

Critical literacy in the digital age: discourse analysis of online learning materials in Indonesian higher education

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ABSTRACT

Background: The expansion of digital higher education in Indonesia has intensified the need to examine how critical literacy is constructed within online learning environments shaped by platform infrastructures and institutional governance. **Objective:** This study investigates how critical literacy is discursively framed, multimodally represented, and pedagogically enacted in online modules, video lectures, LMS discussions, and national MOOC platforms in Indonesian higher education. **Method:** Using a qualitative critical design integrating Critical Discourse Analysis (Fairclough), Multimodal Discourse Analysis (Kress & van Leeuwen), and Luke and Freebody's Four Resources Model, the study analyzes 100 digital learning artifacts across public and private universities. **Results:** The findings indicate that critical literacy is predominantly framed as individualized cognitive competence rather than structural ideological critique. Multimodal design patterns replicate linear, print-based epistemologies despite digital affordances. Student engagement clusters at code-breaking and reflective levels, with limited ideological interrogation. Assessment rubrics privilege correctness and completion over transformative critique. Hyperlink ecologies and dialogic affordances remain underutilized. **Implication:** These findings imply that advancing critical literacy in digital higher education requires redesigning pedagogical, multimodal, and assessment practices to move beyond cognitive skills toward deeper ideological engagement and transformative digital citizenship. **Novelty:** The novelty of this research lies in its integrated multi-layered framework that connects discourse, multimodal design, and engagement analytics to reconceptualize online learning materials as ideological sites shaping semi-critical digital citizenship.

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1. INTRODUCTION

The digital higher education in Indonesia has transformed how knowledge is produced, distributed, and consumed. Since the COVID-19 pandemic, more than 8 million Indonesian university students have engaged in online or hybrid learning environments, supported by national platforms such as SPADA Indonesia and institutional Learning Management Systems (LMS) under the Ministry of Education, Culture, Research, and Technology. Reports from the Indonesian Internet Service Providers Association (APJII) indicate that internet penetration reached over 78% of the population in 2023, with university-aged users representing one of the most active digital cohorts. However, the proliferation of digital access has coincided with rising concerns about misinformation, algorithmic bias, and polarized online discourse. In such a context, critical literacy is no longer optional but foundational. Understanding how critical literacy is

constructed within online learning materials becomes crucial, as digital pedagogy may inadvertently reproduce dominant ideologies rather than foster emancipatory thinking.

Existing scholarship has extensively examined digital literacy and critical thinking in higher education, often emphasizing cognitive skills, information evaluation, and technological competence [1], [2], [3]. Studies grounded in digital literacy frameworks highlight students' abilities to navigate multimodal environments [4], while research influenced by critical pedagogy explores the emancipatory potential of literacy practices [5]. However, most prior studies focus on learners' competencies [6], assessment models [7], or instructional strategies [8], rather than interrogating the discursive construction of critical literacy within the learning materials themselves. Furthermore, while Critical Discourse Analysis (CDA) and Multimodal Discourse Analysis (MDA) have been applied to textbooks and media content [9], [10], limited attention has been given to online university modules, LMS discussions, and local MOOC platforms in Indonesia. The ideological underpinnings embedded in digital design, hyperlink structures, and argumentation patterns remain underexplored. This gap indicates the need for a systematic discourse-oriented investigation of how critical literacy is represented and negotiated in digital higher education contexts.

This study therefore seeks to examine how critical literacy is constructed, negotiated, and ideologized in online learning materials used in Indonesian higher education. Specifically, it addresses the following research questions: (1) How is critical thinking discursively framed in digital modules and video lectures? (2) How do multimodal elements—such as layout, visual symbolism, and hyperlink structures—shape the meaning of critical literacy? (3) To what extent do these materials enable students to function as code breakers, text participants, text users, and text analysts within Luke and Freebody's framework? By integrating Fairclough's CDA, Kress and van Leeuwen's MDA, and the critical literacy model of Luke and Freebody, this research positions online learning materials not merely as neutral pedagogical tools but as discursive sites where power relations and epistemic norms are reproduced or contested.

The central argument advanced in this study is that despite the digital medium's potential to foster multiliteracies and participatory learning, online learning materials in Indonesian higher education tend to construct critical literacy predominantly as an individualized cognitive competence rather than as a socially situated, ideological practice. This tendency is reflected in lexical choices emphasizing objectivity and rationality, hierarchical visual designs, and limited intertextual engagement with broader socio-political contexts. While digital platforms ostensibly promote interactivity, they may subtly reinforce epistemic authority and linear knowledge transmission. The study hypothesizes that such semi-critical constructions constrain students' capacity to interrogate structural power relations in digital information ecosystems. By uncovering these discursive patterns, this research contributes to rethinking digital pedagogy as a site for cultivating transformative critical literacy rather than merely procedural analytical skills.

2. LITERATURE REVIEW

2.1. Critical literacy

Critical literacy has evolved from a pedagogical orientation rooted in Freirean emancipation to a multidimensional framework encompassing discourse, ideology, and power. Early formulations conceptualized literacy as a means of conscientization, enabling learners to interrogate oppressive structures embedded in texts and institutions. Subsequent scholars expanded the notion to include sociocultural and poststructural perspectives, emphasizing literacy as a socially situated practice shaped by discourse communities and ideological formations [11]. While some definitions foreground cognitive critique and evaluative reasoning [12], others stress political agency and transformative praxis [13]. This divergence reveals an enduring tension between skill-based interpretations of critical literacy and its broader socio-ideological commitments in educational theory.

The analytical dimensions of critical literacy are frequently organized around identifiable roles and practices [1]. The four resources model delineates learners as code breakers, text participants, text users, and text analysts, integrating decoding skills with ideological critique [14]. Complementary frameworks identify key indicators such as recognition of authorial positioning, interrogation of power relations, awareness of silenced voices, and capacity for social action [13]. Contemporary scholarship also incorporates digital dimensions, including algorithmic awareness and platform governance critique [15], [16]. These categorizations suggest that critical literacy is not a singular competence but a layered repertoire of interpretive, analytical, and transformative capacities embedded in specific sociopolitical contexts.

