mechanism for rearranging content; rather, it is reshaping students' epistemic relationships with knowledge, time, and identity. The evidence supports Hui's (2021) claim that "digital technologies introduce new times," in which algorithmic memory suppresses classical notions of educational time—defined by prerequisite-based progression—and replaces them with an endless flow of "resurfaced," "trending," or

“personalized” fragments of knowledge. The persistence of obsolescence, found in 15 percent of the sample, underlines how platform time deviates not only from traditional notions of disciplinary development but instead indexes itself to patterns of engagement activities. Algorithmic memory thus constructs what König et al. (2023) refer to as “epistemic dissonance,” because learners experience contradictory or obsolete knowledge independent of chronological or disciplinary cues.

Ultimately, this research extends ongoing debates on platformization by demonstrating that educational platforms now establish themselves as infrastructures of knowledge with the capacity to shape processes of remembering, forgetting, and coherence formation among learners. The paradigm shift from curriculum-driven education to feed-driven education marks a substantial transformation in knowledge organization itself. Instead of progressing step by step through well-defined disciplinary sequences, learners now move through environments curated according to individualized principles steered by algorithmically regulated knowledge-delivery systems.

6. CONCLUSION AND IMPLICATIONS

This paper demonstrates how educational platforms with algorithmic memories exert a restructuring effect on how knowledge encounters, sequences, and memories coalesce together. These outcomes not only imply how algorithmic returns to knowledge lead to individualized knowledge paths with divergent outcomes but also suggest how these paths create students going through unsequenced patterns of knowledge that lead to patterns with aesthetic value rather than disciplinary value. These outcomes align with previous studies related to knowledge and platformization, yet offer insights into how knowledge not only uses platforms but also how platforms restructure knowledge’s architecture altogether.

The study showed how learners begin to read algorithmic cues as intentional teaching practices and construct feed-based learning subjectivities by using algorithmic patterns as if they were legitimate study plans. These trends raise important questions about how knowledge could cohere, or how equity and disciplinary integrity could manifest, when learning comes under the regulatory control of algorithmic reasoning rather than the guidance of teachers and institutions of knowledge. Ingesting algorithmic memory into consciousness as an active system that anticipates possibilities becoming actuality requires addressing how these platforms can now be critically understood to shape what gets remembered or forgotten within these contexts of learning.

In fact, these findings provide multiple teachable moments for those interested in pedagogy, technical instructional design, and policy analysis. For example, those involved in pedagogy need to understand and anticipate the non-linearly structured learning spaces that students experience daily. For educators working with traditional notions of instruction or curricula that presuppose linearity or equal foundational knowledge acquisition, these trends could signal an end to conventional models of instruction or meaningful foundational knowledge acquisition processes. Specifically, lecturers need to carefully connect the aesthetic explanations found in viral recommendations with meta-cognitive techniques that help students differentiate between popular content and meaningful subject matter.

Technologically speaking, platform designers and AI system developers face the challenge of addressing how algorithmic curation translates into the epistemic effects of these systems. What is required is for recommendation systems to incorporate pedagogically meaningful metadata instead of relying primarily on engagement-based metrics. More open interfaces that specify when content is outdated or how conceptual difficulty escalates would greatly benefit learning continuity.

On the policy front, with platforms becoming increasingly integral to educational practice, policymakers need to pay close attention to guidelines that enhance transparency in algorithmic curation, especially on platforms widely used by students. There may need to be mandates ensuring that recommended content meets minimum standards of accuracy and developmental relevance. Additionally, greater emphasis on algorithmic awareness should be included in national digital literacy programs.

Altogether, the emerging trend of algorithmic memory marks the onset of a paradigm shift from curriculum-based learning to feed-based education. On one hand, these platforms offer unprecedented access to diverse educational content; on the other hand, novel patterns of fragmentation, confusion, and disparities are emerging. It becomes critical to identify and address these trends to ensure that algorithmic infrastructures reinforce rather than impair educational quality and knowledge access. The upcoming era of learning will depend on how educators, designers, and policymakers collectively respond to this evolving algorithmic environment.

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