

Assimilative Learning: An Integrative Framework Bridging Classical Islamic Pedagogical Wisdom and the Modern Educational Theory, with implications for SDG 4 Lifelong Learning

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Abstract

The paper suggests an integrative model called “assimilative learning” that connects classical Islamic pedagogical wisdom with the modern educational theory and proposes to rethink the value of reading and learning. This approach proposes that the fundamental nature of learning is a process that unfolds over time, that impacts the learner's intellect, character, and moral disposition over time, rather than whether the learner can immediately recall, summarize, or quote content after engaging in the learning. The paper extrapolates from classical Islamic education which has always made *tarbiyah*, or the act of forming one's ethical character and intellect, a primary goal of education, as well as modern ideas of implicit learning and tacit knowledge, to show that both agree on a single observation: substantive learning frequently happens outside the scope of conscious awareness and remains un-assessable by short-term recall-based methods. This assimilative learning process resituates the reader as a subject, not someone who simply receives data from other people to be retrieved, but a subject who is always being reshaped, subtly and subtly, from the language he constructs in his inner consciousness. On this basis, it is suggested here that curriculum design, religious education and wider pedagogical practice should be informed, and that assessment models should have a different emphasis, valuing the unseen,

cumulative development of the learner over a timeframe rather than the measurable outcomes. This paper introduces a model for reconceptualizing the definition, significance and assessment of learning that foregrounds the gradual and embodied shift in nature as an appropriate and important indicator of educational achievement in both religious and general education settings.

Keywords: assimilative learning, Islamic educational philosophy, tarbiyah, implicit learning, curriculum design, moral formation, pedagogical assessment, transformative learning, SDG 4, lifelong learning

1. Introduction

Religious and secular educational systems have used tests of explicit recall (examinations, recitations, quizzes and summaries) for a long time as the main evidence that learning has taken place. But this paradox is not uncommon: someone may read a book or hear a lecture or study a text in great depth and then, when asked to reproduce it in detail, fail to recall much of it; however, at the same time, the reader or hearer will have picked up a number of words, a subtler moral judgment, or a more polished way of thinking or speaking. This paradox is used as a starting point in this paper and the question raised is what does it tell us about the nature of learning itself.

The inquiry is sparked by the conceptual dilemma experienced by two predominant conceptions of successful education. The first is widespread today in education and in standardized tests: it gives primacy to explicit and retrievable knowledge, that is to say, what the learner is able to say, define, reproduce at will. The second is that of a more insidious, cumulative and largely unconscious character, having to do with the person's language skills, moral sense and patterns of thinking that are developed as a result of sustained interaction with knowledge. In classical Islamic educational thought, the second aspect has been the focus for centuries, where the acquisition of knowledge is not a goal of education but rather a means to the end of character and disposition formation, not only in the general sense, but in the specific sense of tarbiyah (Abdalla, 2025). In recent years, cognitive and educational psychology has reached a similar conclusion: that much important learning is learned outside of conscious attention and that it cannot be reported verbatim (Reber, 1977; 1996; 2022).

This paper suggests that these two traditions, one of centuries of Islamic pedagogical reflection, and the other of modern cognitive science and adult-learning theory, share a common and underutilized insight. When placed in explicit dialogue, a new integrative construct emerges which this paper refers to as assimilative learning, learning in which the value of the material is not judged according to what can be recalled immediately but according to the long-term impact that it has on the learner's intellect, language and moral disposition. This construct is developed theoretically in the paper, placed in the context of the current literature and made explicit its implications for curriculum design, religious education and pedagogy and assessment in general.

The importance of this inquiry goes beyond theoretical discussion. Religious and secular teachers regularly make decisions, both inside and outside of the classroom, that have significant implications for the curriculum, instructional time allocation, and assessment methods which are

grounded in the implicit premises that they make regarding what constitutes evidence of learning. If those assumptions are weighted in favour of the explicit recall, whole aspects of educational value may be systematically undervalued, mismeasured or even absent from the curriculum, in favour of what is easier to test. A theoretical system that can name, organize and validate the more hidden aspects of learning thus has significant practical consequences for the distribution of attention and resources in educational institutions, and for the interpretation and self-assessment of the learning process by individual learners.