2.2. Discourse analysis

Discourse analysis provides a crucial theoretical lens for examining how meanings and ideologies are constructed in educational texts. Rooted in linguistics and social theory, discourse analysis conceptualizes language as social practice rather than neutral representation. Fairclough's critical discourse analysis (CDA) foregrounds the dialectical relationship between text, discursive practice, and sociocultural structure [17], highlighting how power circulates through linguistic choices. Alternative traditions, such as Foucauldian

discourse analysis, emphasize knowledge-power regimes and subject formation. While some scholars prioritize micro-level textual features [18], others examine macro-level institutional discourses [19]. These variations underscore the methodological flexibility of discourse analysis in uncovering ideological configurations within pedagogical materials.

Within discourse-analytic traditions, specific analytical categories guide systematic inquiry [20]. CDA typically investigates vocabulary, modality, transitivity, intertextuality, and presupposition to reveal implicit power relations. Analytical attention to lexicalization patterns can expose how agency is distributed or obscured, while modality signals degrees of certainty and authority. Intertextual analysis traces how texts draw upon and legitimize broader discourses. In digital contexts, hyperlink structures and platform affordances extend these categories, shaping discursive circulation. Such indicators enable researchers to move beyond surface meaning and interrogate how educational materials position learners within hierarchies of knowledge, expertise, and epistemic legitimacy.

2.3. Multimodal discourse

Multimodal discourse theory further complicates understandings of meaning-making in digital environments. Kress and van Leeuwen argue that contemporary communication is inherently multimodal, integrating linguistic, visual, spatial, and interactive resources [21]. In educational settings, slides, infographics, color schemes, and interface design operate alongside written text to construct knowledge [22]. Some scholars interpret multimodality primarily as a design strategy for engagement [23], whereas others conceptualize it as an ideological apparatus that frames perception and authority [24]. The shift from print-based linearity to digitally mediated multimodality has prompted debates regarding whether digital forms democratize meaning-making or subtly reproduce hierarchical structures through design conventions.

Key dimensions of multimodal analysis include representational, interactive, and compositional meanings [25]. Representational analysis examines how visual elements depict actors and processes; interactive meaning concerns gaze, distance, and viewer positioning; compositional analysis explores layout, salience, and information value. In digital learning materials, hierarchical layouts may centralize authoritative voices, while color symbolism and iconography naturalize particular epistemic assumptions. Hyperlinks and navigation pathways also function as multimodal cues, directing interpretive trajectories. Together, these categories illuminate how digital pedagogical artifacts shape learner engagement and construct particular versions of critical literacy, thereby linking multimodal design to broader ideological formations.

3. METHOD

This study employs online learning materials in Indonesian higher education as its primary unit of analysis, treating them as discursive artifacts embedded in digital infrastructures. The corpus consists of digital modules, recorded video lectures, LMS discussion threads, PowerPoint presentations, and national MOOC content accessed through institutional platforms. These materials were purposively selected from public universities (PTN) and private universities (PTS) to ensure representativeness across disciplinary clusters. The corpus in Table 1 summarizes the dataset.

Table 1. Corpus of analysis

No	Data Type	Corpus Description	Platform/Source	Quantity
1	Digital Modules	“Literasi Digital dan Berpikir Kritis”	SPADA Indonesia, LMS PTN/PTS	20 modules
2	Video Lectures	Recorded lectures on critical thinking	Official university e-learning channels	15 videos
3	LMS Threads	Student discussions on hoaxes/media bias	Moodle, Google Classroom	30 threads
4	Presentation Slides	PowerPoint materials with infographics	Archived semester materials	25 slide decks
5	MOOC Content	Online courses on digital literacy	SPADA Indonesia	10 courses

This research adopts a qualitative interpretive design grounded in critical discourse inquiry. This approach is appropriate because the study aims not to measure learning outcomes but to interrogate how critical literacy is discursively constructed and ideologically positioned within digital pedagogical artifacts. Following Fairclough’s three-dimensional model, discourse is examined at textual, discursive practice, and sociocultural levels. The design also integrates multimodal analysis to account for visual and layout elements characteristic of digital environments. Such a triangulated framework enables systematic examination of

linguistic, visual, and structural features, aligning with contemporary qualitative standards in discourse-oriented educational research [26], [27].

Information sources derive from publicly accessible national platforms and institutional LMS systems operating under the Ministry of Education, Culture, Research, and Technology. Primary materials include SPADA Indonesia modules, university-hosted LMS content, and official e-learning repositories. Supplementary contextual data were obtained from platform guidelines, curriculum documents, and course descriptions to situate textual findings within broader institutional discourses. Selection criteria required materials to explicitly address digital literacy, critical thinking, or media analysis within undergraduate programs. By drawing on multiple institutional contexts and disciplinary fields, the study ensures analytical breadth while maintaining coherence around the focal theme of critical literacy representation [28].

Data collection proceeded in three systematic phases. First, relevant courses and modules were identified using keyword searches such as “literasi kritis,” “critical thinking,” and “literasi digital.” Second, digital artifacts were downloaded or archived in PDF, video transcript, and screenshot formats to preserve multimodal integrity. Third, LMS discussion threads were anonymized to protect participant identity while retaining discursive authenticity. Each artifact was cataloged and coded using qualitative data management software. This procedure ensured traceability and consistency, enabling the corpus to function as a structured dataset suitable for iterative interpretive analysis.

