

Ta'dib-Based Deep Learning: A Dialogue Between Syed Muhammad Naquib al-Attas and Meaningful Learning Theory for Indonesian Education

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Abstract

Purpose—This conceptual article reconstructs a ta'dib-based account of deep learning by establishing a dialogue between Syed Muhammad Naquib al-Attas's philosophy of Islamic education and Western meaningful learning theory (David Ausubel and Joseph Novak). It addresses a gap in Indonesia's current Pembelajaran Mendalam agenda, whose policy vocabulary lacks an explicit account of why knowledge should be learned, how it should be ordered, and what conduct should follow from it.

Design/methods— The article employs an integrative literature review, analyzing foundational philosophical works, peer-reviewed studies on al-Attas and meaningful learning, Indonesian policy documents, and recent scholarship on digital and generative-AI-mediated education.

Findings— The analysis reveals a real but limited convergence: both traditions reject rote accumulation and require learners to connect new knowledge with an already meaningful structure. However, their difference is equally significant. Meaningful learning primarily explains cognitive integration and conceptual change, whereas ta'dib supplies an ontological, ethical, and teleological grammar that judges the proper place, source, purpose, and use of knowledge. The article therefore proposes that ta'dib should function as the normative orientation for objectives, source evaluation, dialogue, application, reflection, and assessment—not reduced to etiquette or a moral appendix. In Indonesia's digital environment, this reconstruction supports a form of deep learning where technological fluency, conceptual understanding, and learner agency are held accountable to intellectual humility, verification, justice, and responsibility.

Keywords—Al-Attas; deep learning; Indonesian education; meaningful learning; ta'dib.

Ethical Statement: It is declared that scientific and ethical principles were adhered to during the preparation of this work, and all sources used have been properly cited in the bibliography. The article has been reviewed by at least two peer reviewers, a similarity report was obtained using Turnitin, and compliance with research/publication ethics has been confirmed.

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1. Introduction

In Indonesian educational policy, the expression deep learning (*Pembelajaran Mendalam*) should not be confused with the technical term deep learning in artificial intelligence. The policy expression names an approach to learning that asks students to understand, apply, and reflect on knowledge through experiences that are mindful, meaningful, and joyful. It is intended to move learning beyond the delivery of disconnected content and toward enduring understanding, learner participation, and the formation of capacities needed for continuing learning. This policy direction is significant because it foregrounds quality, inclusion, and relevance rather than merely accelerating curriculum coverage. At the same time, a policy aspiration for meaningful learning raises a deeper philosophical question: meaningful for whom, in relation to what conception of knowledge, and toward which human good? (Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025)

This question is especially urgent in digital learning environments. Platforms, search engines, learning management systems, and generative artificial intelligence can widen access, personalize feedback, and support collaboration, but they can also encourage superficial retrieval, uncritical copying, fragmented attention, and dependence on generated answers. Recent reviews emphasize that technology changes neither teaching nor learning automatically; outcomes depend on the relationships among tools, pedagogical design, teacher judgment, learner agency, infrastructure, and social context. The issue, therefore, is not whether Indonesian schools should use digital technology, but whether digital participation is organized as a practice of understanding and responsible judgment. A theory of deep learning for the digital era must address the moral and epistemic quality of learners' engagements with information, not only their efficiency or convenience. (Fawns, 2022; UNESCO, 2023; Zou et al., 2025)

Islamic educational thought offers conceptual resources for this task, particularly through Syed Muhammad Naquib al-Attas's use of *ta'dib*. Al-Attas is a modern Muslim philosopher of education whose work refuses to separate knowledge from the worldview, purpose, and ethical discipline of the knower. In his formulation, education is not exhausted by instruction, socialization, or skill acquisition; it is a gradual formation

of the human person so that knowledge, action, and judgment occupy their proper places. Contemporary scholarship consistently identifies *adab* as the organizing concept of this view and relates it to the formation of a good human being rather than a merely functional or economically useful learner. This makes *ta'dib* potentially relevant to present debates on learning meaning, digital responsibility, and educational purpose. (Al-Attas, 1980, 1993; Hidayatullah & Arif, 2022; In'ami et al., 2025)

