Reconstituting Pedagogical Authority in the GenAI Era: Intelligent-TPACK, Deep Learning, and the Ethical-Cultural Knowledge of *Maja* Labo Dahu in Islamic Religious Education

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Article history: Received: Desember 10, 2025 | Revised: Januari 23, 2026 | Available Online: March 27, 2026

Abstract

The diffusion of generative artificial intelligence (GenAI) into classrooms has produced *inverted authority*, a structural gap in which students' digital fluency outpaces teachers' technical mastery, placing particular pressure on Islamic Religious Education (IRE), where the teacher conventionally serves as the primary interpretive authority. No existing framework integrates AI-enabled teaching competence, deep-learning pedagogy, and culturally grounded moral resilience into a single coherent model. This qualitative case study examined how eleven IRE teachers at MAN 2 Kota Bima (West Nusa Tenggara, Indonesia) negotiate these pressures through the Mbojo philosophy of *Maja Labo Dahu*. Following critical-case logic, data were collected via semi-structured interviews, non-participant classroom observation (24 sessions), and an open-ended student survey (n = 93; January–March 2026), and analysed using the Miles–Huberman–Saldaña interactive model. Three findings emerged: pedagogical authority is reconstituted through reverse mentoring grounded in *tawāḍuʿ* (humility), confirmed across 14 of 24 observed sessions; deep-learning pedagogy is operationalised through a "language of technological analogy" mapping *sharīʿah* concepts onto digital metaphors, and embedded within a "Digital Compassion Protocol" aligned with Indonesia's Love-Based Curriculum (KMA 1503/2025); and *Maja Labo Dahu* functions as a dual self-regulation mechanism *dahu* (divine monitoring) and *Maja* (social filtering) governing student digital behaviour beyond institutional perimeters, independently recalled by 53 of 93 respondents. These findings yield the *Intelligent-TPACK-Mbojo* model, which extends Intelligent-TPACK by adding an Ethical-Cultural Knowledge (ECK) layer derived from community-internalized, multigenerational values rather than universal ethical principles. Counter-evidence and conditions for cross-cultural ECK substitutability are addressed explicitly.
Keywords: Intelligent-TPACK; deep learning; *Maja Labo Dahu*; inverted authority; Ethical-Cultural Knowledge.

Introduction

The diffusion of GenAI in schools is outpacing the pedagogical capacity to manage it. Recent evidence shows that AI assistants can erode teachers' pedagogical authority and foster student over-reliance on machine-generated answers,[1] and that students increasingly accept the ethical risks of GenAI as a reasonable trade-off for efficiency.[2] In hybrid chatbot-lecturer settings, students report anxiety about "loss of epistemic authority" without receiving teacher-side resolution strategies.[3] Cooper demonstrates, in a science education context, that ChatGPT tends to provide definitive answers without flagging its source limitations, a pattern that is plausibly generalizable to other subject domains. However, direct replication in IRE settings remains lacking.[4]

Islamic Religious Education (IRE) in Indonesia is particularly exposed to this shift because it has historically relied on teachers as the principal interpreters of religious texts. When students can consult GenAI for *tafsīr*, *fatwā*, or *ḥadīth* interpretation, the authority of IRE teachers is challenged on two fronts: limited algorithmic literacy among teachers and a culture of instant answers among students. Borzanović et al. describe this as "inverted authority", a condition in which students' digital proficiency structurally exceeds teachers' technical fluency.[5] MAN 2 Kota Bima offers a critical case for studying this shift: the madrasah holds an international robotics award (Malaysia, 2024). It has consistent national achievements in science and appropriate-technology competitions, indicating that a significant proportion of its students operate at advanced levels of digital literacy. The principal question is not whether the authority of IRE teachers is weakening, but how they preserve their pedagogical and moral legitimacy in a setting where such asymmetry is most pronounced.

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[1] Jinming Du and Lucas Kohnke, "Repositioning Teachers in the Age of AI: A Cross-Disciplinary Study of Perceptions and Practices in China," *Teaching Education*, 2025, https://doi.org/10.1080/10476210.2025.2590694.

[2] Aleksandra Borzanović et al., "Student Perceptions of Generative AI Tools in Higher Education: A Cross-Regional Study of Use, Ethics, and Educational Utility," *Education and Information Technologies*, 2026, https://doi.org/10.1007/s10639-026-13964-8.

[3] Asya Filatova, Alexander Didenko, and Ulyana Ravedovskaya, "From Lecturer to Chatbot: Evaluating a Hybrid Teaching Model," *Journal of Teaching English for Specific and Academic Purposes* 13, no. 3 (2025): 529–38, https://doi.org/10.22190/JTESAP250815040F.

[4] Grant Cooper, "Examining Science Education in ChatGPT: An Exploratory Study of Generative Artificial Intelligence," *Journal of Science Education and Technology* 32, no. 3 (2023): 444–52, https://doi.org/10.1007/s10956-023-10039-y.

[5] Borzanović et al., "Student Perceptions of Generative AI Tools in Higher Education: A Cross-Regional Study of Use, Ethics, and Educational Utility."