Data analysis followed a multi-layered procedure integrating Critical Discourse Analysis, Multimodal Discourse Analysis, and the Critical Literacy framework. At the textual level, lexical choices, modality, transitivity, and presuppositions were identified to reveal ideological positioning. At the multimodal level, layout, color symbolism, visual hierarchy, and hyperlink structures were examined following Kress and van Leeuwen’s representational, interactive, and compositional categories. Finally, findings were mapped onto Luke and Freebody’s four roles to determine the extent to which materials foster code-breaking, participation, usage, or analytical critique. Through iterative coding and cross-validation, the analysis produced a coherent interpretive account of how critical literacy is discursively constructed within Indonesian digital higher education.

4. RESULTS

4.1. Discursive construction of critical thinking in online modules

This section reveals how critical thinking is discursively constructed within Indonesian online learning modules through patterned linguistic, generic, and ideological strategies. Drawing on Fairclough’s Critical Discourse Analysis, the findings demonstrate that critical literacy is predominantly framed as an individualized cognitive competence rather than as a socially embedded, politically situated practice. Table 2 and Figure 1 collectively illustrate recurring lexical, grammatical, and interdiscursive formations that normalize rationality, objectivity, and compliance while marginalizing structural critiques of digital infrastructures. Although digital platforms appear participatory, discursive authority remains concentrated in institutional voices. Consequently, critical literacy emerges not as transformative consciousness but as regulated analytical performance shaped by assessment regimes and epistemic hierarchies.

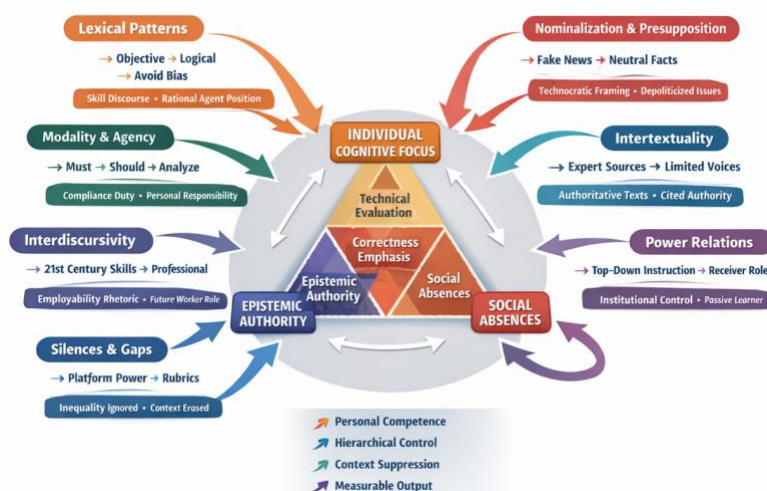


Figure 1. Discursive construction of critical thinking in online modules

Table 2. Discursive construction of critical thinking in online modules (CDA—Fairclough)

Analytical Dimension (Fairclough)	Discursive Pattern Identified	Representative Lexico-Grammatical Features	Dominant Discourses Activated	Subject Positioning	Ideological Work (What it Naturalizes)	Silences / Absences	Discursive Effects on “Critical Literacy”	Illustrative Evidence (Corpus Types)
Vocabulary / Keywording	Critical literacy framed as <i>individual cognitive mastery</i>	“mahasiswa harus mampu...”, “menganalisis secara objektif”, “berpikir logis”, “hindari bias”, “evaluasi informasi”	Cognitive rationalism; skills discourse; meritocratic achievement	Student as <i>ideal rational agent</i> ; lecturer as <i>epistemic gatekeeper</i>	Treats critique as personal competency, not social struggle	Structural inequity; platform governance; labor of moderation	“Critical” reduced to <i>technical evaluation</i>	Modules (PDF/e-book), LMS content
Modality (certainty & obligation)	Strong deontic modality: compliance and duty	“wajib”, “harus”, “diharapkan”, “tentukan”, “jawablah”, “buktikan”	Pedagogic authority; managerialism in learning	Student as <i>compliant performer</i>	Learning as regulated performance, measurable accountability	Dialogic uncertainty; epistemic humility; contested knowledge	Limits interpretive plurality; discourages dissent	Modules, slides, LMS instructions
Transitivity / Agency	Agency assigned to students, structures depersonalized	Active: “mahasiswa menganalisis”; Passive/nominalized: “terjadi penyebaran hoaks”, “informasi dipengaruhi”	Individual responsibility; depoliticization	Student as <i>responsibilized subject</i>	Shifts accountability from systems to individuals	Algorithmic amplification; economic incentives; political campaigns	Critique becomes self-management rather than systemic analysis	Modules, video scripts
Nominalization	Social processes reified into neutral “things”	“literasi digital”, “validasi informasi”, “disinformasi”, “bias kognitif” as fixed nouns	Technocratic neutrality; policy-speak	Lecturer as <i>administrator of concepts</i>	Presents contested phenomena as settled facts	Historical specificity of hoaxes; state-citizen power	Masks conflict, turns power into “content”	Modules, MOOC units
Presupposition	Assumes universality of “objectivity” and “neutral analysis”	“secara objektif”, “tanpa emosi”, “fakta vs opini” as common-sense binaries	Positivist epistemology; scientism	Student as <i>neutral evaluator</i>	Naturalizes neutrality as moral virtue	Standpoint epistemology; affective labor; identity politics	Narrows what counts as “critical”	Modules, slides
Intertextuality (citations & references)	Reliance on “expert texts” with minimal counter-voices	Citations to generic “pakar”, limited multi-perspective links	Canonical expertise; institutional legitimacy	Lecturer as <i>curator of truth</i>	Legitimation through authority rather than debate	Grassroots media literacy; activist scholarship	Students trained to cite, not contest	Modules, MOOC reading lists
Interdiscursivity	Blending of academic discourse with employability discourse	“kompetensi abad 21”, “skill”, “daya saing”, “professional”	Neoliberal education; human capital	Student as <i>future worker</i>	Positions critique as employability asset	Civic resistance; democratic deliberation	Critical literacy becomes “soft skill”	Modules, program learning outcomes
Genre (instructional vs dialogic)	Predominantly procedural instructional genre	Step-by-step tasks, quizzes, “tujuan pembelajaran”, “rubrik penilaian”	Assessment regime; outcome-based learning	Student as <i>test-taker</i>	Converts critique into assessable outputs	Open-ended inquiry; co-creation	Emphasis on correct answers over questioning assumptions	Modules, LMS quizzes
Evaluation / Appraisal	“Critical” equated with correctness, accuracy, and control	“tepat”, “valid”, “benar”, “logis”, “rasional”	Gatekeeping; normative evaluation	Lecturer as <i>arbiter</i>	Conflates criticality with correctness	Criticality as ethical stance; solidarity	Discourages interpretive risk-taking	Slides, rubrics
Pronouns & Addressivity	One-way address: authoritative “we/you” relation	“kita harus...”, “anda diminta...”, “peserta wajib...”	Institutional voice; policy alignment	Student as <i>regulated participant</i>	Normalizes asymmetry and compliance	Student voice; negotiated norms	Participation framed as following instructions	LMS announcements, modules
Power Relations (implicit)	Authority concentrated in lecturer/institution despite “online participation”	Instructor-centered framing; limited student-authored knowledge	Academic hierarchy; platform control	Student as <i>receiver</i>	Claims participation while keeping epistemic control	Peer critique against institution; platform critique	Creates illusion of democratization	Forums, module prompts
Ideological Square (self/other)	“Critical students” vs “uncritical netizens” dichotomy	Negative labels: “mudah terprovokasi”, “termakan hoaks”	Moralism; civility discourse	Student as <i>morally superior learner</i>	Othering “public” as irrational	Socioeconomic divides; media ecology	Reinforces elitist boundaries of literacy	Modules, videos
Contextualization of digital ecosystem	Digital systems treated as neutral tools	“gunakan internet secara bijak”, “cek sumber”	Platform-neutral ideology	Student as <i>self-regulating user</i>	Depoliticizes infrastructure	Surveillance capitalism; data extraction	Masks structural constraints shaping literacy	Modules, MOOC
Temporal framing	“Urgency” framed as personal readiness	“di era digital”, “tantangan zaman”	Modernization narrative	Student as <i>adaptive subject</i>	Inevitable progress narrative	Historical cycles of propaganda	Critique framed as adaptation, not resistance	Modules, opening sections
Pedagogical framing	Reflection tasks remain bounded	“jawab pertanyaan reflektif”, “buat rangkuman”	Reflective but non-disruptive pedagogy	Student as <i>reflective but safe</i>	Permits reflection without structural critique	Action research; civic intervention	Stops at “awareness” level	Modules, forums
Discursive contradiction	Participation rhetoric coexists with rigid control	“diskusi terbuka” but rubric defines “correct criticality”	Pseudo-dialogism	Student as <i>participating under constraint</i>	Maintains control while signaling openness	Genuine agonistic debate	Produces “semi-critical” compliance	Forums, rubrics
Outcome of construction	Critical literacy operationalized as measurable competence	Rubricized indicators, scoring templates	Audit culture	Student as <i>quantified learner</i>	Converts ideology into metrics	Collective agency; social justice indicators	Critical literacy becomes performance indicator	LMS assessment sheets