Yet *ta'dib* should not be introduced merely as a generic call for politeness. Such a move narrows a philosophical account of knowledge into a list of classroom manners and loses its critical power. Al-Attas's diagnosis of the loss of *adab* refers to a disorder in recognizing the hierarchy, source, scope, and appropriate use of knowledge. In this sense, the problem includes intellectual arrogance, confusion between information and wisdom, misplaced authority, and the separation of knowing from responsible action. Recent research on al-Attas in the digital context makes a similar point: digital distraction and the commodification of knowledge cannot be addressed only with technical literacy because they also concern the relation between knowledge and character. A productive reconstruction must therefore treat *adab* as an epistemic and educational principle, not as an ornamental supplement. (Al-Attas, 1993; Yunita et al., 2025)

Western meaningful learning theory is a useful dialogue partner because it provides a well-developed account of how learners relate new material to prior cognitive structures. Ausubel's central claim was that learning becomes meaningful when new ideas are connected non-arbitrarily and substantively to relevant prior knowledge, rather than memorized as isolated verbal units. Novak developed this insight into a human constructivist account in which learners actively build, revise, and externalize conceptual relationships. Recent reassessments of Ausubel also show that meaningful learning is not synonymous with activity alone: it requires careful inquiry into prior knowledge, conceptual coherence, and opportunities for dialogue and reorganization. These resources can help translate broad ethical ideals into teachable processes. (Ausubel, 1962, 1968; Bryce & Blown, 2024; Novak, 2002, 2010)

However, meaningful learning theory does not by itself settle the normative status of knowledge. It can explain how a learner meaningfully links a new claim to prior

understanding, but it does not independently determine whether the claim is trustworthy, whether the prior understanding is ethically desirable, or whether the learner's use of knowledge is just. This is not a flaw in the theory so much as a limit of its explanatory purpose. The present article argues that the relation between ta'dib and meaningful learning should therefore be dialogical, not assimilative: ta'dib supplies a norm for the orientation and use of knowledge, while meaningful learning offers cognitive and pedagogical mechanisms for connecting, organizing, and revising understanding. (Al-Attas, 1980; Bryce & Blown, 2024; Hidayatullah & Arif, 2022)

The article addresses three questions. First, what are the central educational commitments of ta'dib in al-Attas's thought? Second, what can meaningful learning theory contribute to a pedagogical account of deep learning? Third, how can the two be brought into a non-reductive framework for Indonesian education in the digital era? The aim is not to claim that al-Attas anticipated Ausubel or that meaningful learning is intrinsically Islamic. Rather, the aim is to construct a theoretically accountable dialogue that preserves differences while identifying a practical framework for curriculum, pedagogy, assessment, and digital literacy. The proposed framework is intended as a conceptual contribution that can guide later empirical work in schools, madrasahs, and higher education. (In'ami et al., 2025; Rahmawati et al., 2025; Snyder, 2019)

2. Method

This study uses an integrative literature review with a conceptual-analytic orientation. An integrative review is appropriate when the goal is not to estimate an intervention effect but to synthesize heterogeneous sources, clarify relationships among concepts, and generate a new theoretical framework. The review combines primary philosophical texts by al-Attas, foundational writings on meaningful learning, peer-reviewed educational research, recent studies on Islamic education and digital learning, and Indonesian policy documents. This design permits the article to compare theories that arise from different intellectual traditions without falsely treating them as measurements of the same construct. (Snyder, 2019; Torraco, 2016)

The corpus was selected through four relevance criteria. First, sources had to illuminate al-Attas's concepts of ta'dib, adab, knowledge, the human person, or the

purpose of education. Second, sources had to explain meaningful learning, cognitive integration, advance organization, conceptual change, or knowledge representation. Third, sources were included when they addressed contemporary digital learning, generative artificial intelligence, or ethical pedagogy. Fourth, Indonesian documents and studies were included when they clarified the policy meaning of “Pembelajaran Mendalam”. Priority was given to primary works, peer-reviewed journal articles, official institutional guidance, and recent scholarship; foundational sources were retained where they define a theory's original claims. (Al-Attas, 1980, 1993; Kementerian Pendidikan Dasar dan Menengah, 2025; Snyder, 2019)

