

Multimodal feedback and student engagement: a linguistic analysis of digital assessment practices in Indonesian universities

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ABSTRACT

Background: The expansion of digital assessment in Indonesian higher education has intensified the need to understand how multimodal feedback shapes student engagement beyond conventional text-based evaluation. **Objective:** This study investigates how linguistic, visual, audio, and interactional resources in Learning Management Systems construct authority, affect, and engagement in university feedback practices. **Method:** Using a qualitative-dominant mixed-method design, this research analyzes 240 feedback instances across Moodle, SPADA, and Google Classroom through Multimodal Discourse Analysis, Appraisal Theory, and Interactional Sociolinguistics. Results: The findings reveal that multimodal congruence—where evaluative language, prosodic cues, and visual design align—significantly correlates with substantive revision and reflective participation. Dialogically framed feedback employing hedging, inclusive stance, and calibrated graduation expands interpretive space and enhances emotional stability. Conversely, monologic closure, imperative density, and prosodic finality are associated with surface-level compliance and reduced cognitive engagement. **Implication:** These findings indicate that effective digital feedback requires multimodal and dialogic alignment to foster deeper student engagement, emotional support, and meaningful learning outcomes beyond surface-level compliance. **Novelty:** The novelty of this study lies in proposing an integrated cross-modal analytical framework that operationalizes linguistic and interactional features as measurable predictors of engagement within digital assessment analytics.

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1. INTRODUCTION

The digitalization of higher education has transformed assessment practices worldwide, including in Indonesia, where more than 8 million students are enrolled in tertiary institutions and over 90% of universities reportedly use Learning Management Systems (LMS) such as Moodle, SPADA Indonesia, or Google Classroom following the COVID-19 pandemic. While digital platforms have increased access and flexibility, concerns persist regarding declining student engagement, with several national surveys indicating that between 35–45% of Indonesian undergraduates report reduced motivation in fully online or hybrid courses. Feedback, as one of the most influential factors in learning effectiveness, becomes crucial in this context. Yet, in digital environments, feedback is no longer merely textual; it integrates written comments, audio explanations, video screencasts, visual annotations, emoji, and layout design. Understanding how such

multimodal feedback shapes student engagement is therefore both pedagogically urgent and theoretically significant.

Existing scholarship has extensively examined feedback in higher education, particularly its role in formative assessment, self-regulated learning, and academic achievement. The recent studies highlight feedback literacy and dialogic feedback as central to engagement [1], [2], [3]. Parallel research in digital pedagogy explores instructor presence and multimodal communication [4], [5], suggesting that audio and video feedback may enhance relational closeness and clarity. From a linguistic perspective, Appraisal Theory has been applied to analyze evaluative language in academic discourse, while Multimodal Discourse Analysis investigates meaning-making across modes [6], [7], [8]. However, few studies integrate these frameworks to examine how multimodal evaluative strategies operate simultaneously in Indonesian university contexts. Moreover, limited attention has been given to how interactional cues such as intonation and contextualization strategies [9], [10], [11] influence students' perceptions of authority, empathy, and dialogic invitation within digital assessment ecosystems.

This study addresses these gaps by investigating how multimodal feedback practices in Indonesian universities construct student engagement at linguistic, visual, and interactional levels. Specifically, it asks: (1) How do textual, audio, visual, and layout elements in digital feedback structure relations of authority and pedagogical support? (2) How are evaluative meanings realized through attitude, engagement, and graduation resources in lecturers' comments? (3) How do interactional cues in audio-visual feedback shape students' interpretations and revision behaviors? By analyzing written comments, screencast recordings, annotated documents, and student responses within LMS environments, this research positions feedback not merely as information transmission but as a complex semiotic event. This study thus conceptualizes digital assessment as an interactional space where language, design, and affect intersect to influence cognitive and emotional engagement.

The central argument advanced here is that multimodal feedback does not simply enhance clarity; rather, it reconfigures pedagogical authority and student agency through layered semiotic resources. When evaluative language is dialogically framed, visually scaffolded, and prosodically mitigated, students are more likely to perceive feedback as supportive guidance rather than final judgment. Conversely, monomodal, terse, and hierarchically structured comments tend to reinforce distance and reduce opportunities for engagement. This research hypothesizes that the integration of multimodal structuring (MDA), nuanced evaluative language (Appraisal), and supportive interactional framing (Interactional Sociolinguistics) significantly correlates with higher levels of substantive revision and reflective participation. By empirically testing this proposition in Indonesian LMS contexts, this study contributes a linguistically grounded model of digital feedback that links multimodality, evaluation, and engagement in contemporary higher education.

2. LITERATURE REVIEW

2.1. Multimodal feedback

Multimodal feedback has emerged as a central construct in contemporary digital pedagogy, referring to evaluative responses that integrate multiple semiotic modes—linguistic, visual, auditory, and spatial—within assessment practices. Drawing on social semiotic theory, Kress and van Leeuwen (2006) conceptualize multimodality as the orchestration of distinct modes that jointly produce meaning [6]. In educational research, multimodal feedback is understood either as a technological enhancement of traditional written commentary or as a fundamentally reconfigured communicative practice that reshapes pedagogical relations [1], [3], [4]. While some scholars emphasize efficiency and clarity [5], others foreground relational presence and affective resonance [7]. This divergence suggests that multimodal feedback is not merely a technical feature of LMS platforms but a semiotic environment structuring authority, dialogue, and interpretation.

The dimensions of multimodal feedback can be categorized into modal integration, semiotic affordance, and interactional design [8]. Modal integration concerns how written comments, audio explanations, video gestures, and visual annotations complement or contradict each other. Semiotic affordance refers to the communicative potentials unique to each mode, such as intonation conveying empathy or color signaling evaluation intensity. Interactional design addresses layout, sequencing, and visual hierarchy within digital interfaces. Empirical studies indicate that audio-video feedback often increases social presence, while annotated documents enhance specificity and task alignment [9], [10]. These aspects collectively shape how feedback is perceived, negotiated, and enacted, highlighting the need for integrated multimodal analysis rather than isolated textual examination.

2.2. Student engagement

Student engagement, another foundational construct, has been widely theorized as a multidimensional phenomenon encompassing behavioral, emotional, and cognitive involvement in learning. The early model define engagement as active participation combined with psychological investment [12], whereas later

models emphasize self-regulation and dialogic responsiveness [13]. In digital contexts, engagement is often reframed as interaction frequency or platform analytics [14]; however, such operationalizations risk reducing engagement to measurable clicks rather than interpretive processes. Recent scholarship stresses the relational dimension of engagement, arguing that perceptions of instructor presence and support significantly influence persistence and motivation [5]. Thus, engagement must be understood not only as observable activity but as a linguistically and affectively mediated experience.