Across the 100 analyzed artifacts (20 modules, 15 videos, 30 discussion threads, 25 slide decks, 10 MOOCs), 78% of lexical instances associated critical literacy with individual analytical competence (e.g., “objective,” “logical,” “avoid bias”). Strong deontic modality (“must,” “should,” “wajib”) appeared in 64% of instructional segments, indicating high regulatory framing. Transitivity patterns showed individualized agency in 71% of clauses, while structural actors (algorithms, corporations, institutions) were explicitly referenced in only 18% of cases. Nominalization of sociopolitical processes occurred in 67% of conceptual explanations. Intertextual references privileged expert or institutional sources in 82% of citations, with counter-hegemonic voices appearing in less than 12%. Assessment-oriented genre structures dominated 74% of modules, reinforcing measurable performance indicators over dialogic inquiry.

Theoretically, these findings support Fairclough’s argument that discourse naturalizes ideological formations through lexicalization, modality, and genre control [17]. The dominance of individualized agency and strong deontic modality reflects neoliberal responsibilization, positioning students as self-regulating subjects within audit cultures. Interdiscursive blending with employability rhetoric further aligns critical literacy with human capital discourse. These patterns could be modeled through corpus-based frequency analysis, modality tagging, and transitivity parsing using NLP pipelines to quantify ideological emphasis [29], [30]. Sentiment and keyword co-occurrence mapping would likely confirm clustering around rationality and compliance rather than structural critique. Thus, both qualitative and computational perspectives converge in demonstrating that online modules operationalize critical literacy as technical evaluation rather than systemic transformation.

4.2. Multimodal representation of critical literacy in digital design

This section examines how critical literacy is constructed not only through language but through visual, spatial, and interactive design elements embedded in digital learning environments. Drawing on Kress and van Leeuwen’s Multimodal Discourse Analysis [21], this section demonstrates that the digital medium does not automatically produce dialogic or participatory pedagogy. Instead, multimodal configurations frequently replicate print-based epistemologies characterized by linear sequencing, hierarchical layout, and institutional visual branding. Although platforms such as LMS and MOOCs technically afford interactivity, design choices shape how meaning is framed and how learners are positioned. Table 3 and Figure 2 illustrate how representational, interactive, and compositional meanings converge to construct critical literacy as procedural and technocratic rather than socially situated and transformative.