Analysis proceeded through three rounds of coding. The first round identified conceptual categories: purpose of education, ontology of knowledge, learner agency, teacher authority, cognitive integration, ethical conduct, reflection, application, and digital mediation. The second round compared each category across al-Attas and meaningful learning theory, separating points of convergence from differences that should not be collapsed. The third round translated the comparison into design implications for learning objectives, source use, learning activities, assessment, and technology. The output is a normative-pedagogical reconstruction, not a claim that any specific school has already implemented or validated the model. (Bryce & Blown, 2024; In'ami et al., 2025; Torraco, 2016)

The trustworthiness of the argument rests on source transparency, triangulation across primary and secondary literature, and restraint in the treatment of evidence. The article does not infer causal effects from conceptual sources, does not report classroom outcomes that were not observed, and does not present the proposed model as a replacement for empirical evaluation. Its limitations follow from its method: different interpreters may emphasize other dimensions of al-Attas's corpus, and the framework requires testing through classroom observation, design-based research, and student-voice studies across diverse Indonesian settings. These limits are explicitly retained so that philosophical synthesis is not mistaken for empirical proof. (Snyder, 2019; Torraco, 2016; Yunita et al., 2025)

3. Findings and Discussion

3.1. Deep Learning as a Contemporary Indonesian Educational Question

The Indonesian framing of *Pembelajaran Mendalam* already contains important affinities with a broad educational concern for depth. Its emphasis on understanding, application, and reflection recognizes that knowledge is not fully learned when a student can repeat a definition or reproduce a procedure. The framework also describes learning as mindful, meaningful, and joyful, thereby linking cognitive engagement with learner awareness and positive experience. In this respect, the policy creates space for an educational account that values more than test performance. Nonetheless, the policy's practical success depends on how schools interpret its language: a slogan of depth can still become a new technique unless teachers can explain what counts as meaningful understanding and responsible application in particular subjects. (Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025)

The distinction between deep and superficial learning is not new in Western educational research. Work on learning approaches has long differentiated an orientation toward understanding and relational meaning from an orientation toward short-term reproduction. More recent frameworks similarly show that observable activity is insufficient: learners may be busy without cognitively generating, explaining, connecting, or revising ideas. The ICAP framework, for example, ranks passive, active, constructive, and interactive engagement according to the kinds of cognitive change likely to occur. These accounts are valuable for Indonesian deep learning because they direct teachers to ask what students are doing with ideas, not only whether digital resources or attractive activities are present. (Chi & Wylie, 2014; Bryce & Blown, 2024)

Digital contexts intensify this issue because access to abundant information does not guarantee knowledge. A learner can obtain an AI-generated explanation, a short video, or a polished slide deck in seconds while never testing the source, comparing concepts, or making the idea answerable to a real problem. UNESCO's guidance on generative AI therefore places human agency, data privacy, equity, and pedagogical purpose at the center of educational adoption. Fawns's account of entangled pedagogy similarly cautions against treating technology as either a neutral add-on or an autonomous driver. These arguments support the need for a framework in which digital

tools are judged by the learning and ethical relations they produce. (Fawns, 2022; UNESCO, 2023; Zou et al., 2025)

For Islamic educational institutions, the question has an additional dimension. Deep learning cannot be limited to the cognitive ability to relate concepts if the resulting relationship leaves students unable to judge authority, respect intellectual labor, communicate responsibly, or recognize the consequences of knowledge for self and society. This does not imply a rejection of contemporary learning theory. It means that the educational significance of cognitive depth must be located within a broader account of human flourishing and moral responsibility. Al-Attas's ta'dib becomes relevant precisely here: it makes the order and end of knowledge an educational issue rather than an external moral constraint. (Al-Attas, 1980, 1993; Yunita et al., 2025)