The Indonesian policy response is articulated in the Minister of Religious Affairs Decree No. 1503/2025 (KMA 1503/2025), which mandates integrating deep-learning pedagogy and the Love-Based Curriculum (LBC) into the madrasah system. LBC, as operationalized in KMA 1503/2025, foregrounds affective-relational dimensions of the pedagogical encounter, care, empathy, and dignity in communication as non-negotiable complements to cognitive attainment. A national survey of 174 elementary teachers across seven Indonesian cities found that deep-learning pedagogy is viewed positively but is constrained by limitations in technology infrastructure, teacher training, and integration with local culture.[6] In parallel, the TPACK framework (Mishra & Koehler,[7]) has been extended into Intelligent-TPACK by Celik (2023), who adds Ethical Knowledge as a constitutive dimension, and into GenAI-TPACK by Lan et al., who position Ethical Knowledge as integral to the technical and pedagogical mastery of AI.[8] Validation of an AI-TPACK instrument with 460 vocational teachers in Indonesia confirms the framework's relevance to the national context.[9] A study of preservice teachers in the United States reports that Intelligent-TPACK builds critical awareness of AI bias and dependency but leaves disciplinary content mastery uneven.[10]

The TPACK tradition has attracted substantive critique. Cox and Graham argue that the original framework conflates different kinds of knowledge and underspecifies how integration occurs in practice; later revisions have attempted to address this by distinguishing transformative from integrative models.[11] The present study works within Celik's[12] Intelligent-TPACK precisely because its addition of Ethical Knowledge

[6] Dinda Karunia Putri et al., "Primary Teachers' Perceptions of Deep Learning Pedagogy in Culture-Integrated STEM Education: A Quantitative Survey," *Journal on Mathematics Education* 16, no. 4 (2025): 1331–46, https://doi.org/10.22342/jme.v16i4.pp1331-1346.

[7] Matthew J Koehler, Punya Mishra, and William Cain, "What Is Technological Pedagogical Content (TPACK)?," *Journal of Education* 193, no. 3 (2017).

[8] Guoshuai Lan et al., "Integrating Ethical Knowledge in Generative AI Education: Constructing the GenAI-TPACK Framework for University Teachers' Professional Development," *Education and Information Technologies* 30, no. 11 (2025): 15621–44, https://doi.org/10.1007/s10639-025-13427-6.

[9] Andri Setiyawan et al., "Measuring Teachers' Competencies for AI Integration: Development and Validation of the AI-TPACK in Vocational Education," *Computers and Education Open* 9 (2025): 100319, https://doi.org/10.1016/j.caeo.2025.100319.

[10] Jeffrey Radloff, Ibrahim H Yeter, and Thomas K F Chiu, "Intelligent-TPACK in Teacher Education: Examining Preservice Elementary Teachers' Emerging Views about AI Classroom Use," *Computers and Education Open* 9 (2025): 100307, https://doi.org/10.1016/j.caeo.2025.100307.

[11] Suzy Cox and Charles R Graham, "Diagramming TPACK in Practice: Using an Elaborated Model of the TPACK Framework to Analyze and Depict Teacher Knowledge," 2009.

[12] Ismail Celik, "Towards Intelligent-TPACK: An Empirical Study on Teachers' Professional Knowledge to Ethically Integrate Artificial Intelligence (AI)-Based Tools into Education," *Computers in Human Behavior* 138 (2023), https://doi.org/10.1016/j.chb.2022.107468.

addresses the normative deficit that earlier formulations left unresolved, while acknowledging that the framework's empirical basis remains primarily quantitative and therefore less attentive to the locally situated dimensions of ethical practice that qualitative fieldwork can surface.

The notion of deep learning as a pedagogical orientation, distinct from machine learning, has a longer genealogy. Marton and Säljö first distinguished "surface" from "deep" approaches to learning,[13] and Fullan and colleagues later operationalized the concept as a whole-system framework linking higher-order thinking skills (HOTS) to global competencies.[14] KMA 1503/2025 imports this orientation into the madrasah but does not specify how it should be reconciled with AI integration and with local moral systems.

Tasrif and Komariah,[15] and Umar et al. have similarly documented *Maja* Labo Dahu as a character-education resource. The cultural foundation invoked in this study is the *Maja* Labo Dahu, a Mbojo (Bima) philosophy that combines a sense of shame (*Maja*) towards others and the self with fear (*dahu*) of God, functioning as a collective mechanism for moral regulation. Studies of *Maja Labo Dahu* have established its effectiveness in elementary character education and have mapped how its values are transmitted across generations through proverbs.[16] Ardiansyah et al. and Sila's analyses of Mbojo cultural life, more broadly, including ritual, customary law (adat), and vernacular poetry (kalero), document a multigenerational moral ecology in which *Maja* and *dahu* are not merely affective states but constitutive orientations towards social life. Studies of culturally embedded character education in eastern Indonesia have shown how indigenous knowledge can shape teacher identity and institutional culture,[17] and critical spiritual pedagogy provides a conceptual scaffold for integrating such knowledge into

[13] Ference Marton and Roger Säljö, "On Qualitative Differences in Learning: I—Outcome and Process," *British Journal of Educational Psychology* 46, no. 1 (1976): 4–11.
[14] Michael Fullan, Joanne Quinn, and Joanne McEachen, *Deep Learning: Engage the World Change the World* (Corwin Press, 2017).
[15] T Tasrif and S Komariah, "Model Penguatan Karakter Masyarakat Berbasis Nilai Kearifan Lokal 'Maja Labo Dahu' Dalam Perspektif Budaya Bima," *Jurnal Ilmu Administrasi Negara* 18, no. 1 (2021): 51–67.
[16] Zi Lin et al., "Exploration of Transmission Patterns of Bima Traditional Proverbs Expressions: A Case Study in Indonesia, Bima Society," *International Journal of Anthropology* 40, no. 1–2 (2025): 137–62, https://doi.org/10.14673/IJA2025121140.
[17] Natsir B Kotten et al., "Culturally Embedded Character Education: Teacher Identity and Institutional Transformation in Eastern Indonesia," *International Journal of Learning, Teaching and Educational Research* 24, no. 11 (2025): 711–25, https://doi.org/10.26803/ijlter.24.11.33.

formal curricula.[18] The study engages critically with the decolonial positioning of *Maja Labo Dahu*. While Popow calls for decolonizing AI-driven epistemic architectures, this study does not claim to adopt a decolonial methodology in the technical sense.[19] Rather, it treats local wisdom as an epistemically substantive resource within a conventional qualitative case-study design, acknowledging the tension between this ambition and the Western-derived analytical apparatus employed.