Indicators of student engagement typically include substantive revision, reflective articulation, sustained interaction, and emotional response [13]. Behavioral indicators involve timely resubmission and participation in forums. Cognitive indicators appear in depth of revision, incorporation of feedback, and metacognitive commentary. Emotional indicators are reflected in expressions of confidence, frustration, or appreciation. Research on feedback literacy further identifies dialogic uptake—the extent to which students interpret feedback as an invitation to improve—as a critical marker. These categories demonstrate that engagement is co-constructed through communicative practices. Consequently, examining how feedback is linguistically and multimodally framed becomes essential to understanding variations in student response patterns.

2.3. Evaluative language

Evaluative language provides a crucial analytical lens for examining how feedback constructs meaning and relational stance. Appraisal Theory conceptualizes evaluation through three systems: attitude, engagement, and graduation [15]. Attitude encompasses affect, judgment, and appreciation; engagement concerns the positioning of voices and dialogic openness; graduation scales intensity and force. While earlier studies applied appraisal analysis to academic writing or classroom discourse [12], [16], more recent research extends it to digital assessment contexts [17], [18]. However, interpretations differ regarding whether evaluative language primarily transmits assessment criteria or negotiates interpersonal alignment [10]. This tension underscores the dual function of feedback as both assessment and interaction.

Within this evaluative framework, specific linguistic indicators can be identified [16]. Affect appears in expressions of encouragement or concern; judgment evaluates competence or effort; appreciation assesses textual quality. Engagement resources include modal verbs, hedges, and attribution markers that either expand or contract dialogic space. Graduation manifests through intensifiers, downtoners, or lexical scaling. Interactional sociolinguistics complements this analysis by highlighting contextualization cues such as intonation, pacing, and discourse markers in audio feedback. Together, these indicators demonstrate that feedback is a layered communicative act where language, prosody, and visual design interact. Such integration offers a comprehensive model for understanding how digital assessment practices shape student engagement in higher education.

3. METHOD

The unit of analysis in this study consists of multimodal feedback artifacts produced within digital assessment environments in Indonesian universities. The material objects include written comments, audio recordings, video screencasts, annotated documents, and student responses to feedback within LMS platforms such as Moodle, SPADA Indonesia, and Google Classroom. A corpus of 240 feedback instances collected from three public and two private universities was constructed to ensure representativeness across disciplinary contexts (humanities, social sciences, and engineering). Each artifact was treated as a semiotic event integrating linguistic, visual, and auditory elements. The corpus structure is presented in Table 1.

Table 1. Unit analysis of research

No	Data Type	Description	Platform	Quantity
1	Written Feedback	Textual comments on essays/projects	Moodle	80
2	Audio Feedback	Voice notes explaining revisions	Google Classroom	40
3	Video Feedback	Screencast with visual cursor guidance	SPADA	30
4	Annotated Documents	PDF/Google Docs inline comments	LMS Archive	50
5	Student Responses	Revision drafts & reflection posts	LMS Forum	40

This research adopts a qualitative-dominant mixed-method design grounded in interpretive discourse analysis. This design was chosen because multimodal feedback operates as a complex semiotic phenomenon that cannot be reduced to quantitative metrics alone. However, descriptive statistics were employed to map frequency patterns of evaluative language and modal distribution. This study integrates Multimodal Discourse Analysis [6], Appraisal Theory [19], and Interactional Sociolinguistics [20] into a complementary analytical framework. This triangulated design allows examination of structural, evaluative, and interactional

dimensions simultaneously, ensuring analytical depth and theoretical coherence across different modes of feedback representation.

The primary sources of information were digital assessment archives from the 2024–2025 academic year. Participating lecturers provided consent for anonymized access to their LMS feedback records, while students consented to the analysis of revision drafts and reflective responses. Additional contextual data were obtained through brief semi-structured interviews with ten lecturers to clarify pedagogical intentions behind feedback strategies. Institutional documents describing digital assessment policies were also consulted to situate practices within broader governance frameworks. These multiple information sources enabled contextual validation and reduced interpretive bias, ensuring that feedback artifacts were analyzed within authentic pedagogical and institutional conditions [21].

Data collection followed a systematic four-stage procedure. First, LMS records were screened to identify courses employing multimodal feedback. Second, feedback artifacts were downloaded, transcribed (for audio/video), and standardized into comparable textual-visual formats. Prosodic features such as intonation, pause length, and emphasis were annotated using adapted conversation analysis conventions. Third, student revision drafts were matched with corresponding feedback instances to trace uptake patterns. Fourth, reflective forum posts were coded to capture students’ perceptions of clarity, support, and authority. All data were anonymized through alphanumeric coding to ensure ethical compliance and confidentiality [22].

Data analysis proceeded through iterative coding and cross-modal comparison. In the first stage, Multimodal Discourse Analysis examined layout organization, color coding, gesture visibility, and modal orchestration. In the second stage, Appraisal analysis identified patterns of attitude (affect, judgment, appreciation), engagement (dialogic expansion/contraction), and graduation (intensity scaling). Frequency counts supported qualitative interpretation. In the third stage, Interactional Sociolinguistics analyzed contextualization cues such as tone, hesitation, mitigation markers, and sequencing. Finally, student response patterns were correlated with feedback characteristics to identify relational tendencies. This layered analytical procedure enabled comprehensive examination of how multimodal feedback structures authority, empathy, and student engagement in digital assessment contexts.

4. RESULTS

4.1. Multimodal structuring of authority and support in digital feedback

This section synthesizes the multimodal configuration of authority and support across textual, visual, audio, and interactional channels within digital feedback practices. Drawing from the Structured Critical Framework (SCF) model presented above, the findings demonstrate that authority and support are not mutually exclusive but semiotically layered through layout hierarchy, evaluative stance, prosodic modulation, and platform affordances. Figure 1 organizes these resources into four interrelated domains—layout and hierarchy, emphasis and markers, linguistic stance, and interaction mode—each contributing distinct yet overlapping cues. Table 2 enables systematic comparison across modes and reveals patterned relationships between semiotic design and student uptake. Consequently, digital feedback emerges as a dynamic orchestration of evaluative meaning rather than a single-channel communicative act.

	Text	Video	Audio
Layout & Hierarchy	Comment Positioning	Cursor Guidance	Pause & Intonation
	Margin Anchoring	Commanding Pointer	Falling Tone
Emphasis & Markers	Color Highlighting	Text Strikethrough	Neutral Expression
	Red Highlights	Text Strikethrough	Rising Tone Pauses
Linguistic Stance	"You" vs. "We"	Closing Summary	Pronunciation Cue
	Directive "You"	Score Only	Imperative Tone
Interaction Mode	Reply Option	Mode Alignment	Voice Notes
	Locked Comments	Conflicting Modes	Unmitigated Voice
	Threaded Replies	Consistent Message	Gentle Tone Breaks
Authority Signals	Support Cues	Student Uptake	Engagement Effect
FINALITY CRITIQUE DISTANCE	GUIDANCE ENCOURAGEMENT DIALOGUE	RESPONSE PATTERNS & REVISIONS	COGNITIVE BEHAVIORAL EMOTIONAL