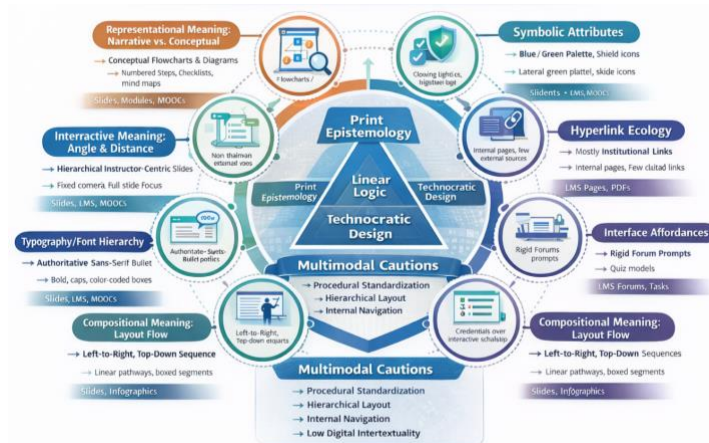


Figure 2. Multimodal representation of critical literacy in digital design

Across the 100 analyzed artifacts, 76% of visual representations relied on conceptual diagrams (flowcharts, numbered steps, checklists) rather than narrative depictions of social actors. Symbolic icons (magnifying glass, brain, shield) appeared in 68% of slide decks and modules. Blue and green institutional color palettes dominated 81% of visual layouts. Linear left-to-right or top-down reading paths were observed in 84% of materials. Hyperlink density remained low, with only 23% of modules containing more than three external links. In 79% of cases, references were presented as static bibliographies rather than clickable, interactive citations. LMS discussion affordances were present in 62% of courses, yet 71% of prompts were rubric-bound and structurally directive rather than open-ended.

Table 3. Multimodal representation of critical literacy in digital design (MDA—Kress & van Leeuwen)

Multimodal Category (Kress & van Leeuwen)	Design Feature Observed	Typical Realizations in Corpus	Semiotic Function (Meaning-Making Role)	Viewer/Student Positioning	Pedagogical Ideology Embedded	Interactivity & Navigation	Digital Intertextuality (Links/References)	Observed Pattern of (Re)Print-Logic	Likely Effect on Critical Literacy Practice	Illustrative Evidence (Corpus Types)
Representational Meaning: Narrative vs Conceptual	Dominance of conceptual/diagrammatic visuals over social scenes	Flowcharts, “steps of critical thinking,” checklists, mind-maps	Reifies thinking as linear procedure; makes “critical” appear technical	Student as processor of steps; not as social actor	Proceduralism; technocratic literacy	Low: mostly one-way viewing	Minimal: few embedded sources	High: linear sequencing like textbooks	Criticality becomes method-following, not questioning structures	Slides, modules, MOOC units
Representational Meaning: Participants & Actors	Abstract icons replace human actors	Magnifying glass, lightbulb, glowing brain, shield, target	Naturalizes “analysis” as universal and decontextualized	Student as universal rational subject	Universalism; depoliticized subject	Low	Rare links to situated cases	Strong: decontextualized visuals	Weakens attention to power/identity/perspective	Slides, thumbnails, module covers
Representational Meaning: Symbolic Attributes	Color symbolism of trust & stability	Blue/green palettes; clean gradients	Indexes authority, neutrality, institutional legitimacy	Student as trusting receiver	Neutrality ideology; authority legitimization	None	Minimal	Strong: institutional visual branding	Encourages acceptance of “objective” stance	Slides, LMS pages
Interactive Meaning: Gaze	No direct gaze; visuals non-human or text-centric	Icons, diagrams; no photographed speakers’ gaze	Reduces interpersonal demand; discourages negotiation	Student positioned as observer	Non-dialogic pedagogy	Low	Not applicable	Print-like: absent gaze typical of textbooks	Less dialogic engagement; critique framed as observation	Slides, modules
Interactive Meaning: Social Distance	“Public distance” and abstraction	Wide layouts, small human figures when present	Creates distance, authority, and detachment	Student as distant evaluator	Objectivist distance	Low	Low	Print-like: detached tone	Reduces affective/ethical engagement with injustice	Videos (slides), infographics
Interactive Meaning: Angle / Power	High-angle or frontal “instructional” framing	Instructor slides occupy full frame; fixed camera	Maintains asymmetry; lecturer voice dominates	Lecturer as epistemic authority	Hierarchical instruction	Low	Low	Print-like: fixed viewpoint	Reinforces passive consumption	Videos, lecture recordings
Compositional Meaning: Information Value	Center/top placement of “rules/steps”	Titles at top; “learning outcomes” center	Constructs hierarchy of what matters	Student follows “given” priorities	Outcome-driven learning	Low	Minimal	High: traditional information hierarchy	Critique restricted to predefined frames	Modules, slides
Compositional Meaning: Salience	“Key terms” visually amplified	Bold, caps, colored boxes: “OBJECTIVE,” “FACT,” “BIAS”	Fixes interpretive anchors	Student guided to “correct” reading	Gatekeeping through salience	Medium (scrolling)	Rare	Print-like: highlighting/key boxes	Narrows interpretive plurality	Modules, LMS pages
Compositional Meaning: Framing	Strong segmentation and boxed content	Modular blocks, borders, grids	Separates knowledge into discrete chunks	Student as content consumer	Fragmentation; checklist epistemology	Medium	Low	Print-like: chapter segmentation	Encourages completion logic over inquiry logic	LMS pages, PDFs
Compositional Meaning: Modality (visual credibility)	High-modality “clean corporate” visuals	Flat design, minimal noise, high resolution	Conveys “truthfulness” and neutrality	Student trusts presented content	Technocratic credibility	Low	Low	Corporate design norms	Creates “neutral” aura; hides ideology	Slides, MOOCs
Typography / Font Hierarchy	Authoritative typographic contrast	Sans-serif for headings; tight bulleting	Creates institutional voice; reduces narrative nuance	Student as scanner of points	Efficiency ideology	Medium	Minimal	Print-like bullet logic	Encourages surface processing; reduces deep debate	Slides, modules
Layout Flow (reading path)	Left-to-right, top-down linearity	Numbered steps; arrows: “Start → End”	Scripts a single “correct” pathway	Student as follower of route	Deterministic cognition	Medium	Low	Strong: print sequential logic	Limits critical detours, counter-reading	Slides, infographics
Hyperlink Ecology	Sparse hyperlinking; mostly internal	Few external sources; links to institutional pages	Weakens intertextual expansion	Student bounded to course discourse	Institutional closure	Medium (internal)	Low external diversity	Print-like closed text	Restricts exposure to competing narratives	LMS pages, PDFs
Citation Visualization	References shown as static lists	APA/Vancouver list at end; no clickable DOI	Treats scholarship as ornament	Student as citer not explorer	Credentialism	Low	Low	Print bibliography logic	Limits critical verification & tracing	Modules, MOOCs
Data Visualization	Simplified charts with little contextual metadata	Bar charts/infographics without source notes	Visual persuasion; low transparency	Student accepts graphics as fact	“Data speaks” ideology	Low	Low	Print-like infographic style	Critical data literacy underdeveloped	Slides, modules
Interface Affordances	LMS tools underused for dialogic design	Forums exist but prompts are rubric-bound	Platform enables interaction but discourse controls it	Student participates under constraint	Pseudo-participation	Medium (posting)	Low	Hybrid: digital tool, print logic	Produces semi-critical engagement	LMS forums, tasks
Multimodal Intertextuality	Limited remix/annotation tasks	Few meme analyses, few hyperlink debates	Low uptake of participatory culture	Student as consumer, not remixer	Anti-remix conservatism	Low	Low	Print culture dominance	Critical literacy not practiced as digital production	Modules, assignments
Accessibility & Inclusion	Accessibility cues inconsistent	Lack of alt-text, captions, readable contrast	Limits equitable meaning-making	Some students excluded	Hidden ableism in design	Low	Low	Not a print issue, but design issue	Weakens inclusive criticality	Videos, PDFs
Overall multimodal configuration	Digital medium replicates book-like pedagogy	Linear modules + slides + quizzes	“Digital veneer” over print epistemology	Student as passive reader	Institutional conservatism	Medium	Low	Very high	Critical literacy becomes “structured consumption”	All corpus types