2. Statement of the Problem

The modern culture of assessment has become more one-dimensional and focused on quantifiable and immediate results, especially in formal education, such as standardized tests, quizzes, and recall tasks that are evaluated with rubrics. They have legitimate uses of accountability and comparability but they systematically overlook one narrow slice of what learning actually produces. The current paradigms of assessment have already been subject to some questioning by those who have a broader view of the purposes of education, who suggest that assessment systems should be more closely aligned to learners' well-being, identity and contribution to society over a longer-term horizon than limited workplace or examination skills (McArthur, 2023). This criticism, however, has been elaborated upon in the secular discourse of higher education and has not been robustly linked to the other criticism that has existed, and perhaps even existed for longer, in classical Islamic pedagogical thought.

Research on implicit learning and incidental knowledge acquisition, on the other hand, shows empirically that people often acquire complex and structured knowledge (of language, social norms, abstract patterns) without being able to describe what they learned and how they learned it (Reber, 1977; 1996; 2022). Meta-analytic findings in L2 research support this finding in more specific terms: L2 vocabulary gains were found to be measurable and permanent even when the learner is not actively trying to learn and memorize new words; incidental acquisition of vocabulary from reading in the L2 is shown to have significant effect sizes in immediate and delayed post-tests (Webb et al., 2023). If that is the case for vocabulary alone, it is worth considering that there may be an analogous, but more subtle, operation at work in style, reasoning and moral insight.

So the problem that this paper aims to solve is twofold. First, there is a gap in concepts, as there is no existing model that explicitly links the Islamic pedagogical perspective on tarbiyah with the cognitive-scientific perspective on implicit and tacit learning to create a unified model of how reading and study change the learner. Second, a practical one: assessment and curriculum in both religious and general education are not well developed to acknowledge, appreciate or develop the slow, cumulative and largely imperceptible dimension of learning that both traditions identify as important.

This paper aims to construct an integrative theoretical framework (assimilative learning) through conceptual and thematic analysis between classical educational theory in Islam with contemporary educational and cognitive theory. To this end, there are three guiding questions answered in the paper. **First**, how does the Islamic educational concept of tarbiyah predict and/or

resemble the cognitive-scientific notion of tacit knowledge and implicit learning? **Second**, how can these two lines of thinking be theoretically unified into a single, unified learning model which will capture the unseen, incremental, and dynamic nature of the learner? **Thirdly**, what does this model have to say about curriculum design, the subject of RE and pedagogical assessment more generally, in terms of the meaning and measure of the value of reading and sustained study?

3. Theoretical Framework

Implicit Learning and Tacit Knowledge

The cognitive-scientific basis for the present paper is the theory of implicit learning, initially formulated in a systematic manner by Reber (1977), and later summarised by Reber (2022). Implicit learning is the process by which a complex, rule-governed type of knowledge is acquired in a largely unintentional way, and for which the knowledge acquired is tacit, meaning that it is difficult to describe or reflect on, yet it in fact influences later judgment and performance. This is a challenge to the fact that much educational practice tacitly assumes that learning that cannot be verbally reproduced has not occurred or that it is not learning. In Reber's seminal experiments on learning an artificial grammar, participants were able to discriminate between well-formed novel strings and ill-formed novel strings that were produced according to a complex underlying grammar, but they could not explain the rules underlying that grammar; the knowledge they learned was abstract, structural, and operative, even if not explicitly learned.

This theoretical stance has been carried on and extended well beyond the classroom grammar-learning context. Tacit knowledge has been demonstrated to be communicated and made partially explicit in professional and clinical settings by the intentional use of boundary objects and reflective practices, it is not completely untranslatable and can be developed and partially externalized by pedagogical mediation structured through reflection and the use of boundary objects (Lyng et al., 2023). The importance of this finding for the present framework is that it suggests that implicit, assimilative learning is not entirely out of the reach of pedagogy; specific practices of engagement, reflection, and habituation can impact the content and nature of what is tacitly learned.