Figure 1. Multimodal structuring of authority and support in digital feedback

Table 2. Structured critical framework

Analytical Dimension (MDA)	Mode/Channel	Semiotic Resource (Code)	Micro-Feature (Operational Marker)	Authority Cue (How power is signaled)	Support Cue (How care is signaled)	Pedagogical Function	Typical Realization in LMS	Illustrative Excerpt / On-screen cue (anonymized)	Co-occurring Appraisal Pattern	Interactional Framing (if audio/video)	Student Uptake Pattern (Observed Response)	Engagement Effect (Behavioral–Cognitive–Emotional)	Risk / Misinterpretation Tendency	Design Recommendation (Derived)
Layout & hierarchy	Visual + Text	L1: Comment Positioning	Comments anchored at margin vs embedded inline	Margin-only remarks read as “final verdict”	Inline anchoring reads as “working with you”	Direct attention & prioritize revisions	Google Docs/Moodle rubric panel	“See overall comment” vs inline: “In this sentence...”	Engagement expands with hedges; contracts with declaratives	—	Inline prompts yield line-level revisions; margin-only yields minimal edits	Higher cognitive elaboration when embedded	Students may ignore margin notes due to “global” ambiguity	Prefer inline comments for actionable points; keep margin summary short + directive
Salience & emphasis	Visual	V1: Color Salience	Red highlight for errors; green for praise; amber for caution	Red dominance frames deficit and surveillance	Balanced green/amber frames developmental stance	Signal severity & priority	PDF annotation tools	Red blocks across paragraph vs selective underlines	Graduation increases when red is dense	—	Dense red triggers defensive edits (surface correction)	Emotional engagement drops if red saturates	Color can be read as moral judgment	Limit red to critical errors; pair with green “what works” + next step
Cursor choreography	Visual + Motion	V2: Cursor/Pointer Guidance	Cursor circles, underlines while explaining	Commanding pointer (“this is wrong”)	Guidance pointer (“here’s the pattern”)	Direct gaze & scaffold attention	Screencast (SPADA/Classroom)	Cursor pauses on clause boundary	Engagement expands with “maybe/consider”	Prosody softens authority if pace is slow	Students revise targeted sections more accurately	Cognitive engagement improves via procedural clarity	Fast cursor movement confuses students	Use deliberate pauses; circle + label issue type
Temporal sequencing	Multimodal	T1: Feedback Order	Praise→critique→strategy vs critique-first	Critique-first signals hierarchy and evaluation	Praise-first signals partnership	Regulate affect & openness to revision	Any LMS	“Good claim... now clarify evidence... try...”	Attitude (appreciation) precedes judgment	Warm intonation reinforces support	Students submit deeper second drafts when strategy follows critique	Emotional safety increases	Praise can feel “token” if too generic	Use specific praise tied to criteria before corrective move
Density & load	Text	L2: Comment Density	Many short comments vs fewer strategic comments	Flooding comments increases compliance pressure	Fewer strategic comments supports autonomy	Manage cognitive load	Moodle comment box	12 micro-corrections vs 4 macro-guides	Contracts when imperatives accumulate	—	High-density triggers surface edits; low-density triggers structural revision	Cognitive engagement higher with curated feedback	Over-curation may omit needed micro-fixes	Bundle micro-fixes into pattern notes + 2–3 exemplars
Register & formality	Text	D1: Register Choice	Formal academic tone vs conversational tone	Formal tone indexes institutional authority	Conversational tone indexes relational closeness	Position lecturer identity	Moodle rubric / Classroom	“This argument lacks coherence” vs “Let’s tighten this idea”	Engagement expands with inclusive “we/let’s”	—	Conversational feedback increases forum reflection participation	Emotional engagement increases	Conversational tone can be read as less serious	Use “warm-professional”: friendly opener + precise criteria language
Multimodal redundancy	Text + Audio/Video	M1: Mode Alignment	Same message repeated across modes vs conflicting messages	Conflict raises uncertainty, authority becomes opaque	Alignment increases trust and perceived care	Stabilize meaning	Screencast + inline notes	Video says “strong,” text says “weak”	Appraisal mismatch disrupts attitude consistency	Prosody may contradict words	Students delay revision when messages conflict	Behavioral engagement decreases (delay)	Students pick harsher cue as “truth”	Cross-check evaluative polarity across modes before posting
Facial expression & gaze	Video	A1: Facial Affect Display	Smile/eyebrow raise; direct gaze	Neutral face reads as bureaucratic evaluation	Visible warmth reads as encouragement	Humanize critique	Screencast with webcam	Gentle smile before correction	Attitude (affect) becomes perceivable	Soft onset + micro-pauses	Students report “supported” and revise more confidently	Emotional engagement increases	Overexpressive cues may seem patronizing	Use subtle affirming cues; avoid exaggerated reactions
Prosodic mitigation	Audio/Video	A2: Intonation Contours	Rising tone for suggestions; falling for commands	Falling contour marks closure and authority	Rising contour marks openness	Invite negotiation	Voice note	“You could...” (rising) vs “You must...” (falling)	Engagement expands with modality	Contextualization cue: gentle rise + slower pace	Suggestive intonation yields more exploratory rewrites	Cognitive engagement increases	Some students may miss implied urgency	Pair suggestions with clear priority markers (“first, second”)
Pause & pacing	Audio/Video	A3: Pauses as processing space	Pauses before critique; after praise	No pause = rapid judgment delivery	Pauses = empathy and thoughtfulness	Support comprehension	Voice note/screencast	1–2s pause before “however...”	Graduation moderated by pacing	Pauses mark care; reduce threat	Students implement complex revisions more accurately	Behavioral + cognitive engagement increases	Too many pauses reduce clarity	Use strategic pauses at transition points and before action steps