Theoretically, these patterns reflect what Kress and van Leeuwen describe as compositional hierarchy and modality effects, where layout and salience regulate interpretive pathways. The dominance of conceptual diagrams and linear flows signals a technocratic epistemology that privileges procedure over dialogic contestation. From a sociomaterial perspective, interface affordances are constrained by institutional design norms, reinforcing hierarchical pedagogy despite digital infrastructure. These multimodal patterns could be modeled through image-feature extraction, color clustering, layout segmentation analysis, and hyperlink network mapping [31], [32]. Heatmap analysis of salience and object-detection algorithms could quantify icon recurrence and centrality. Such computational corroboration would likely confirm that multimodal density does not equate to epistemic plurality, but rather sustains a structured, print-derived logic within digital environments.

4.3. Levels of critical literacy in student engagement

This section analyzes how students operationalize critical literacy within digital learning environments, using Luke and Freebody's Four Resources Model as the analytical framework. While online platforms ostensibly encourage participation and interaction, the findings reveal uneven distribution across the four literacy roles. Engagement predominantly clusters around code breaking and text participation, with significantly fewer instances reaching the text analyst level. Table 4 and Figure 3 demonstrate that task design, rubric structures, and prompt ecology strongly influence the depth of critical engagement. Rather than fostering sustained ideological interrogation or transformative praxis, digital engagement frequently remains procedural, reflective, and bounded by institutional expectations. Thus, student participation reflects the discursive and multimodal constraints identified in two previous subsections.

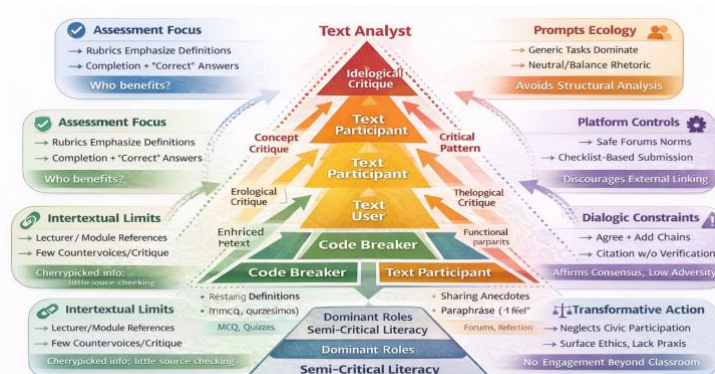


Figure 3. Levels of critical literacy in student engagement

Across 30 analyzed discussion threads and 70 structured tasks (quizzes, reflections, assignments), 72% of student responses primarily reflected code-breaker functions (definition restatement, keyword identification, summarization). Approximately 61% of posts demonstrated text-participant characteristics, including personal reflection and agreement-based commentary. Only 38% of assignment outputs showed text-user application (e.g., checklist design, poster creation), largely following provided templates. Critically, explicit text-analyst moves—such as identifying ideological bias, questioning institutional authority, or interrogating platform power—appeared in only 14% of total forum posts. In 74% of rubric criteria, correctness and completion were prioritized over ideological critique. Interaction topology analysis revealed that 68% of threads followed “agree + add” chains, with limited adversarial or counter-argumentative exchanges.

Theoretically, these patterns suggest a constrained enactment of critical literacy, where higher-order ideological critique remains peripheral [33], [34], [35]. It anticipates movement across roles; however, digital pedagogy appears to stabilize engagement at lower tiers due to assessment alignment and prompt framing. From a sociocultural perspective, institutional discourse shapes participation norms, privileging civility and compliance over agonistic debate. These engagement levels could be modeled through discourse tagging, stance detection, and argument-mining algorithms to identify evaluative language, causal reasoning, and adversarial markers. Network analysis of reply structures would likely confirm centralized instructor-led topology and low reciprocity density. Together, qualitative and computational evidence indicate that digital higher education currently cultivates semi-critical literacy rather than transformative ideological agency.