Four gaps remain unaddressed in the literature. *First*, Intelligent-TPACK research has concentrated on vocational and science contexts and has rarely addressed religious education with its specific burden of interpretive authority. *Second*, studies of *Maja Labo Dahu* have largely remained at the elementary level of character education and have not theorized it as a filter for digital ethics. *Third*, research on deep learning and LBC under KMA 1503/2025 has not been integrated into a single framework, leaving HOTS achievement and affective depth conceptually disconnected. *Fourth*, no model integrates AI teaching competence, deep-learning reasoning, and culturally grounded moral resilience as an integrated response to inverted authority in IRE classrooms.

Three questions guide this study: (1) What concrete steps do IRE teachers take to restore their pedagogical-moral authority in conditions of inverted authority? (2) How are deep-learning strategies designed to align with the cognitive habits of digital-native students while maintaining affective warmth? and (3) how is *Maja Labo Dahu* activated as a digital-ethics filter beyond the school's technical controls? The synthesis of these three answers yields the proposed *Intelligent-TPACK-Mbojo* model, in which AI functions as an instrument, deep learning as a method, LBC as an ethos, and *Maja Labo Dahu* as the moral foundation.

Research Method

This study uses a qualitative case study design, following Yin's critical case logic.[20] The paradigm is interpretivist-constructivist: pedagogical reality is treated as a social

[18] Joseph Ernest Mambu et al., "Incorporating Indigenous Knowledge into Character Education in English Language Classrooms: A Critical Spiritual Pedagogy Perspective," *Pedagogy, Culture and Society*, 2025, https://doi.org/10.1080/14681366.2025.2552696.
[19] Monika Popow, "Decolonizing Knowledge in the Postdigital Era: Pedagogical Strategies for Navigating AI-Driven Epistemic Transformations," *Educational Philosophy and Theory* 58, no. 1–2 (2026): 44–56, https://doi.org/10.1080/00131857.2025.2552764.
[20] Robert K Yin, *Case Study Research and Applications: Design and Methods*, 6th ed. (Los Angeles: SAGE, 2018).

construction emerging from interaction among teachers, students, curriculum, and technology Lincoln & Guba.[21]

MAN 2 Kota Bima (West Nusa Tenggara) was selected as a critical case on three grounds that satisfy Yin's requirement for theoretically justified site selection. First, its documented technological achievements, an international robotics award (Malaysia, 2024), and multiple national placements in science and appropriate-technology competitions establish that a significant proportion of its students operate at digital-literacy levels substantially above the regional and national madrasah norm, making inverted authority observable in its most developed form. Second, the institution demonstrates an unusually strong commitment to implementing KMA 1503/2025, including a teacher-developed Learning Management System (M2LMS), thereby providing variation in the dependent variable of interest. Third, the school is embedded in the Mbojo cultural setting where *Maja Labo Dahu* remains a living ethos. The critical-case logic is that if the integration of Intelligent-TPACK, deep learning, and local wisdom is achievable here, where pressures are greatest, it is plausible under less demanding conditions elsewhere. Fieldwork ran for three months (January–March 2026), covering one complete planning implementation evaluation cycle.

Eleven IRE teachers were recruited through purposive sampling. Inclusion criteria were: (a) permanent IRE teacher at MAN 2 Kota Bima with a minimum of three years of service; (b) at least one AI-based tool integrated into teaching during the previous semester; and (c) willingness to describe pedagogical practice in depth. Limited snowball sampling was used to reach additional informants identified as the most active reverse-mentoring practitioners. Theoretical saturation was assessed against a two-criterion standard: (i) no new codes emerged from successive interviews, and (ii) no new pedagogical strategies or *Maja Labo Dahu* activations were reported. Saturation was provisionally reached after the ninth interview; two additional interviews were conducted to test its robustness, yielding confirmatory rather than novel data. The eleven-participant count thus reflects analytical rather than arbitrary closure. All participants were assigned two-letter pseudonymous codes (OS, SH, AL, etc.). For data-source triangulation, 93 students from grades X–XII responded to an open-ended Google Forms survey distributed with proportional allocation across grade levels; students are identified by

[21] Yvonna S Lincoln and Egon G Guba, *Naturalistic Inquiry* (sage, 1985).

three-letter pseudonymous codes (e.g., AI, AN, ANR). Survey participation was voluntary, responses were anonymous, and students were informed that their teacher was the subject of the broader study. Ethical approval and informed consent were obtained; raw data are held in encrypted storage with access restricted to the research team.

Three instruments were used in a triangulated sequence. *First*, semi-structured interviews (60–90 minutes each) were audio-recorded with consent. The interview guide was organized around four blocks derived from Celik's Intelligent-TPACK and the deep-learning dimensions of KMA 1503/2025: (a) AI technical competence (Intelligent-TK); (b) pedagogical-technological and content-technological integration (Intelligent-TPK/TCK); (c) ethical knowledge (EK); and (d) concrete responses to inverted authority. Sample prompts included: "Describe an instance when you delegated a technical step to a student and what happened next," "How do you correct a student who has copy-pasted ChatGPT output?", and "When you cannot match a student's digital skill, what do you do to preserve the relationship?" The full interview guide is available from the corresponding author on reasonable request.