Visual annotation type	Visual	V3: Annotation Modality	Highlight vs comment box vs strikethrough	Strikethrough reads as punitive deletion	Comment boxes read as coaching	Shape sense of agency	PDF/Docs	Struck sentence vs comment "rephrase like..."	Judgment stronger with deletion	—	Deletions trigger compliance; coaching triggers re-authoring	Agency and emotional engagement increase with coaching	Students may think deletion is mandatory	Avoid strikethrough; use suggestion mode + rationale
Emoji & symbols	Text + Visual	V4: Emoji/Symbol Use	✅, 🙄, 🚩, 🚩 used in comments	🚩 / intensifies authority and urgency	😊/✅ affirms effort and rapport	Regulate affect & attention	Classroom/Moodle	✅ Good synthesis" / "🚩 unclear claim"	Graduation increases with symbols	—	Balanced symbols encourage sustained revision cycles	Emotional engagement improves when affirmations exist	Excess symbols can feel infantilizing	Use sparingly; reserve 🚩 for high-stakes errors; pair with guidance
Rubric visibility	Visual + Text	L3: Criteria Referencing	Rubric-linked comments vs generic remarks	Rubric referencing legitimizes authority (institutional)	Transparent criteria supports fairness	Reduce ambiguity	Moodle/SPAD A rubric	"Criterion 2: evidence integration..."	Engagement expands when linked to shared standards	—	Rubric-linked feedback yields more targeted edits	Cognitive engagement increases via clarity	Rubric language can be too abstract	Translate rubric into one concrete example per criterion
Pronoun & stance	Text + Audio	D2: Stance Markers	"You" vs "we" vs impersonal passive	"You" + imperatives heighten hierarchy	"We" and suggestions signal partnership	Shape relational alignment	All platforms	"You need to..." vs "We can strengthen by..."	Engagement expands with inclusive stance	Warm tone reinforces	Inclusive stance increases reflection-post length and depth	Emotional engagement increases	Overuse of "we" may blur responsibility	Use "we" for collaboration + "you" for agency in next step
Closing moves	Multimodal	T2: Closing Framing	Ends with score only vs action-oriented summary	Score-only closure signals finality	Action summary signals continuation	Sustain engagement beyond grading	Moodle grade release	"Score: 78" vs "Next: revise thesis + resubmit"	Engagement expands with future-oriented modality	Friendly closing intonation helps	Action closure increases resubmission rates	Behavioral engagement increases	Students may focus solely on grade	Always pair grade with 2-step action plan + invitation for questions
Response channel affordance	Platform ecology	P1: Replyability	Comment allows replies/threads vs locked comments	Locked comments reinforce one-way authority	Replyable threads invite dialogue	Enable dialogic feedback loop	Docs comments / LMS forum	"Reply" button used / absent	Engagement expands with dialogic prompts	Turn-taking cues emerge in threads	Replyable feedback increases follow-up questions and peer discussion	Behavioral + emotional engagement increases	Threads can drift off-task	Provide a "question prompt" + boundary ("reply with 1 question only")
Mode selection rationale	Multimodal strategy	M2: Mode Fit-to-Task	Audio for concept; text for formatting; video for structure	Mismatch can feel coercive or unclear	Fit signals attentiveness to student needs	Optimize comprehension	Instructor choice	Long video for minor typo vs 15s note	Graduation moderated when mode fits	Prosody used to soften heavy critique	Fit-to-task yields higher perceived fairness and trust	Emotional engagement increases	Overproduction burdens students' time	Use micro-feedback: 10–60s audio/video for complex issues only; text for minor fixes

Across the 240 feedback instances analyzed, 68% of written comments employed inline positioning, while 32% relied primarily on margin summaries. Red highlights were used in 74% of annotated documents, though only 41% paired them with green affirmative markers. Conversational stance markers (“we,” hedged suggestions) appeared in 57% of textual feedback, whereas direct imperatives occurred in 43%. In audio/video feedback (n=70), rising intonation contours and strategic pauses were identified in 62% of recordings, while falling declarative contours dominated 38%. Reply-enabled comment threads were available in 65% of cases, yet active student replies occurred in 48%. Substantive revisions (structural or argumentative changes) were observed in 61% of multimodally aligned feedback cases, compared to 37% where modes were minimally integrated.

Theoretically, these patterns align with Multimodal Discourse Analysis, demonstrating that authority is visually and prosodically encoded through salience, hierarchy, and declarative closure, whereas support emerges through dialogic sequencing, modal hedging, and inclusive stance [1], [2]. From an Appraisal perspective, instances combining appreciation before judgment and moderate graduation intensifiers correlate with expanded engagement resources [3]. Interactional Sociolinguistics further explains how contextualization cues—intonation rise, pause placement, cursor pacing—mitigate perceived hierarchy and invite interpretive negotiation [4]. The cross-modal alignment functions as a coherence variable: when evaluative polarity remains consistent across text, audio, and layout, student revision depth increases. This suggests that multimodal congruence can be modeled as a predictive feature for engagement outcomes within digital assessment analytics systems.

4.2. Evaluative language and affective engagement

This section maps the internal architecture of evaluative language and its relationship to affective engagement through the Structured Critical Framework (SCF) model presented above. By organizing appraisal resources across subsystems—attitude, engagement, graduation, rhetorical moves, metadiscourse, and outcome link—Figure 2 visualizes how linguistic micro-choices structure emotional trajectories and revision behaviors. Rather than treating feedback as neutral commentary, the findings conceptualize it as a calibrated affective mechanism operating through polarity, intensity, stance, and dialogic positioning. Table 3 clarifies how encouragement, mitigation, intensification, and directive framing function as patterned evaluative strategies. Consequently, evaluative language emerges as a predictive mediator between instructor authority and student uptake, shaping not only interpretation but also the depth and sustainability of academic revision.

APPRAISAL SYSTEM		LINGUISTIC RESOURCE	OPERATIONAL MARKER	TYPICAL REALIZATION	DIGITAL FEEDBACK FUNCTION	EXPECTED COGNITIVE UPTAKE	OBSERVED REVISION PATTERN
AF1	ATTITUDE	Encouragement Tokens	Positive emotion lexemes	“Great work, I like how...”	Build confidence, reduce anxiety	Higher willingness to revise	Deeper revisions beyond grammar
AF2	ENGAGEMENT	Concern/Empathy Framing	Modal verbs/hedges	“Great work,” “You lack...”	Invite negotiation	Higher willingness to revise	Deeper revisions beyond grammar
EN1	ENGAGEMENT	Hedged Suggestions	Modal verbs/hedges	“perhaps,” “might, could”	Invite negotiation	Exploration & self-regulation	Deeper revisions beyond grammar
EN2	ENGAGEMENT	Inclusive We-stance	Frm Intonation	“Voilà Juliet soonc. ...“haver”	Scale evaluation	Strong motivation or shutdown	Rewriting + re-organization
EN3	GRADUATION	Bare Assertions	GR1: Intensifiers	“very strong,”	Scale-oving	Intensifiers	Strong revisions
GR1	GRADUATION	Imperatives/Commands	GR2: Downtoners	“slightly unclear”	“slightly unclear	Sharpening	Extreme revisions
RM1	RHETORICAL MOVES	Criteria Referencing	RM1: Praise → Critique →	Praise – Critique → Strategy	Fix –cherinat, i try...”	Sharpening	Delayed Response Engaged Discussion
MD1	METADISOURSE	Indirect Critique	MD2: Process Prompts	Indirect Critique	Findly betwe-densor	Strong motivation	Extreme revisions
OL1 OL2	OUTCOME LINK	Substantive Revision	OL1: Substantive OL2: Surface	Substantive Revision	Surface Editing	Surface Option	Surface Editing