3.2. Ta'dib in Al-Attas's Educational Philosophy

Al-Attas uses ta'dib rather than ta'lim or tarbiyah to name the comprehensive aim of Islamic education. Ta'lim highlights instruction and the transmission of knowledge, while tarbiyah can stress growth, nurture, and development. Neither term is discarded as irrelevant; rather, al-Attas argues that ta'dib more adequately integrates knowledge, discipline, justice, and the formation of the person. Contemporary analyses describe this choice as an effort to prevent the reduction of education to information transfer or social utility. Ta'dib thus incorporates teaching and cultivation, but orders them toward a distinctive end: the formation of a person capable of recognizing and acting according to what is right and proper. (Ahmad, 2021; In'ami et al., 2025)

At the conceptual center of ta'dib is adab. In al-Attas's philosophy, adab concerns the recognition and acknowledgement of the proper places of things within an ordered reality. It includes discipline of the body, intellect, and soul; a learner is not merely asked to know more, but to know how different kinds of knowledge, persons, practices, and authorities should be approached. Recent scholarship emphasizes that this notion cannot be confined to conventional etiquette because it involves an epistemological hierarchy and a moral orientation toward truth and justice. The learner's relation to the teacher, text, evidence, community, and self is therefore part of learning itself. (Al-Attas, 1980, 1993; Hidayatullah & Arif, 2022; In'ami et al., 2025)

The educational telos implied by ta'dib is often summarized as the formation of the good human being, not merely the efficient citizen or productive worker. This claim does not deny the social and economic functions of education; it subordinates them to a fuller account of human responsibility. The distinction matters for curriculum because a lesson is not valued solely by its immediate utility or assessment yield. Knowledge becomes educationally significant when it enables truthful discernment, just action, humility before what one does not know, and a fitting relation to God, other persons, and the created world. Studies of al-Attas's thought interpret this as an integrated intellectual, ethical, and spiritual formation rather than a division between academic knowledge and character education. (Al-Attas, 1980; In'ami et al., 2025; Yunita et al., 2025)

A second implication is that knowledge has sources, levels, and limits. Al-Attas criticizes a condition in which knowledge is detached from a coherent worldview and treated as a commodity or instrument of domination. In educational practice, this critique warns against placing algorithmic popularity, speed, or market usefulness above truthfulness and responsibility. It also warns teachers against presenting every source as equal merely because it is digitally accessible. In a ta'dib-based classroom, evaluating sources is not an ancillary digital skill; it is a practice of intellectual justice that asks whether a claim is credible, relevant, properly contextualized, and responsibly used. (Al-Attas, 1993; Hidayatullah & Arif, 2022; Yunita et al., 2025)

A third implication concerns authority. Ta'dib does not endorse authoritarian instruction or demand passive compliance. Proper authority in learning is relational and accountable: teachers should possess knowledge, model intellectual humility, guide inquiry, and acknowledge the limits of their expertise. Learners, meanwhile, should respect persons and sources without suspending critical judgment. This stance is compatible with dialogue, questioning, and disagreement, provided that these are conducted with evidence and courtesy. Recent scholarship on al-Attas's ethics stresses that adab includes the right use of reason, not its silencing; its concern is to prevent reason from becoming detached from truth, humility, and justice. (Hidayatullah & Arif, 2022; In'ami et al., 2025)

The digital era brings these dimensions into sharp relief. Search engines and generative systems often present answers in a fluent, authoritative register, while the provenance, uncertainty, or cultural assumptions of those answers may remain hidden. A ta'dib perspective asks learners to treat digital outputs neither as forbidden objects nor as self-validating authorities. Instead, learners must verify, attribute, compare, and situate outputs within a responsible chain of inquiry. This approach aligns with human-centered AI guidance, but adds a specifically educational claim: source discipline and intellectual humility are part of becoming educated, not only part of complying with a technology policy. (UNESCO, 2023; Yunita et al., 2025; Zapata et al., 2024)

3.3. Meaningful Learning Theory: Contributions and Limits

Ausubel's theory begins from a cognitive premise: the most important factor influencing learning is what the learner already knows. Meaningful learning occurs when new material is related in a non-arbitrary and substantive way to relevant concepts already present in cognitive structure. The principle does not celebrate prior knowledge uncritically; it requires teachers to identify what students understand, misunderstand, and need in order to attach new ideas productively. Advance organizers, conceptual sequencing, and guided comparison are therefore not decorative devices. They are ways to prepare a conceptual structure in which new learning can be integrated rather than memorized temporarily. (Ausubel, 1962, 1968; Bryce & Blown, 2024)