Second, non-participant classroom and laboratory observation was conducted across 24 sessions (approximately two sessions per teacher) using a structured protocol that targeted the following phenomena: (a) instances of role-reversal between teacher and student; (b) use of technological analogies; (c) affective dimensions of digital communication; and (d) explicit invocations of *Maja Labo Dahu* in instructional discourse. Field notes were written during observation and expanded within 24 hours; a copy of the observation protocol is available from the corresponding author.

Third, the open-ended student survey solicited perceptions of teacher digital competence, the warmth of pedagogical communication in digital spaces, and the influence of *Maja Labo Dahu* on online behavior. The survey was not designed as a psychometric instrument; its function was to triangulate themes emerging from interviews and observation, not to generate independently valid quantitative findings. Frequencies reported in the Results section (e.g., "64 of 93 students") are therefore treated as illustrative rather than inferential, and should be read as convergence checks rather than statistical estimates. Social desirability bias may be present despite anonymous submission, as acknowledged in the Limitations section.

Data were analyzed using the Miles, Huberman, and Saldaña,[22] interactive model in three concurrent activities. *Data condensation* began with *a priori* coding derived from the Intelligent-TPACK and deep-learning frameworks, supplemented by emergent codes generated from the field, including "metaphysical CCTV," "Digital Compassion Protocol," and "language of technological analogy." *Data were displayed using* thematic matrices per teacher, and the cross-cutting tables reported below (Tables 2–3). *Conclusion drawing and verification* proceeded iteratively, with returns to raw transcripts each time a new theme emerged. Coding was performed independently by two researchers, with weekly code-matching meetings; disagreements were resolved through reflective dialogue and documented in analytic memos, consistent with the interpretive tradition. Survey responses were processed in two steps: (i) inductive thematic coding aligned with interview themes, and (ii) frequency tabulation per theme (reported as "n/93" and interpreted as convergence indicators, not as validated measurements).

Trustworthiness followed Lincoln and Guba's four criteria.[23] Credibility was supported by source triangulation (teachers, students, policy documents), method triangulation (interviews, 24 observation sessions, survey), and member checking with five key informants after initial transcription. Transferability is supported by the thick description of MAN 2 Kota Bima provided here and in the supplementary fieldwork summary. Dependability rests on an audit trail of transcripts, analytic memos, and coding-change logs. Confirmability was preserved by separating descriptive data from interpretation in each memo. Researcher reflexivity was documented through bracketing of theoretical affiliation with the Intelligent-TPACK framework and personal familiarity with Mbojo culture in a daily reflective journal. Insider status, one author is a Mbojo community member, affords interpretive depth but also the risk of naturalizing practices that an outside researcher might interrogate more critically. This tension was managed through systematic member checking with informants unfamiliar to the insider researcher and through weekly cross-examination of emergent interpretations by the two coders.

[22] B Miles Matthew, A Michael Huberman, and Johnny Saldana, "Qualitative Data Analysis: A Methods Sourcebook" (Sage Publications, 2014).
[23] Y S Lincon and Egon G Guba, "Naturalistic Inquiry. Beverly Hills," *CA: Sage Publications. Lee, WS (2001). Parents Divorce and Their Duty to Support the Expense of Bringing up Their Child. Asian Women* 13, no. 1 (1985): 85–105.

Results

Thematic analysis of the eleven interview transcripts, 24 observation sessions, and 93 student survey responses produced three themes that map directly onto the research questions: (1) restoration of pedagogical authority through Intelligent-TPACK adoption and reverse mentoring; (2) operationalisation of deep learning through a "language of technological analogy" aligned with the Love-Based Curriculum; and (3) reactivation of *Maja Labo Dahu* as an internal digital-ethics filter. A fourth theme, counter-evidence and partial failures, is reported in a dedicated subsection. Results are reported descriptively below; their theoretical interpretation is developed in the Discussion.

Restoration of Pedagogical Authority through Reverse Mentoring

All eleven informants reported routine use of AI-assisted and digital tools well beyond conventional slide presentations. Reported tools included Gamma AI and Gemini for module drafting, Canva for visual materials in Islamic Cultural History (SKI), and Quizizz and Kahoot for formative assessment. Teacher AL used Quizizz and Google Classroom analytics for diagnostic remediation:

> "I don't need to go through all the material from the beginning. From the Quizizz data, I know exactly which parts of the inheritance-law topic students got wrong, and I focus remediation on those points." (Interview, Teacher AL, 2026)

The distribution of practices across Intelligent-TPACK dimensions is summarised in Table 2. Six of eleven teachers (OS, SH, AL, MT, RA, WH) explicitly described delegating technical tasks to students; the remaining five adopted a more cautious posture, maintaining fuller technical control but still reporting at least one instance of student-led troubleshooting.

Table 2.
Distribution of Intelligent-TPACK Practices among IRE Teachers at MAN 2 Kota Bima (n = 11)

Dimension	Empirical Representation	Pedagogical Implication
Intelligent-TK	Independent use of Gamma AI and Canva for visual presentation modules without reliance on technical staff (Teachers OS, SH; confirmed in observation, Sessions 3, 7).	Reduces workload; visualizes SKI events concretely; models self-directed AI adoption to students.
Intelligent-TCK	Analysis of digital quiz output (Quizizz, Google Classroom) to identify fiqh/inheritance topics with the highest error rates (Teacher AL; confirmed in observation, Session 11).	Targeted remediation rather than blanket review; shifts teacher role toward diagnostic facilitation.

Intelligent-TPK	Use of collaborative documents (Google Docs/Slides) so that role distribution and revision history are traceable (Teacher AL; also Teachers MT, RA in observation).	Shifts the teacher's role from the sole source of answers to a facilitator; makes student contributions visible.
Ethical Knowledge (EK)	Explicit guidance against copy-pasting ChatGPT output; students asked to analyze and rewrite in their own words (reported by all eleven teachers; observed in Sessions 1, 4, 9, 14, 19).	Cultivates academic integrity and substantive understanding; models critical AI use.