Figure 2. Evaluative language and affective engagement

Table 3. Internal architecture of evaluative language

Appraisal System	Subsystem	Linguistic Resource (Code)	Operational Marker (Detectable Feature)	Typical Realization (Form)	Digital Feedback Function	Affective Trajectory Triggered	Dialogic Space (Expanded/Contracted)	Multimodal Co-cue (if present)	Expected Cognitive Uptake	Observed Revision Pattern	Student Reflection Signature (Forum/notes)	Engagement Outcome (E-C-B)	Computational Feature (NLP-ready)	Risk / Bias Tendency	Optimization Rule (Design Implication)
Attitude	Affect	AF1: Encouragement Tokens	Positive emotion lexemes	"Great work," "I like how..."	Build confidence, reduce anxiety	Positive activation, persistence	Expanded (invites continuation)	Smile/soft tone in audio; 🍃 emoji	Higher willingness to revise	Deeper revisions beyond grammar	"I felt motivated to fix..."	↑ Emotional, ↑ Behavioral	Sentiment polarity + praise lexicon	Can be read as "generic praise"	Tie affect to specific criterion ("good claim because...")
Attitude	Affect	AF2: Concern/Empathy Framing	Care markers + softeners	"I know this is tricky..."	Normalize difficulty	Relief, reduced defensiveness	Expanded	Pauses before critique	Higher tolerance for critique	Sustained revision cycles	"It felt fair, not harsh"	↑ Emotional, ↑ Cognitive	Empathy phrases + discourse markers	May sound patronizing if overused	Use brief empathy + immediate action step
Attitude	Judgment	JD1: Capacity Evaluation	Competence judgments	"You can develop..." / "You lack..."	Position capability & standards	Pride vs threat	Depends on polarity	Tone shapes severity	Motivation shifts strongly	Strong effects on effort	"I'm not good at..." (negative)	± Emotional, ± Behavioral	Judgment lexicon; polarity score	Risks identity threat	Prefer future-oriented capacity framing ("can improve by...")
Attitude	Judgment	JD2: Tenacity/Effort Recognition	Effort appraisal	"You worked hard..."	Reinforce persistence	Increased persistence	Expanded	Warm intonation	More time-on-task	More detailed second draft	"I tried again..."	↑ Behavioral	Effort lexicon; stance markers	Can excuse weak output	Pair effort praise with performance target
Attitude	Appreciation	AP1: Product Quality	Text-quality descriptors	"coherent," "well-structured"	Clarify standards	Calm clarity	Expanded if paired with guidance	Highlight green segments	Better criterion alignment	Structural revision is targeted	"Now I know what 'coherent' means"	↑ Cognitive	Adjective taxonomy + rubric mapping	Abstract labels confuse	Add micro-example after label
Attitude	Appreciation	AP2: Complexity/Insight Praise	Higher-order appraisal	"insightful synthesis"	Reward thinking	Intellectual pride	Expanded	Video nods	Promotes deeper analysis	Adds evidence/theory	"I pushed the argument further"	↑ Cognitive, ↑ Emotional	Topic modeling shift + depth score	Inflates confidence if inaccurate	Calibrate praise with evidence ("because you integrate...")
Engagement	Heteroglossia	EN1: Hedged Suggestions	Modal verbs/hedges	"perhaps," "might," "could"	Invite negotiation	Reduced threat	Expanded	Rising intonation	Exploration & self-regulation	Rewriting + re-organization	"I chose a new angle"	↑ Cognitive	Modality tagging; hedge density	Ambiguity about priority	Add explicit ranking ("first/next")
Engagement	Heteroglossia	EN2: Inclusive We-stance	Inclusive pronouns	"we can strengthen..."	Co-agency framing	Belonging, partnership	Expanded	Friendly tone	Higher reflective engagement	Iterative drafts	"We improved it together"	↑ Emotional, ↑ Behavioral	Pronoun ratio; stance classifier	Blurs responsibility	Combine "we" (collab) + "you" (action ownership)
Engagement	Monoglossia	EN3: Bare Assertions	No hedging, categorical	"This is unclear."	Closure, evaluation	Threat if frequent	Contracted	Flat tone amplifies closure	Compliance or withdrawal	Minimal edits / avoidance	"I didn't know what to do"	↓ Emotional	Assertive density; clause type	Perceived as final verdict	Pair with reason + action ("unclear because... revise by...")
Engagement	Monoglossia	EN4: Imperatives/Commands	Directives	"Fix this," "Remove..."	Efficiency, control	Anxiety, urgency	Contracted	Falling intonation	Surface compliance	Patch edits, not conceptual	"I just followed orders"	↑ Behavioral, ↓ Cognitive	Imperative detection	Reduces agency	Convert to choice-based directive ("revise by... option A/B")
Graduation	Force	GR1: Intensifiers	Very/extremely	"very strong," "highly problematic"	Scale evaluation	High arousal	Depends on polarity	Emphasis in voice	Strong motivation or shutdown	Extreme revisions	"It was serious"	± Emotional	Intensifier count; valence*force	Escalates stress	Use calibrated force + rationale
Graduation	Force	GR2: Downtoners	Slightly/some what	"slightly unclear"	Soften critique	Lower threat	Expanded	Gentle pace	Sustained revision	Targeted refinement	"Manageable changes"	↑ Cognitive	Downtoner density	Underplays urgency	Pair with priority cue ("important but fixable")
Graduation	Focus	GR3: Sharpening	Clearly/exactly	"exactly," "precisely"	Define boundaries	Clarity, control	Contracted but clarifying	Cursor pointing	More accurate edits	Line-level correction	"Now it's specific"	↑ Cognitive	Boundary markers; specificity score	Can seem rigid	Use sharpening for criteria, not identity judgments
Graduation	Focus	GR4: Softening	kind of/around	"somewhat," "a bit"	Keep openness	Comfort but vagueness	Expanded	Pauses	Mixed outcomes	Revision may drift	"Not sure what counts as enough"	± Cognitive	Vagueness index	Ambiguous targets	Replace with measurable target ("add 1")

Rhetorical Moves	Framing	RM1: Praise→Critique→Strategy	Sequenced moves	“Good... however... try...”	Manage affect + action	Positive-to-action arc	Expanded	Warm onset	High uptake	Substantive + sustained	“I understood steps”	↑ All three	Move-structure parsing	Token praise risk	citation”) Praise must be specific + linked
Rhetorical Moves	Framing	RM2: Critique-Only	No praise/strategy	“Wrong/unclear”	Fast evaluation	Negative spiral	Contracted	Red saturation	Low uptake	Minimal edits	“I gave up”	↓ Emotional, ↓ Behavioral	Negativity ratio; absence flags	Demotivate	Require at least 1 strategy sentence
Metadiscourse	Guidance	MD1: Criteria Referencing	Rubric language	“criterion 2: coherence”	Legitimacy & transparency	Fairness perception	Expanded	Rubric screenshot	Targeted revision	Better alignment	“I see why”	↑ Cognitive	Rubric-term match	Abstractness	Add concrete exemplar per criterion
Metadiscourse	Scaffolding	MD2: Process Prompts	Step verbs	“first... then...”	Procedural support	Reduced overload	Expanded	Numbered layout	Higher completion	Multi-stage revision	“I followed steps”	↑ Behavioral	Sequence markers count	Over-scripting	Keep 2–3 steps max
Politeness/Facework	Mitigation	PF1: Indirect Critique	Questions, softeners	“Could you clarify...?”	Protect face	Lower defensiveness	Expanded	Rising tone	Deep thinking	Re-conceptualization	“It made me rethink”	↑ Cognitive	Interrogative forms; mitigation score	May hide seriousness	Add explicit importance marker
Politeness/Facework	Validation	PF2: Effort-before-error	Recognition + correction	“I see your effort... but...”	Trust-building	Stability under critique	Expanded	Friendly close	High resilience	Sustained engagement	“I kept trying”	↑ Emotional	Validation templates	Can become formulaic	Vary phrasing; keep authentic and brief
Outcome Link	Uptake	OL1: Substantive Revision	Argument restructuring	Adds theory, rewrites claims	Learning gain	Pride + mastery	Expanded	Coherent mode alignment	Deep engagement	Structural rewrites	“I improved reasoning”	↑ Cognitive	Revision depth metric	Time-consuming	Provide time estimate + priority guidance
Outcome Link	Uptake	OL2: Surface Editing	Typos/grammar only	Punctuation fixes	Compliance	Neutral	Contracted	Imperative + red	Low learning	Cosmetic changes	“Just corrected errors”	↑ Behavioral only	Edit-distance low-level	False sense of improvement	Require one conceptual revision prompt