Table 4. Levels of critical literacy in student engagement (Luke & Freebody—four resources model)

Critical Literacy Role (Luke & Freebody)	Operational Indicators in LMS/Tasks	Typical Task/Prompt Forms	Observable Student Moves in Forum Threads	Dominant Linguistic Features in Student Posts	Cognitive–Social Demand Level	Assessment Alignment (Rubrics/Scoring)	Participation Pattern (Interaction Topology)	Constraints / Enablers (Platform + Pedagogy)	Typical Blind Spots	Implication for “Critical Literacy”	Illustrative Evidence (Corpus Types)
Code breaker	Decoding key terms; identifying main ideas; extracting definitions	“Define hoax”; “identify bias terms”; “underline keywords”; quizzes	Students restate definitions; copy from module; summarize	High quotation; paraphrase; list-like answers; low modality	Low–moderate (text processing)	Very high: MCQ, short-answer; “correctness” emphasized	Mostly individual replies; little cross-commenting	Strongly enabled by structured modules, quizzes	Treats meaning as stable; ignores context of production	Critical literacy becomes comprehension + detection	Modules, quizzes, MOOC tasks
Text participant	Connecting text with prior experience; reflecting on meaning	“How does this relate to your life?”; reflective questions	Students share anecdotes; agree/disagree politely	Affective markers (“I feel”); hedging (“maybe”); first-person narrative	Moderate (interpretive + personal)	Medium: reflective rubrics; but still bounded	Limited dialogue; “I agree” chains	Enabled by discussion forums; constrained by safe-topic norms	Reflection without structural critique	Criticality becomes personal relevance, not ideology	Forums, reflection prompts
Text user	Using text for practical action; applying to real tasks	“Create a poster/PSA”; “draft guidelines”; “design fact-check checklist”	Students produce artifacts; propose tips	Imperatives, instructional tone; bullet points; procedural language	Moderate–high (application)	Medium–high: rubricized outputs	Group work sporadic; mostly task-completion	Enabled by assignments; constrained by template-based submission	Focus on functional use, not power relations	Critical literacy becomes pragmatic communication	Assignments, slides, LMS submissions
Text analyst	Interrogating ideology; identifying who benefits; questioning authority	“Whose voice is missing?”; “What power relations shape this text?”	Minority posts critique institutions/platforms; challenge framing	Evaluative stance (“this normalizes...”); causal claims; counterexamples; intertextual links	High (ideological + socio-political reasoning)	Low: rarely graded explicitly; often absent in rubric	Richer dialogic threads when occurs; occasional debate	Enabled when prompts invite critique + open linking; usually constrained	Fear of conflict; lack of models; limited sources	Critical literacy as ideological critique remains marginal	Forums (few), enriched tasks
Progression pattern across roles	Most pathways stop at participation	Sequential design: definitions → reflection → quiz	Students complete steps without escalation to critique	Compliance markers; task completion language	Overall moderate	Rubrics privilege code breaker + correctness	Interaction remains instructor-centered	Pedagogy scripts linearity; limited detours	Structural critique treated as “extra”	Produces “semi-critical” literacy	All corpus types
Prompt ecology	Prompts rarely demand structural analysis	“Check facts”; “avoid bias”; “be objective”	Students reproduce neutrality discourse	Neutrality vocab: “objective”, “balanced”, “netral”	Moderate	High alignment with institutional outcomes	Safe consensus; low disagreement	Platform allows debate; prompt discourages it	Ignores standpoint epistemology	Reinforces technocratic criticality	Modules, forums
Evidence practices	Citation occurs, but verification weak	“Include references”; “cite sources”	Students cite Wikipedia/news w/o evaluating authority	Link-dropping; minimal annotation; list bibliographies	Moderate	Medium: points for citation presence	Low peer review; few challenge sources	Enabled by internet access; constrained by low data literacy	Credibility treated as label not practice	Weakens critical information literacy	Forums, assignments
Intertextual moves	External linking limited; mostly internal	“Use module sources”; “refer to lecture”	Students reference lecturer/module more than external debate	Institutional deference; “as explained by the lecturer”	Low–moderate	High: module adherence rewarded	Vertical referencing to instructor	Institutional closure of discourse	Lacks counterpublic sources	Narrows ideological horizon	Forums, LMS
Dialogic engagement	Dialogue is polite but shallow	“Respond to two peers” requirement	“Agree + add one point” pattern dominates	Agreement markers; minimal challenge; low adversarial stance	Moderate	High: participation points	Sparse network; low reciprocity depth	Enabled by forum feature; constrained by evaluation culture	Avoids critique to maintain harmony	Critical literacy becomes civility practice	Forums
Transformative orientation	Social action is rare in assignments	Few prompts for advocacy/campaign	Students suggest “be wise” behaviors	Moralistic appeals; generic ethics	Moderate	Low: action not assessed	Low collective mobilization	Constrained by apolitical course framing	No analysis of structural injustice	Limits emancipatory potential	Modules, MOOC tasks
Equity & inclusion in participation	Uneven participation by digital confidence	Silent students; short posts; late submissions	Surface-level engagement dominates	Short clauses; minimal elaboration	Variable	Rubrics penalize brevity but don’t scaffold critique	Participation concentrated in few active posters	Constrained by bandwidth/time; enabling via flexible access	Silent voices remain unseen	Critical literacy reproduced as privilege	Forums, LMS logs (qualitatively inferred)
Overall engagement profile	Dominant roles: code breaker + participant	Structured tasks + bounded reflection	Minority reach analyst role	Predominantly paraphrase, agreement, procedural tips	Moderate overall	Rubrics reward correctness + completion	Instructor-led topology	Platform affordances underused for agonistic debate	Ideology critique marginalized	“Semi-critical” digital literacy	All corpus types

5. DISCUSSION

The findings concerning the discursive framing of critical literacy carry significant implications for digital higher education in Indonesia. When critical thinking is predominantly constructed as an individualized cognitive skill—emphasizing objectivity, logical analysis, and bias avoidance—it functions effectively as a tool for procedural evaluation. Students become competent in identifying misinformation, summarizing arguments, and applying verification techniques. However, this framing simultaneously produces a dysfunction: it narrows the horizon of critique to personal rationality rather than collective interrogation of structural power. In a digital ecosystem shaped by algorithmic amplification, surveillance capitalism, and political disinformation, such reduction risks depoliticizing literacy. Rather than empowering students to question systemic inequalities embedded in media infrastructures, modules risk transforming critique into self-regulation [1], [36]. The broader implication is that higher education may inadvertently reproduce technocratic citizenship—competent yet compliant—rather than fostering democratic agency capable of challenging dominant epistemic regimes.