Triangulated student survey data confirm that this adoption did not erode teacher authority. Of 93 student respondents, 71 (76%) indicated that their respect for teachers increased after observing senior teachers learning to use AI tools; 62 (67%) reported that teachers' openness about technical limits made the classroom climate more approachable. These proportions should be read as convergence indicators, given the unvalidated survey instrument and potential social desirability, but they align consistently with observational data and interview accounts. A representative student response:

> "Our teacher is elderly but is willing to learn how to use AI. That is what makes me respect him, not because he is tech-savvy." (Survey, Student K, 2026)

Classroom observation supports this pattern. In 14 of 24 observed sessions, teachers asked students to resolve a technical problem (setting up Gamma AI, recovering projector output, troubleshooting LMS access). In 12 of those 14 instances, the technical delegation was immediately followed by a brief moral-interpretive reflection linking the act of receiving help to Islamic principles of mutual assistance (*taʿāwun*). The technical role reversal was thus consistently reframed through a moral-interpretive lens. Informants and student observers described this combination as demonstrating humility (*tawāḍuʿ*) rather than incompetence.

Deep Learning through Technological Analogy and the Digital Compassion Protocol

IRE teachers at MAN 2 Kota Bima developed a heuristic strategy, which this study labels the "language of technological analogy": explaining sharīʿah concepts through digital terminology familiar to students. Teacher OS articulated the underlying principle:

> "As long as teachers can connect worldly knowledge with the principles of the hereafter using simple, accessible language, that is where deep learning actually happens." (Interview, Teacher OS, 2026)

Inductive coding of the full transcript set and observation notes produced the analogy mapping in Table 3. Each analogy was reported by at least two teachers and confirmed in at least one observation session.

Table 3.
Technological Analogies Used in IRE Teaching at MAN 2 Kota Bima

Sharīʿah Concept	**Technological Analogy**	**Teacher-Attributed Cognitive Outcome (Bloom Level)**	**Observation Confirmation**
Obedience to sharīʿah	A robot functions correctly only when following its creator's program; any deviation triggers an error. Sharīʿah is the divine "program" for the human life cycle (OS, SH).	Obedience reframed as a functional prerequisite for social balance, not arbitrary dogma (Application–Analysis).	Sessions 3, 7
Intention (niyya) in worship	Default settings: an app processes data correctly only if its initial configuration is correct (SH).	Students model an abstract internal state as the validity condition for the resulting action (Analysis).	Session 5
Codification of the Qur'an	Cloud backup: the Companions' recording parallels backing up local memory to a permanent medium (OS, AL).	Codification reframed as progressive information assurance rather than rote history (Analysis–Evaluation).	Session 9
Continuing rewards and continuing sins	Share/repost metrics: educational content generates ongoing rewards; harmful reposts generate a chain of accountability (AL, MT).	Cultivates pre-publication ethical sensitivity in social-media use (Evaluation).	Sessions 11, 17
Supplication (duʿāʾ)	Request–response: duʾa is a request sent to an absolute server; the response is guaranteed, but execution time depends on the system's parameters (SH, RA).	Builds mental resilience and reframes delays without despair (Application–Analysis).	Session 14

Note. The column "Teacher-Attributed Cognitive Outcome" reports the cognitive function teachers described as their intended outcome. These are pedagogical intentions and observed discussion behaviors, not independently measured cognitive outcomes.

Classroom observation confirmed that analogies functioned as more than rhetorical flourishes. In Session 9, Teacher OS projected a cloud-storage architecture diagram and mapped its components to the Uthmanic compilation process; students were observed comparing data-loss risk in digital systems with the integrity of historical text transmission consistent with analysis–evaluation operations in Bloom's taxonomy rather than passive recall. In Session 17, a discussion of the "share/repost" analogy prompted spontaneous student contributions that connected viral misinformation to the concept of continuing sin, suggesting that the analogy had activated evaluative reasoning.

The affective requirements of LBC posed a distinct challenge in digital settings, where screen-mediated communication tends to flatten interpersonal warmth. Teachers responded with a "Digital Compassion Protocol" (DCP), which centered on two main practices. First, technical incidents were handled with empathy. When a student accidentally damaged a classroom projector (Session 6), the teacher refrained from public reprimand and addressed the matter privately, prioritizing honesty and trust. Second, assignment feedback in Google Classroom and WhatsApp groups avoided red marks; corrections were delivered via voice messages, beginning with recognition of effort, followed by substantive feedback, and ending with a personal tone. Of the student respondents, 58 of 93 (62%) indicated that their teachers "remain attentive even when working with screens." This proportion, while illustrative rather than statistically definitive, is consistent across all three grade levels in the survey data.

Maja Labo Dahu as an Internal Digital-Ethics Filter

Network-level filtering at the institutional gateway proved ineffective against anonymous accounts and off-network access (as confirmed by the school administration in a key informant interview, March 2026). Teachers responded by bringing *Maja Labo Dahu* directly into digital instruction. The *dahu* dimension (fear of God) was framed as *muraqabah* awareness of divine surveillance, which Teacher OS rendered metaphorically as a "metaphysical CCTV":

> "I tell the children: you can clear your browser history, use a VPN, or create a fake account. But there is one camera you can never turn off: God's. After they understood that, they stopped following the rules out of fear of having their phones confiscated; they followed them out of piety." (Interview, Teacher OS, 2026)

This metaphor was subsequently reported by four other teachers (SH, MT, WH, RA), who used near-identical framings, suggesting it circulates as a shared pedagogical device rather than arising from the individual creativity of any single informant. Survey data indicate that 64 of 93 students (69%) cited divine surveillance as a primary motive for avoiding hoaxes or inappropriate content, and 47 (51%) explicitly used the term *takut dosa* ("fear of sin") rather than fear of institutional sanction.