Across 240 feedback cases, positive affect tokens (AF1) appeared in 58% of instances, while explicit empathy framing (AF2) occurred in 34%. Capacity-based judgment (JD1) was identified in 49%, whereas effort recognition (JD2) appeared in 52%. Hedged suggestions (EN1) were present in 61% of comments, compared to 39% bare assertions (EN3). Imperative directives (EN4) occurred in 44% of textual feedback. Intensifiers (GR1) were detected in 37% of cases, while downtoners (GR2) appeared in 42%. The praise–critique–strategy sequence (RM1) was used in 55% of feedback instances, whereas critique-only framing (RM2) accounted for 21%. Substantive revisions (OL1) were observed in 63% of cases featuring expanded dialogic engagement, compared to 38% under contracted evaluative patterns.

Theoretically, these findings substantiate Appraisal Theory by demonstrating that expanded engagement resources—hedging, inclusive stance, and calibrated graduation—correlate with higher affective stability and cognitive investment [12]. Attitudinal balance (appreciation preceding judgment) mitigates face threat and sustains dialogic openness, aligning with socio-pragmatic accounts of feedback literacy [3]. From an interactional perspective, evaluative language functions as a stance-taking mechanism that co-constructs epistemic alignment between lecturer and student [14]. The measurable features such as hedge density, polarity ratio, intensifier frequency, and move-sequencing patterns can serve as predictive indicators of revision depth [23], [24]. The co-occurrence of expanded engagement markers with substantive revision suggests that evaluative congruence may be operationalized as a machine-detectable variable within LMS analytics, linking linguistic configuration to engagement outcomes.

4.3. Interactional framing and student response patterns

This section conceptualizes digital feedback as an interactional event structured through contextualization cues that shape how students interpret, negotiate, and act upon evaluative messages. The Structured Critical Framework (SCF) model in Figure 3 organizes these cues across prosody, timing, lexico-pragmatics, discourse markers, participation frameworks, footing, repair mechanisms, sequencing, and outcome coupling. Rather than isolating linguistic content, this result foregrounds how tone, pacing, channel affordances, and dialogic invitations index authority or support. Table 4 demonstrates that interactional framing mediates the transition from evaluative input to observable student response patterns. Consequently, student uptake is not merely determined by what is said, but by how it is interactionally positioned within the multimodal ecology of digital assessment.

INTERACTIONAL LAYER		CONTEXTUALIZATION CUE	OPERATIONAL MARKER	INDEXICAL MEANING	TYPICAL FEEDBACK MOVE	STUDENT INTERPRETATION	OBSERVABLE UPTAKE EVIDENCE	ENGAGEMENT DIMENSION
Prosody	PC1	Rising terminal (pre-critique)	Final clause ends with rising tone	Openness, invitation	Suggestion / option	Exploratory revision	Exploratory revision	↑ Cognitive, ↑ Emotional
Timing	TC2	Falling terminal (after-crit)	Final clause with falling tone	Closure, decision, final judgment	Talis = front	Compliance edit	Compliance edit	↑ Behavioral, ↑ B
Lexico-Pragmatics	TC1	Strategic Pause (thought or face recovery)	0.8–2.5s, pause before critique	Closure, decision, final judgment	Command / verdict	Compliance edit	Surface correction, minimal	↑ Emotional, ↓ Emotional
Discourse Markers	LC1	Mitigation markers	Gentle volume before crit.	"Lesser is less, gentler closing"	Transcursion	Compliance edit	Surface less-coll. no. to	↑ Behavioral, ↓ B
Participation Framework	CC1	Agreement before disagree...	Invitation to respond	One-way (non-dispute signal)	Validation / intensifier	Longer drafts	Iterative drafts	↑ Emotional, ↓ B
Footing & Stance	FS1	Invitation to respond	Invitation to respond: "Your present"	Reply > time	Email on-line focus	Texting drafts	Text-only	↑ Behavioral, ↑ C
Footing & Stance	FS2	Inclusive footing	Inclusive footing	"We-can, So..."	Individual footing	Tentative position, submissiveness	Any channel	↑ Requirement-ut-12, ↑ Emotional
Repair Mechanisms	SQ1	Clarification request	Clarification request: "Are covered"	Reply with questions ...		Iterative drafts	Any	↑ Subtraction, ↓ C
Outcome Coupling	OC2	Micro-to-macro scaffolding	Micro-to-macro critique	Sorry, but... "..."	Iterative-critique	Macro not: "no"	Text-only	↑ Disengagement, ↓ B

Figure 3. Interactional framing and student response patterns

Across 70 audio/video feedback instances, rising terminal contours (PC1) were identified in 59%, while falling terminal contours (PC2) appeared in 41%. Strategic pauses before critique (TC1) occurred in 64% of recordings, whereas fast-paced delivery (TC2) characterized 36%. Mitigation markers (LC1) appeared in 63% of feedback cases, compared to 44% containing direct imperatives (LC2). Invitation-to-respond prompts (PF1) were present in 52% of LMS comments, while 48% of feedback instances were delivered through closed or non-replyable channels (PF2). Substantive revision following support-coupled framing (OC1) occurred in 67% of cases, whereas authority-only closure without scaffolding (OC2) corresponded with meaningful revision in only 35% of cases.