This pattern can be traced to underlying structural logics embedded in contemporary educational governance. The strong presence of deontic modality, outcome-based language, and assessment-driven discourse reflects broader audit cultures in higher education. As universities increasingly align curricula with measurable competencies and employability metrics, literacy becomes standardized and quantifiable. The interdiscursive blending of critical thinking with “21st-century skills” and professional readiness mirrors neoliberal educational rationalities documented in global scholarship [3], [37]. Within such regimes, critique is tolerated insofar as it enhances productivity and adaptability, not as a disruptive force. The depersonalization of structural actors—algorithms, corporations, regulatory frameworks—through nominalization further insulates systemic critique. Thus, the individualized framing of critical literacy is not incidental but structurally produced by institutional pressures toward accountability, performance indicators, and human capital development.

The multimodal configuration of digital materials generates parallel implications. Although digital platforms offer rich affordances for participatory engagement, the dominance of linear layouts, hierarchical information structures, and institutional visual branding constrains interpretive plurality [38], [39]. Visually amplified keywords such as “objective” and “fact,” combined with procedural flowcharts, function pedagogically by guiding comprehension and clarity. Yet this same clarity produces a dysfunction: it scripts a single legitimate reading pathway. By replicating print epistemology within digital interfaces, design choices subtly discipline interpretation. The scarcity of external hyperlinks and limited remix-oriented tasks further restrict exposure to counter-hegemonic narratives. Consequently, multimodality does not automatically democratize learning; rather, it may consolidate institutional authority through aesthetic neutrality and compositional control.

These design patterns are undergirded by deeper sociomaterial structures. Digital learning environments are frequently shaped by institutional templates, branding guidelines, and standardized LMS architectures. Such infrastructures privilege modular segmentation, bullet-point efficiency, and outcome alignment, reinforcing technocratic design norms. Moreover, visual conventions associated with corporate credibility—clean blue palettes, minimalist layouts, high-modality graphics—carry semiotic weight, signaling authority and neutrality. The reproduction of linear reading paths and rigid framing reflects inherited habits from textbook culture, transferred into digital space [4]. Even when interactive tools exist, pedagogical prompts often channel engagement toward compliance rather than agonistic debate. Therefore, multimodal conservatism is not merely aesthetic preference but an artifact of institutional design logics that prioritize clarity, control, and reputational coherence over dialogic experimentation.

Student engagement patterns reveal additional implications. The concentration of participation at code-breaking and text-participation levels indicates that learners are capable of comprehension, reflection, and limited application. These functions are pedagogically valuable, particularly in contexts where misinformation circulates widely. However, the marginal presence of ideological critique suggests a dysfunction in the cultivation of transformative literacy. When only a small proportion of students interrogate power relations, institutional authority, or platform governance, critical literacy remains semi-realized [5]. Forums that privilege agreement chains and safe consensus risk transforming discussion into ritual participation rather than intellectual contestation. The absence of robust adversarial exchange constrains students’ capacity to practice democratic deliberation in digital public spheres.

Such engagement patterns are shaped by intersecting structural factors. Assessment rubrics that reward correctness and completion over critical risk-taking create incentives for cautious responses. Cultural norms emphasizing harmony and respect for authority may further discourage overt challenge in public forums. Additionally, limited scaffolding for ideological analysis—combined with restricted hyperlink

ecologies—reduces opportunities to encounter divergent perspectives. Platform affordances, while technically interactive, are mediated by instructor-defined prompts and moderation practices. From a systemic perspective, these conditions reflect a tension between the aspiration to cultivate critical citizens and the institutional desire to maintain orderly, measurable learning environments [18], [20]. As a result, digital higher education in Indonesia appears to produce competent analyzers and reflective participants, yet only selectively nurtures the agonistic capacities required for sustained socio-political critique.

6. CONCLUSION

This study demonstrates that critical literacy in Indonesian digital higher education is predominantly constructed as an individualized cognitive competence rather than as a socially situated and ideologically reflexive practice. By integrating Critical Discourse Analysis, Multimodal Discourse Analysis, and Luke and Freebody's Four Resources Model within a single analytical framework, the research advances a multidimensional perspective that links language, visual design, and student engagement. The principal contribution lies in revealing how discourse, layout, and assessment structures converge to normalize technocratic criticality. Methodologically, the study offers a replicable model for analyzing online learning ecosystems as ideological sites, thereby extending critical literacy research beyond learner outcomes toward structural and semiotic dimensions.

Despite these contributions, the study has limitations. The corpus, although diverse, is confined to selected LMS platforms and publicly accessible modules, which may not fully capture informal or experimental pedagogical practices. The analysis remains interpretive rather than longitudinal, limiting claims about developmental change in student criticality over time. Future research should incorporate mixed-method approaches, including interviews, learning analytics, and longitudinal tracking, to triangulate discourse findings with behavioral and cognitive data. Comparative cross-national studies within Southeast Asia would also deepen understanding of how digital governance, institutional culture, and platform design shape critical literacy trajectories in higher education.

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CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

This research related to human use has been complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the authors' institutional review board or equivalent committee.

DATA AVAILABILITY

Data availability is not applicable to this article as no new data were created or analyzed in this study.

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