> "I avoid hoaxes and indecent content not because I am afraid of getting caught by the teacher, but because I am afraid of sin." (Survey, Student AI, 2026)

The *Maja* dimension (a sense of shame) was operationalized as a social filter applied before posting. The reflective prompt teachers most frequently reported was: "Would you be embarrassed if your parents read your comment online?" The same

prompt was independently recalled by 53 of 93 student respondents (57%), suggesting wide diffusion. Student ANR wrote that she rejects the trend of revealing clothing on visual media platforms "not for likes or views, but to preserve self-respect" (Survey, 2026). Student AH described *Maja Labo Dahu* as a "shield" when browsing without supervision (Survey, 2026).

Across the data, *Maja Labo Dahu* is treated not as a museum artifact to be preserved but as an active self-regulation mechanism. The combination of *dahu* (vertical-divine monitoring) and *Maja* (horizontal-social filtering) produces a dual system that operates beyond the school's technical perimeter.

Counter-Evidence and Cases of Partial Failure

Not all findings are unambiguously positive, and the analytical integrity of this study requires reporting instances where the framework did not operate as expected. Three informants (WH, MN, ZA) reported recurring difficulties with the technological-analogy strategy. Teacher WH noted that some students, particularly those with limited religious background, found the juxtaposition of divine and computational categories confusing rather than illuminating: "*When I compared the Qur'an to cloud backup, one student asked whether that meant God's server could crash. I had to step back and explain the analogy's limits*." This suggests the strategy depends on a baseline level of both digital and theological literacy that cannot be assumed across all student populations.

Two informants (MN, ZA) also reported that the DCP proved difficult to sustain under time pressure. When assessment deadlines coincided with technical problems, a common occurrence given the school's LMS infrastructure, teachers occasionally reverted to direct correction without the empathic framing that the protocol requires. Teacher MN acknowledged: "*When I'm rushed, I forget to record the voice message. I type. And I know that's not the same*." These implementation failures suggest that the DCP requires both attitudinal commitment and structural conditions (such as adequate preparation time) that are not always present.

Regarding *Maja Labo Dahu*, three students in the open-ended survey (Students BT, PR, CF) reported that the "metaphysical CCTV" framing felt coercive rather than empowering, and one described it as "adding another thing to be afraid of." This minority response, drawn from an unvalidated, potentially social-desirability-affected instrument, cannot support strong inferential claims. Still, it does indicate that the framing's

effectiveness is not universal and that its reception may vary with individual religiosity, family background, and psychological orientation toward authority. Future research should explicitly examine these moderating variables.

Discussion

The three themes are interpreted below and synthesized into the proposed Intelligent-TPACK-Mbojo model. The findings should be read against a global shift toward GenAI-mediated classrooms in which inverted authority is an empirically documented condition rather than a speculative scenario.

Reframing Pedagogical Authority

Most published work treats inverted authority as a linear loss in which students' digital advantage gradually marginalizes teachers. Du and Kohnke document the destabilization of pedagogical authority among Chinese university teachers but stop short of proposing teacher-side strategies for resolution.[24] Filatova et al. report student anxiety about the loss of epistemic authority in chatbot-mediated instruction, without offering teacher-side mechanisms either.[25] The MAN 2 Kota Bima case suggests a different trajectory: when teachers openly delegate the technical step and immediately reclaim the moral-interpretive role, authority is redistributed rather than eroded. Teachers relinquish technical supremacy (hard authority) and retain interpretive-moral supremacy (soft authority). This pattern resonates with Omodan's argument that hybrid models combining AI efficiency with reflective human oversight are more sustainable than models in which either side dominates.[26]

The reverse-mentoring practice observed here differs from the generic intergenerational skill exchange documented elsewhere.[27] It is anchored in *tawāḍuʿ*, an Islamic pedagogical value, which reframes technical limitations as a recognizable moral

[24] Du and Kohnke, "Repositioning Teachers in the Age of AI: A Cross-Disciplinary Study of Perceptions and Practices in China."
[25] Filatova, Didenko, and Ravedovskaya, "From Lecturer to Chatbot: Evaluating a Hybrid Teaching Model."
[26] Bunmi Isaiah Omodan, "Redefining the Role of Supervisors in the Era of Artificial Intelligence: Implications for Hybrid Postgraduate Research Governance," *Cogent Education* 12, no. 1 (2025): 2536534, https://doi.org/10.1080/2331186X.2025.2536534.
[27] Magdalena Glinkowska and Marlena Dzikowska, "An Evaluation of Reverse Mentoring: A Case Study of Research Assistants and Advisors," *E-Mentor Journal* 4, no. 96 (2022): 14–23, https://doi.org/10.15219/em96.1582.

stance rather than a deficit. This reading also nuances Cooper's account of ChatGPT as a self-positioned epistemic authority in science education: when teachers consistently channel AI output through interpretive framing rather than prohibition, they keep machine authority epistemically subordinated to human interpretive authority.[28] The MAN 2 Kota Bima evidence does not warrant a universal claim that IRE teachers have "solved" inverted authority; the finding is bounded by the critical-case design and the specific institutional conditions at MAN 2. What it supports is the more modest claim that authority can be reconstituted, in this setting, through openness combined with sustained moral-interpretive presence, and that the "metaphysical CCTV" framing, though effective here, may not travel equally well to contexts where student religiosity is lower or more heterogeneous (as the counter-evidence subsection above indicates).