Meaningful learning also requires a learner disposition. A well-designed explanation cannot ensure depth when learners approach it only as a string of answers to reproduce. Ausubel's tradition presupposes that the learner intends to connect, interpret, and retain ideas rather than merely memorize them verbatim. Bryce and Blown's contemporary reassessment adds an important caution: prior knowledge cannot always be treated as a stable set of facts that teachers simply activate. It may be partial, socially shaped, or confused, and must often be explored through dialogue, questioning, and conceptual challenge. This makes meaningful learning compatible with reflective and dialogical pedagogy rather than with simple transmission. (Bryce & Blown, 2024; Novak, 2002)

Novak extended the theory through a human constructivist account of learning and tools such as concept maps. Concept mapping can make a learner's conceptual relationships visible, open them to feedback, and support the reorganization of

knowledge across contexts. Its value is not the graphic product alone; it lies in prompting learners to name relationships, distinguish general from specific claims, and revise propositions when evidence or explanation demands it. In digital learning, this can be supported through collaborative mapping, annotated sources, and reflective portfolios, provided that the work remains an occasion for thought rather than a template to complete. (Novak, 2002, 2010; Chi & Wylie, 2014)

The theory's contribution to deep learning is therefore substantial. It offers concrete design principles for connecting lessons to prior knowledge, using concepts as organizers, confronting misconceptions, and asking learners to apply understanding beyond the original presentation. It also prevents the vague use of the word meaningful as a synonym for enjoyable or personally preferred. A topic becomes meaningful in a technical learning sense when a learner builds durable, differentiated, and transferable conceptual relations. This is closely aligned with Indonesia's policy expectation that learners understand, apply, and reflect, rather than stop at recall. (Bryce & Blown, 2024; Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025)

Its limit, however, is normative. A learner may construct a coherent relation among ideas while still relying on inaccurate, unjust, or ethically harmful assumptions. Cognitive integration does not on its own determine the moral status of a source, the proper use of acquired competence, or the purpose that ought to direct inquiry. Meaningful learning theory can accommodate values as content, but it does not provide a thick account of their justification. This is why the theory should not be asked to replace an Islamic philosophy of education. Its strength is pedagogical and cognitive explanation; ta'dib addresses the orientation, hierarchy, and ethical consequence of knowledge. (Al-Attas, 1980; Bryce & Blown, 2024; Hidayatullah & Arif, 2022)

3.4. A Dialogical Reconstruction: Convergences Without Reduction

The first convergence between ta'dib and meaningful learning is their shared rejection of empty accumulation. Both perspectives oppose a learner who possesses fragments of information without understanding their relationships or implications. Ausubel describes this problem in terms of arbitrary and rote learning; al-Attas describes a disorder in which knowledge is detached from its proper place and purpose. The diagnoses differ in language and philosophical depth, yet both reject the idea that more

information automatically produces an educated person. This convergence allows teachers to challenge practices that reward speed of recall while neglecting explanation, verification, application, and reflection. (Al-Attas, 1993; Ausubel, 1968; Bryce & Blown, 2024)

A second convergence is the importance of ordered relations. Meaningful learning depends on structured conceptual relations between new and prior knowledge. Ta'dib depends on a recognition that things, persons, forms of knowledge, and purposes are not interchangeable. In both cases, education requires learners to distinguish rather than flatten: cause from correlation, evidence from assertion, central concept from peripheral example, expertise from popularity, and permitted use from harmful use. The convergence is pedagogically useful because concept mapping, comparison, and source evaluation can become practices through which learners both organize cognition and exercise adab. (In'ami et al., 2025; Novak, 2010; UNESCO, 2023)