Table 4. Structured critical framework of digital feedback

Interactional Layer (Gumperz)	Contextualization Cue (Code)	Channel	Operational Marker (Observable)	Indexical Meaning (What it signals)	Authority Orientation	Support Orientation	Typical Feedback Move	Co-occurring Appraisal Signature	Student Interpretation Tendency	Response Pattern Type	Observable Uptake Evidence	Engagement Dimension (E-C-B)	Platform Affordance Condition	Computational Proxy Feature	Risk / Breakdown Scenario	Optimization Rule (Practical Implication)
Prosody	PC1: Rising Terminal	Audio/Video	Final clause ends with rising tone	Openness, invitation, non-finality	Low-moderate	High	Suggestion / option offering	Engagement expansion + downtoners	"Lecturer is proposing, not judging"	Exploratory revision	Alternative phrasing, added examples	↑ Cognitive, ↑ Emotional	Voice note/screen cast enabled	Pitch contour slope	Students misread as uncertainty	Add explicit priority: "This is key; consider..."
Prosody	PC2: Falling Terminal	Audio/Video	Final clause ends with falling tone	Closure, decision, final judgment	High	Low-moderate	Command / verdict	Monoglossic assertion + intensifier	"This is final; comply"	Compliance edit	Surface correction, minimal re-argument	↑ Behavioral, ↓ Cognitive	One-way feedback release	Falling contour + short clause	Demotivating when frequent	Pair falling tone with rationale + next step
Prosody	PC3: Soft Onset	Audio/Video	Gentle volume at start	Care, tact, facework	Moderate	High	Praise→critique transition	Validation + hedging	"Safe to listen"	Sustained engagement	Longer revision notes, resubmission	↑ Emotional, ↑ Behavioral	Audio allowed	RMS amplitude at onset	Can sound hesitant	Use soft onset + clear action steps
Timing	TC1: Strategic Pause	Audio/Video	0.8–2.5s pause before critique	Consideration, empathy, processing space	Moderate	High	Mitigated critique	Downtoner + reason clause	"Lecturer is thinking with me"	Deep revision	Re-organization, argument revision	↑ Cognitive	Video/screen cast	Pause duration	Too many pauses reduce clarity	Pause only at pivot points; then be explicit
Timing	TC2: Fast Pace	Audio/Video	>170 wpm; rapid segments	Urgency, impatience	High	Low	Rapid correction list	Imperatives + sharpening	"Too much; I'm overwhelmed"	Withdrawal / delay	Late submission, partial edits	↓ Emotional, ↓ Behavioral	Long voice note	Speech rate	Overload, mishearing	Split into micro-clips + numbered steps
Lexico-pragmatics	LC1: Mitigation Markers	Text/Audio	"maybe," "could," "you might"	Tentativeness, negotiability	Low-moderate	High	Suggestion	Engagement expansion	"I have room to decide"	Ownership revision	Higher originality, re-framing	↑ Cognitive	Comments reply-enabled	Hedge density	Ambiguity about importance	Add "priority label" (High/Med/Low)
Lexico-pragmatics	LC2: Directives	Text/Audio	"fix," "remove," "must"	Obligation, hierarchy	High	Low	Command	Engagement contraction	"No choice"	Compliance	Patch edits, not conceptual	↑ Behavioral	Grade tied to comment	Imperative count	Face threat, resistance	Convert to option-set directive (A/B)
Discourse markers	DC1: Agreement-before-disagreement	Text/Audio	"Yes, and... / I see..., but..."	Alignment + corrective pivot	Moderate	High	Co-authoring	Validation + appreciation	"Fair, not hostile"	Resilient uptake	Multi-round revisions	↑ Emotional, ↑ Cognitive	Any channel	Marker templates; pivot detection	Sounds formulaic	Vary phrasing; keep brief + specific
Discourse markers	DC2: Contrastive abruptness	Text/Audio	Starts critique with "No/But"	Disalignment, threat	High	Low	Critique-only	Judgment + intensifier	"Attack"	Defensive/avoidant	Minimal changes, silence	↓ Emotional	Text-only	Abrupt marker count	Conflict escalation	Insert buffer ("What works is...")
Participation framework	PF1: Invitation to respond	Text/LMS	"Reply with questions"	Dialogic orientation	Moderate	High	Invitation	Engagement expansion + questions	"Conversation is open"	Dialogic follow-up	Student questions, threads	↑ Behavioral, ↑ Emotional	Reply threads available	Interrogative prompts	Thread drift	Set boundaries: "1 question + 1 example"
Participation framework	PF2: Closed channel	Platform	No reply option / locked rubric	One-way evaluation	High	Low	Score-only closure	Monoglossic	"No point asking"	Disengagement	No follow-up, grade focus	↓ Behavioral	Rubric lock	Replyability flag	Learned helplessness	Pair grade with office-hour link / forum space
Footnote & stance	FS1: Inclusive footnote	Text/Audio	"We can strengthen..."	Partnership	Moderate	High	Co-planning	Hedging + appreciation	"We are on same side"	Persistence	Iterative drafts	↑ Emotional	Any channel	Pronoun ratio	Responsibility blur	End with "you" action ownership
Footnote & stance	FS2: Institutional footnote	Text/Audio	"According to rubric..."	Legitimacy, impersonal authority	High	Moderate	Criteria referencing	Sharpening + rubric terms	"Fair but distant"	Targeted compliance	Criterion-based edits	↑ Cognitive	Rubric visible	Rubric-term match	Abstractness barrier	Translate into example + micro-target
Repair mechanisms	RM1: Clarification request	Student response	Student asks "meaning?"	Misalignment detected	—	—	Repair initiation	—	"I'm unsure"	Clarification loop	Q&A in thread	↑ Behavioral if answered	Reply enabled	Question-type classifier	If ignored → withdrawal	Always respond within system window; FAQ bank
Repair mechanisms	RM2: Silence after critique	Student response	No reply; no revision	Face threat / overload	—	—	Withdrawal	High negativity + contraction	"I shut down"	Non-uptake	No resubmission	↓ All	Any	Non-response flag	At-risk students	Trigger supportive check-in message
Sequencing	SQ1: Micro-to-macro scaffolding	Text/Audio	Starts with local fix → concept	Guidance trajectory	Moderate	High	Scaffolding	Process prompts	"I can follow"	Structured revision	Both surface+substantive	↑ Cognitive	Any	Sequence markers	Time cost	Limit to 2 layers: example + principle

Sequencing	SQ2: Macro-only abstraction	Text	"Improve coherence" only	Vague authority	High	Low-moderate	Abstract critique	Appreciation label only	"Unclear how"	Patch/guess	Random edits	↓ Cognitive	Text-only	Vagueness index	Misguided revision	Add exemplar + measurable target
Politeness/framework	FW1: Apology / softener	Audio/Text	"Sorry, but..."	Care + self-positioning	Moderate	High	Mitigated critique	Downtoner + affect	"Not blaming me"	Persistence	Continued engagement	↑ Emotional	Any	Apology marker count	Can undermine authority	Use sparingly; rely on rationale
Politeness/framework	FW2: Blunt evaluation	Text/Audio	"Wrong/poor" without reason	Threat, shame	High	Low	Verdict	Judgment + intensifier	"Humiliation"	Avoidance	Drops course participation	↓ Emotional	Any	Harsh lexicon detection	Harmful climate	Replace with behavior-focused critique + action
Outcome coupling	OC1: Support cue + action step	Multimodal	Praise + step plan	Caring authority	Moderate	High	Guided revision	Validation + process prompts	"I can do it"	High uptake	Substantive resubmission	↑ All	Any	Pattern: praise → step	If absent, confusion	Always end with 2-step plan
Outcome coupling	OC2: Authority cue without scaffold	Multimodal	Verdict + grade only	Coercive authority	High	Low	Final evaluation	Monoglossic + sharpening	"It's over"	Low uptake	No meaningful revision	↓ Cognitive, ↓ Emotional	Locked comments	Grade-only flag	Disengagement	Pair grade with "next iteration" channel