Deep Learning, Technological Analogy, and Affective Envelope

The "language of technological analogy" is best understood within the Marton–Säljö, deep-learning tradition,[29] as operationalized by Fullan et al., for whole-system change.[30] Reading sharīʿah concepts through digital metaphors (default settings, cloud backup, request–response) is a form of cognitive localization: it links new content to cognitive structures that students already use to navigate everyday digital life. Putri et al. report that integrating local culture with deep-learning pedagogy is widely viewed as relevant but constrained by infrastructural and training limitations; the MAN 2 Kota Bima case shows one way around that constraint: pedagogical creativity through analogy can compensate for infrastructural limitations.[31] This is, however, a single-case observation; whether the strategy scales to classrooms with weaker teacher content mastery or lower student digital literacy remains an open question, as the partial failures reported by Teachers WH, MN, and ZA indicate.

In Bloom's terms, the observed analogies invite operation at the analysis–evaluation levels rather than at the recall–comprehension levels. Where this remains incomplete is the affective dimension: deep-learning attainment, decoupled from compassion, risks

[28] Cooper, "Examining Science Education in ChatGPT: An Exploratory Study of Generative Artificial Intelligence."
[29] Marton and Säljö, "On Qualitative Differences in Learning: I—Outcome and Process."
[30] Fullan, Quinn, and McEachen, *Deep Learning: Engage the World Change the World*.
[31] Putri et al., "Primary Teachers' Perceptions of Deep Learning Pedagogy in Culture-Integrated STEM Education: A Quantitative Survey."

collapsing into mere cognitive performance. The Digital Compassion Protocol serves as the affective envelope that LBC requires: it operationalizes Ethical Knowledge within Intelligent-TPACK in the affective domain. This corresponds to the holistic position taken by Lan et al. in the GenAI-TPACK framework. Radloff et al. report that preservice teachers in the United States are aware of AI's pedagogical potential, but fewer than half voice ethical concerns about bias and dependency; the MAN 2 Kota Bima teachers appear to operate beyond initial awareness, though the case-study design does not permit comparative ranking.[32]

Local Wisdom as Internal Regulation: The ECK Distinction

The most theoretically distinctive contribution of this case is the reactivation of *Maja Labo Dahu* as an internal digital-ethics regulator. To understand why this constitutes an extension of Celik's framework rather than a simple application, it is necessary to specify precisely how ECK differs from generic Ethical Knowledge (EK).[33]

Celik's EK is structured as a set of professionally acquired competencies, awareness of AI bias, data privacy, and algorithmic fairness that teachers are trained to develop and model. This is consistent with what moral philosophers in the Kantian tradition call *dutiful* ethics: principle-derived, articulable, and transferable across contexts. ECK, by contrast, operates closer to what MacIntyre calls virtue ethics and what Sandel[34] calls *constitutive commitments*: moral orientations that are not adopted from without but grow out of membership in a community whose practices, narratives, and relationships have shaped the self. *Maja Labo Dahu* is not a principle that Mbojo students learn and then apply; it is an orientation that has been co-constituted through family, adat, and religious socialization long before students encounter a school curriculum. When Teacher OS invokes divine surveillance as a "*camera you can never turn off*," he is not teaching a new ethical rule; he is activating a pre-existing dispositional architecture.

This distinction has a direct methodological corollary: ECK cannot be "added" to a teacher's competency profile through a professional development module, as ECK can.

[32] Radloff, Yeter, and Chiu, "Intelligent-TPACK in Teacher Education: Examining Preservice Elementary Teachers' Emerging Views about AI Classroom Use."
[33] Celik, "Towards Intelligent-TPACK: An Empirical Study on Teachers' Professional Knowledge to Ethically Integrate Artificial Intelligence (AI)-Based Tools into Education."
[34] Michael Sandel, "Liberalism and the Limits of Justice," in *Debates in Contemporary Political Philosophy* (Routledge, 2005), 150–69.

Its educational function depends on the prior existence of the value system in the student's cultural formation. This is precisely why the present study treats it as an independent layer rather than as a sub-dimension of EK.

The ECK concept engages productively with Popow's decolonial-postdigital argument that education needs to reclaim its deliberative role from AI epistemic architectures that marginalize non-Western and indigenous knowledge.[35] The MAN 2 Kota Bima case illustrates one practical mode of reclaiming: not by rejecting AI but by subordinating it to local value systems with a generational track record. Alsuhaymi and Atallah similarly argue that AI integration contributes positively only when located within an ethical framework anchored in educational goals, social justice, and human dignity.[36] The present study adds that for communities with living moral traditions, those frameworks need not be imported; they need to be activated. A candid caveat is warranted here: this study adopts a case-study methodology rooted in Western social-science traditions. It does not claim to operate within a decolonial epistemological framework in a strict methodological sense. The decolonial relevance of the findings lies in substantive insight, not in methodological design.

Synthesis: The Intelligent-TPACK-Mbojo Model

Table 4.
Proposed Intelligent-TPACK-Mbojo Model: Architecture and Operational Functions

Layer	Component	Function	Empirical Anchor
1	*Intelligent-TPACK* (competence)	Teacher mastery of CK, PK, TK, their intersections, and ethical AI use; instrumental capacity to operate the digital ecosystem.	Table 2: Interviews OS, SH, AL; Observation Sessions 3, 7, 9, 11.
2	*Deep Learning* (method)	Cognitive linking of new knowledge to existing structures through the "language of technological analogy" supports the attainment of HOTS.	Table 3: Observation Sessions 5, 9, 14, 17; Student survey (convergence).
3	*Love-Based Curriculum* (ethos)	Affective-humanistic envelope expressed through the Digital Compassion Protocol and reverse mentoring grounded in humility (tawāḍuʿ).	DCP observation (Sessions 6, 15, 20); Survey convergence (62%); Interviews OS, SH, WH.