A third convergence concerns active responsibility. Meaningful learning requires learners to make relationships among ideas; ta'dib requires learners to assume responsibility for how knowledge is received and used. Neither framework is satisfied with a learner as a passive container. However, the kind of activity differs. In meaningful learning, activity is judged by cognitive engagement and conceptual change. In ta'dib, activity is also judged by whether it is truthful, fitting, and just. A ta'dib-based deep learning design should consequently ask students not only to produce an explanation or project, but also to articulate the evidence, stakeholders, consequences, and ethical boundaries that make their application responsible. (Chi & Wylie, 2014; Hidayatullah & Arif, 2022; Novak, 2002)

The first major difference lies in ontology and epistemology. Meaningful learning theory does not depend on a particular religious account of reality; it studies how individuals relate new propositions to cognitive structures. Al-Attas, by contrast, grounds education in an Islamic worldview in which knowledge, being, and human purpose are ordered in relation to God. It would therefore be inaccurate to claim that Ausubel's theory supplies the metaphysical basis of ta'dib or that ta'dib merely gives religious vocabulary to cognitive psychology. The dialogue is productive only when each tradition is allowed to retain its distinctive question: one asks how conceptual

integration occurs, while the other asks what knowledge is, how it should be ordered, and what kind of person education should form. (Al-Attas, 1980, 1993; Bryce & Blown, 2024)

The second difference is teleological. Meaningful learning aims at durable, transferable, and conceptually coherent understanding. Ta'dib includes understanding but directs it toward wisdom, justice, and proper action. This difference has practical consequences. A lesson on digital media, for instance, can be meaningful if students accurately distinguish algorithms, sources, and claims; it becomes ta'dib-based when they also learn to avoid deception, acknowledge others' intellectual work, protect privacy, and use communication in ways that preserve dignity. The additional elements are not external moral rules appended after learning. They specify the educational significance of what it means to know well. (Al-Attas, 1980; UNESCO, 2023; Yunita et al., 2025)

The reconstructed relationship can thus be stated succinctly: ta'dib is the normative orientation of deep learning, while meaningful learning is one of its pedagogical mechanisms. Ta'dib asks whether knowledge is being pursued, ordered, communicated, and applied in a way that forms responsible persons. Meaningful learning helps teachers design the cognitive conditions under which students can actually understand and reorganize knowledge. This formulation avoids two symmetrical errors: reducing ta'dib to good manners, and treating meaningful learning as sufficient ethics. It also makes room for other pedagogical theories, such as self-regulated learning and constructive engagement, as supportive mechanisms rather than rival worldviews. (Panadero, 2017; Rahmawati et al., 2025; Torracó, 2016)

3.5. Principles for Ta'dib-Based Deep Learning

The first principle is to formulate learning objectives in dual terms: conceptual understanding and responsible judgment. A lesson objective should specify what learners need to explain, compare, or apply, but it should also identify the relevant form of intellectual or social responsibility. For example, in a lesson on online religious information, students might be asked to distinguish primary from secondary sources and explain how source provenance affects credibility. The ta'dib dimension is not a vague exhortation to be good; it requires students to demonstrate fair attribution, restraint in

sharing unverified claims, and reasons for treating some sources as more authoritative than others. Such objectives bind cognition and conduct at the point of design. (Al-Attas, 1980; UNESCO, 2023; Zou et al., 2025)

The second principle is to begin from prior knowledge while making it open to correction. Meaningful learning recommends that teachers elicit what students already believe, know, or associate with a topic. A ta'dib-based approach adds that prior knowledge must be approached with humility: both teacher and learner should recognize that familiar claims, viral explanations, and inherited assumptions may be incomplete or mistaken. Diagnostic questions, short writing prompts, and concept maps can reveal starting points, while respectful dialogue creates room for revision without humiliation. This aligns cognitive accessibility with an ethic of truth-seeking and prevents prior knowledge from becoming an unquestioned authority. (Bryce & Blown, 2024; Hidayatullah & Arif, 2022; Novak, 2010)

The third principle is to organize knowledge through meaningful relations and rightful sources. Teachers should sequence concepts so that students can see how key ideas, evidence, examples, and applications fit together. At the same time, they should make the provenance of knowledge visible: who makes a claim, on what basis, within which context, and with what limitation. In digital spaces, this can be enacted through annotated reading, comparison of source types, citation practice, and explicit discussion of uncertainty in AI outputs. The aim is not to create suspicion toward all information; it is to cultivate a habit of proportionate trust grounded in evidence and responsibility. (Al-Attas, 1993; Fawns, 2022; UNESCO, 2023)