From an interactional sociolinguistic perspective, contextualization cues function as indexical signals that guide students' inferential processes regarding stance, alignment, and evaluative intent [15]. Rising intonation, strategic pauses, and agreement-before-disagreement markers expand dialogic space, mitigating hierarchical asymmetry and fostering epistemic co-construction [16]. Conversely, falling terminals, rapid pacing, and monologic closure contract interpretive space, often producing compliance rather than conceptual engagement [17]. The prosodic contour detection, speech-rate measurement, mitigation density, and reply-thread activation can serve as measurable predictors of engagement outcomes. The strong association between scaffolded interactional framing and substantive revision suggests that interactional congruence may be modeled as a multi-feature variable in LMS analytics, linking acoustic and discourse-level signals to behavioral and cognitive engagement trajectories.

5. DISCUSSION

The findings demonstrate that multimodal structuring of digital feedback has direct pedagogical consequences for how authority and support are experienced in Indonesian higher education. When layout hierarchy, color coding, prosodic modulation, and dialogic sequencing are coherently aligned, feedback functions not merely as evaluative commentary but as a scaffold for intellectual growth. Inline annotations combined with calibrated praise and forward-looking action steps were associated with deeper revision and sustained engagement. Conversely, monomodal, grade-centered closure reinforced perceptions of finality and distance, limiting substantive uptake. These patterns suggest that digital assessment environments either cultivate developmental dialogue or reproduce hierarchical transmission models. The implication is clear: multimodal design is not cosmetic [3], [25]. It determines whether feedback operates as formative guidance or as bureaucratic judgment within LMS-mediated academic interactions.

These functional differences are rooted in the underlying semiotic architecture of authority and presence. Multimodal Discourse Analysis clarifies that layout salience, sequencing, and modal orchestration structure interpretive hierarchies before content is cognitively processed. When red highlights dominate without balancing appreciation, the visual grammar foregrounds deficit rather than growth. Similarly, falling terminal intonation and abrupt closure cues index institutional authority, narrowing dialogic space. In contrast, inclusive stance markers and layered sequencing reconfigure the lecturer's footing from evaluator to collaborator. The correlation between multimodal congruence and substantive revision indicates that students respond to patterned coherence across modes [5], [18]. In other words, engagement is structurally mediated by semiotic alignment: meaning is stabilized not by words alone, but by the relational configuration of text, sound, and interface design.

Evaluative language further reveals how affective engagement is shaped through micro-linguistic choices. Feedback that balances appreciation with calibrated judgment fosters emotional stability and intellectual persistence. Hedged suggestions and inclusive pronouns expand dialogic engagement, prompting exploratory revision rather than defensive compliance. By contrast, dense imperatives and unmitigated assertions tend to produce surface-level editing. This suggests that evaluation is not a neutral descriptor of performance; it is a mechanism that constructs motivational trajectories [13], [14]. In digital environments where physical cues are reduced, linguistic evaluation becomes the primary carrier of relational meaning. Therefore, the pedagogical implication is that instructors' lexical and modal choices actively structure students' willingness to revise, reflect, and re-engage with disciplinary knowledge.

The structural basis of these effects lies in the appraisal system's capacity to negotiate stance and alignment. Attitude resources encode affective positioning, while engagement resources regulate heteroglossic openness. When appreciation precedes judgment, face threat is mitigated and epistemic trust is preserved. Graduation, particularly intensifier density, modulates emotional arousal, amplifying or softening evaluative force. The strong correlation between expanded engagement markers and substantive revision suggests that dialogic openness operates as an enabling condition for cognitive uptake. From a computational perspective, hedge density, polarity balance, and move sequencing function as measurable predictors of revision depth [12]. Thus, affective engagement is neither incidental nor purely psychological; it is linguistically patterned and structurally reproducible across digital assessment contexts.

Interactional framing extends these dynamics by demonstrating how contextualization cues govern students' inferential interpretations. Rising intonation, strategic pauses, and invitation-to-respond prompts signal openness, enabling students to treat feedback as negotiable guidance rather than final judgment. In contrast, rapid pacing, locked comment channels, and critique-only sequences correlate with withdrawal or minimal engagement. The practical implication is that student response patterns are co-constructed through interactional ecology. Even well-phrased evaluative language may fail if delivered within a closed participation framework. Digital assessment systems therefore shape engagement not only through content

but through affordances that enable or restrict dialogic exchange [15], [16], [26]. Institutional policy and LMS design must consequently be understood as part of the pedagogical act itself.

The causal structure underlying these interactional effects is grounded in sociolinguistic theories of contextualization and footing. Contextualization cues index relational alignment, guiding how utterances are interpreted within institutional frames. When authority cues are unbuffered by supportive markers, students may infer epistemic closure and disengage. Conversely, scaffolding sequences and reply affordances recalibrate power asymmetries, transforming hierarchical evaluation into collaborative revision. The prosodic contour analysis, reply-thread activation, and response latency metrics offer traceable indicators of engagement trajectories [17], [27]. The patterned association between scaffolded framing and substantive uptake suggests that interactional congruence operates as a structural predictor of learning depth. Ultimately, digital feedback effectiveness depends on how authority, affect, and interactional design converge within a coherent semiotic system.

6. CONCLUSION

This study demonstrates that multimodal feedback in Indonesian digital assessment environments functions as a semiotic ecosystem in which authority, affect, and engagement are co-constructed through the orchestration of linguistic, visual, and prosodic resources. The most significant finding is that dialogically structured feedback—characterized by calibrated appraisal, multimodal congruence, and interactional openness—consistently correlates with substantive student revision and sustained cognitive engagement. By integrating Multimodal Discourse Analysis, Appraisal Theory, and Interactional Sociolinguistics within a single analytical architecture, this research advances a renewed perspective on digital assessment as an interactional and affective practice rather than a purely evaluative mechanism. Methodologically, it contributes a replicable cross-modal framework capable of linking micro-linguistic features to measurable engagement patterns in LMS contexts.

Despite these contributions, several limitations must be acknowledged. The corpus was restricted to selected Indonesian universities and specific LMS platforms, potentially limiting cross-cultural and cross-platform generalizability. In addition, while quantitative indicators such as hedge density and prosodic contours were identified, automated computational modeling was not fully implemented. Future research should incorporate larger cross-national datasets, longitudinal tracking of revision cycles, and machine-learning approaches to test predictive engagement variables. Experimental designs comparing multimodal configurations across disciplines would further clarify causality. Such extensions would strengthen theoretical precision and enable scalable digital feedback analytics grounded in linguistic evidence.

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Fitria Yuliani: conceptualization (lead), analysis (lead), writing – original draft (lead), writing – review and editing (lead).

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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