[35] Popow, "Decolonizing Knowledge in the Postdigital Era: Pedagogical Strategies for Navigating AI-Driven Epistemic Transformations."
[36] Adeeb Obaid Alsuhaymi and Fouad Ahmed Atallah, "Sustainable Education in the Age of Artificial Intelligence and Digitalization: A Value-Critical Approach," *Sustainability (Switzerland)* 18, no. 3 (2026): 1257, https://doi.org/10.3390/su18031257.

4	*Ethical-Cultural Knowledge (ECK) Maja Labo Dahu*	Internal moral regulation: dahu as vertical-divine monitoring (muraqabah) and *Maja* as horizontal-social filtering ("filter before sharing"). Operates beyond the institutional perimeter.	"Metaphysical CCTV" (5 teachers); "filter before sharing" prompt (53/93 students); Interviews OS, SH, MT, WH, RA.

The four layers are synergistic rather than hierarchical: each compensates for what the others cannot supply. Layer 1 supplies technical capacity; without Layer 2, that capacity collapses into mere efficiency; without Layer 3, depth is uncoupled from warmth; and without Layer 4, the architecture lacks a moral anchor that travels with the student beyond the institution. The model also addresses Borzanović et al.'s concern about the "normalization of risk" in AI adoption: it locates ethical control not in external regulation but in internalized cultural-religious values.[37] The model is proposed here on inductive grounds; it has not been validated experimentally, and the case-study design does not warrant causal claims.

A final conceptual issue requires explicit resolution. The Conclusion below states that ECK is "substitutable" across cultural contexts, meaning that the ECK slot in the model can be filled by a different community's living moral tradition, Tri Hita Karana in Bali, Nggusu Waru in other parts of Bima, or Malaqbiq in Mandar, without altering the model's internal logic. This is a structural claim about the model's architecture, not a claim that any arbitrary ethical code can substitute for deep community internalization. Substitutability requires that the candidate value system satisfy the same conditions as *Maja* Labo Dahu: multigenerational internalization, community-wide recognition, and practical salience in everyday moral deliberation. Generic professional ethics training satisfies none of these conditions; it remains at the level of Celik's EK. This distinction resolves what might appear as a contradiction between the context-specificity argument (ECK works because it is deeply embedded) and the transferability claim (the model can travel): it is the *slot* that travels, not the specific content.

Five limitations should be acknowledged. *First*, the single-case design at a leading madrasah limits transferability; in settings with weaker digital literacy, the model would require modification. *Second*, the student survey instrument was not psychometrically

[37] Borzanović et al., "Student Perceptions of Generative AI Tools in Higher Education: A Cross-Regional Study of Use, Ethics, and Educational Utility."

validated and is best read as illustrative; social desirability cannot be ruled out despite anonymous submission. *Third*, the three-month observation window does not capture longitudinal effects on *Maja Labo Dahu*-based self-regulation beyond the madrasah. *Fourth*, the Intelligent-TPACK-Mbojo model is inductively derived rather than causally validated. *Fifth*, institutional confounds strong leadership, a proprietary LMS, and a high-achieving student intake cannot be fully disentangled from the model's effects; whether the same practices would yield comparable outcomes in a less resource-rich institution remains unknown.

Four research directions follow. *First*, multi-case comparative testing across madrasahs with varying digital-literacy profiles and different local-wisdom systems, allowing the ECK layer to be populated with alternative value traditions. *Second*, mixed-methods or larger-N quantitative work adapting validated AI-TPACK instruments (Setiyawan et al., 2025) with an added ECK subscale. *Third*, longitudinal designs tracking the persistence of local-wisdom-based self-regulation after graduation. *Fourth*, a diagnostic instrument for IRE teachers that measures readiness across the four layers of the model, including an assessment of the extent to which ECK is already present in students' cultural formation.

Conclusion

Within the bounds of a single critical case, this study finds that IRE teachers at MAN 2 Kota Bima reconstitute their pedagogical-moral authority in the GenAI era through three interlocking moves rather than by appealing to technical superiority. They shift from hard authority to soft authority via reverse mentoring anchored in *tawāḍuʿ*; they operationalize deep learning through a "language of technological analogy" that links theology to digital experience while protecting affective warmth through a "Digital Compassion Protocol" aligned with the Love-Based Curriculum. They reactivate *Maja Labo Dahu* as a dual self-regulation mechanism in which *Dahu functions as internalized divine monitoring and Maja* as social filtering before publication. Counter-evidence instances where analogies confused rather than clarified, where the Digital Compassion Protocol broke down under time pressure, and where the "metaphysical CCTV" framing was experienced as coercive are documented throughout and constrain the scope of these claims.

These findings are synthesized into the proposed *Intelligent-TPACK-Mbojo* model, which extends Celik's framework by adding deep learning, the Love-Based Curriculum, and Ethical-Cultural Knowledge (ECK). ECK differs from generic Ethical Knowledge not in scope but in origin and mode: it is drawn from a value system already alive in the community and operates dispositionally rather than propositionally. The model contributes to the Intelligent-TPACK literature by addressing a context dominated by science-vocational and secular settings, and it offers an operational reference for implementing KMA 1503/2025. The ECK slot is substitutable across cultural contexts: other local moral traditions that satisfy the conditions of multigenerational internalization can fill it, whereas specific content is not interchangeable with professionally delivered ethics training. The broader implication is that local wisdom need not be treated as an obstacle to educational modernization; in this case, it served as a working layer of digital ethical regulation that the institution's technical infrastructure could not provide on its own.

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