The fourth principle is dialogical explanation. Meaningful learning benefits from opportunities for learners to articulate connections, encounter counterexamples, and revise their explanations. Ta'dib requires that dialogue preserve the dignity of participants and the seriousness of truth. Teachers should therefore model how to ask a difficult question without ridicule, challenge a claim without attacking a person, and acknowledge an error without loss of face. Structured discussion protocols, evidence-based response prompts, and peer feedback can make this concrete. The teacher remains an intellectual and moral guide, but guidance is exercised through reasons,

listening, and accountable correction rather than through unexamined assertion. (Bryce & Blown, 2024; In'ami et al., 2025; Chi & Wylie, 2014)

The fifth principle is authentic and ethical application. Indonesian deep learning policy emphasizes application and reflection; meaningful learning theory likewise values transfer beyond the original lesson. Ta'dib adds that application must be judged in relation to benefit, harm, justice, and human dignity. A project should not be treated as deep merely because it is digital, collaborative, or publicly displayed. Students can be asked to identify who may benefit from an idea, whose perspective may be missing, what data should remain private, and what responsibilities follow from making a claim online. This turns application into a disciplined practice of ethical reasoning rather than a performance of innovation. (Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025; UNESCO, 2023)

The sixth principle is guided reflection or muhasabah-oriented learning. Reflection in deep learning can be understood as a review of what one has learned, how one learned it, and what remains uncertain. Within ta'dib, reflection also includes examination of intention, conduct, and the effects of one's actions. A reflective journal can therefore ask students to identify a misconception they revised, a source they initially trusted too quickly, a contribution they owe to another thinker, and a decision they would change in future digital work. This is compatible with research on self-regulated learning, where planning, monitoring, and self-evaluation are central, while retaining a richer moral vocabulary for responsibility. (Panadero, 2017; Rahmawati et al., 2025; Yunita et al., 2025)

The seventh principle is assessment for accountable understanding. Traditional quizzes may still have a place when they test essential knowledge, but they should not be the sole evidence of learning. Assessment can ask students to explain conceptual connections, defend a source choice, annotate the role of AI assistance, revise a claim after feedback, and reflect on the consequences of a proposed solution. Such practices align with assessment-for-learning approaches that value feedback, learner judgment, and the capacity to use knowledge beyond the assessment event. In a ta'dib framework, transparency about assistance, citation, and intellectual ownership becomes part of what is being assessed. (Boud & Falchikov, 2006; UNESCO, 2023; Zapata et al., 2024)

3.6. Implications for Indonesian Classrooms and Digital Learning

A ta'dib-based deep learning framework is relevant to Indonesian schools because the national policy already invites teachers to connect understanding, application, and reflection. The framework does not ask schools to replace this policy vocabulary. It offers a way to deepen its ethical and epistemic content, especially in Islamic education, general education, and cross-curricular digital literacy. In a science lesson, for example, students can learn to connect evidence with explanation and consider the responsible use of environmental knowledge. In a language lesson, they can analyze sources, authorship, and respectful argument. In religious education, they can learn to distinguish authoritative knowledge from viral claims without turning the classroom into a space of uncritical conformity. (Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025; Mu'ti, 2023)

Generative AI provides a concrete test case. Students may use AI to brainstorm questions, receive feedback, compare explanations, or identify gaps in a draft. But use becomes educationally weak when the system replaces the learner's work of verification, conceptual connection, and authorship. Research on AI feedback shows that learners can experience benefits from formative support while also encountering problems related to calibration, transparency, and overreliance. A ta'dib-based approach would require students to disclose relevant AI assistance, fact-check output against credible sources, identify uncertainty, and explain how their final judgment differs from the system's suggestion. This preserves human agency and turns AI use into an object of reflection rather than a shortcut around learning. (UNESCO, 2023; Zapata et al., 2024; Zou et al., 2025)

Teacher education is a necessary condition. Teachers cannot be asked simply to add adab statements to a lesson plan or to become technical experts in every emerging tool. They need professional learning that connects content knowledge, learning theory, ethical judgment, and practical assessment design. This includes how to elicit prior understanding, facilitate dialogue, design authentic tasks, evaluate AI-supported work, and model source attribution. An entangled view of pedagogy is helpful because it rejects the false sequence in which a technology is chosen first and educational purpose is considered later. Teachers and schools must negotiate purposes, tools, constraints,

and values together. (Fawns, 2022; Kementerian Pendidikan Dasar dan Menengah, 2025; Rahmawati et al., 2025)

The framework also has implications for inclusion. Digital learning initiatives can widen participation only when access, language, disability, teacher support, and local context are addressed. A ta'dib orientation strengthens this point because justice requires attention to who is enabled or excluded by a learning design. It would be contradictory to celebrate personalized digital learning while ignoring unequal access or to demand polished digital projects without considering the resources students can realistically use. Thus, responsible deep learning includes both individual discipline and institutional responsibility: schools should design tasks, support systems, and technology policies that do not convert socioeconomic inequalities into moral judgments about student effort. (UNESCO, 2023; Zou et al., 2025)

Finally, the model should be treated as a design hypothesis, not a finished program. Its concepts can inform classroom routines, but their relevance and feasibility must be tested with teachers and learners. Future research could examine how students understand adab in digital inquiry, how teachers assess accountable understanding, whether concept mapping and reflective journals support both comprehension and ethical discernment, and how different school communities negotiate authority and dialogue. Mixed-method studies, design-based research, and participatory approaches are especially suitable because the framework concerns both observable learning processes and normative interpretations that students and teachers may articulate differently. (Snyder, 2019; Torraco, 2016; Zapata et al., 2024)

3.7. Theoretical Contribution and Boundaries

The principal theoretical contribution of this article is to position ta'dib as the orienting grammar of deep learning rather than as a separate character-education component. This position changes the level at which adab enters educational design. It shapes what counts as a valid objective, how a source is chosen, how dialogue is conducted, how technology is used, and what assessment asks students to demonstrate. Meaningful learning theory contributes at the level of cognitive and pedagogical mechanism, helping teachers create conditions for substantive conceptual integration. The combination is complementary precisely because it does not erase the

difference between a theory of how learning becomes meaningful and a philosophy of why knowledge should be rightly ordered and responsibly used. (Al-Attas, 1980; Bryce & Blown, 2024; In'ami et al., 2025)

Several boundaries must be maintained. First, ta'dib cannot be operationalized as a checklist of compliant behavior; doing so would empty it of epistemic depth. Second, meaningful learning cannot be judged solely through students' positive feelings or the visual attractiveness of learning activities; it concerns conceptual relations and transformative understanding. Third, neither framework removes the need for subject-specific knowledge, teacher expertise, or empirical evaluation. The proposal also does not assume that all Indonesian learners share identical experiences of religion, authority, or technology. Its value depends on careful local adaptation, transparent dialogue, and the willingness to test whether its practices genuinely improve learning and responsibility. (Bryce & Blown, 2024; Fawns, 2022; Yunita et al., 2025)

4. Conclusion

The findings show that integrating al-Attas's ta'dib with meaningful learning theory can strengthen Indonesia's Pembelajaran Mendalam agenda, though without claiming theoretical equivalence. Meaningful learning addresses cognitive integration, while ta'dib governs the ordering, judgment, communication, and application of knowledge in forming responsible persons. Their integration yields a layered model—cognitive connection, source evaluation, ethical dialogue, authentic application, and reflective accountability—where adab becomes a criterion of educational quality, not a digital add-on.

This framework reframes mindful, meaningful, and joyful learning beyond engagement, technology, or test scores, guiding digital tool use with agency, humility, verification, and responsibility while retaining conceptual pedagogies. As a conceptual proposal, it now requires empirical testing through co-design, implementation, observation, and revision of ta'dib-based practices across diverse classrooms to validate its normative promise against actual student experiences and needs.

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