Another, and more domain specific, line of evidence is derived from studies of incidental vocabulary learning from reading. In a recent meta-analysis of twenty-four primary studies, consistently large effects were observed for vocabulary acquisition from meaning-focused reading exposure, with vocabulary acquired in the reading episode still being retained and integrated on a delayed post-test after the period of reading, suggesting that readers did not need to make a conscious effort to remember the new vocabulary during the reading episode but were still able to remember and integrate it afterwards (Webb et al., 2023). The following hypothesis, which is the major claim of this paper, is supported by this body of evidence: Reading affects the reader in ways that are not necessarily measured by explicit recall of content.

Tarbiyah and the Islamic Conception of Holistic Formation

A remarkably compatible, and much older, description of learning as transformation, not just information, is offered by classical Islamic educational thought. In recent scholarship, the concept of tarbiyah, defined as nurturing, upbringing, or holistic formation, has been demonstrated to act as an integrative paradigm within Islamic educational philosophy, giving way to the wider reality of a higher purpose that involves a focus on worship, ethical refinement, and the formation of the whole person (Abdalla, 2025). In this paradigm, the acquisition of knowledge is never considered an end unto itself, but rather knowledge is seen as valuable only in the sense that it helps to shape the moral, spiritual and intellectual life of the person throughout his life.

A related and compatible idea was ta'dib, which has been theorized as a model that focuses on disciplining and refining of character and intellectual development in one framework, as the intellectual dimension of Islamic pedagogy must not be divorced from moral and spiritual development in the context of Islamic boarding-school education (Anwar et al., 2025). Together, tarbiyah and ta'dib describe an educational model in which the transformation of the learner must be gradual, embodied, and in part hidden – precisely what makes this transformation hard to capture for instruments that measure what is explicitly and immediately retrievable.

This all-encompassing approach transcends Islamic development theory as a whole. Recent conceptual developments in Islamic child development have suggested that the interplay between nature (fitrah) and nurture (nurturing) affect the child's character on a cumulative basis throughout the life span, in repeated and usually unnoticed events, rather than in terms of set periods of instruction (Aziz et al., 2025). The developmental account of the process of low visibility, cumulative formation is consistent with the cognitive-scientific account of implicit learning described above, and it is here that the assimilative learning framework proposed in this paper makes sense.

Transformative Learning Theory as a bridging concept

The third theoretical resource, which straddles the cognitive-scientific and Islamic pedagogical accounts, is the theory of transformative learning. Transformative learning theory was developed by Jack Mezirow, and was extensively developed and modified over almost five decades of subsequent research (Hoggan, 2023). While the traditional focus in transformative learning theory has been on the need for a disorienting experience to spark moments of critical reflection, recent research has focused on the emotional, relational and incremental nature of transformation, highlighting that meaningful change in a learner's frame of reference does not need to happen at one moment but can unfold over time with lower levels of disruption (Carter & Nicolaides, 2023).

This newer, developmental and affective interpretation of transformative learning theory offers a helpful conceptual linkage between the cognitive language of implicit learning and the explicitly moral and spiritual language of tarbiyah. All three frameworks share the view that learning outcomes that impact the disposition of the learner (linguistic, cognitive, emotional, and moral),

are the most significant ones, rather than those that are to be added to a bank of propositions that can be retrieved. This is where the assimilative learning framework is looking for a formalization.

The definition of ‘contemporary’ and its relationship with classical thought

This paper relies on a contrast between “classical” and “contemporary” theory; such a contrast must be defined, and not impressionistically. In this paper the term contemporary is defined as the last 50 years — from the late 1970s to the present (roughly 2026). This is not a random or “fuzzy” boundary, it is based on the specific publications from which the paper's theoretical framework is drawn. The formal statement of implicit learning theory was first introduced by Reber and Lewis (1977), and is summarized by Reber (2008). Transformative learning theory was first theorized by Mezirow in 1978, which is precisely when Hoggan (2023) says it was first conceptualized in theory, with a reference to “45 years”. The paper represents contemporary Islamic educational scholarship that uses an academic approach to tarbiyah and ta’dib as systematic and cross-referenced academic constructs, with the scholarship of the last twenty years published between 2005 and 2026 (Aziz et al., 2025; Abdalla, 2025; Anwar et al., 2025); and contemporary assessment theory with incidental-learning research by the scholarship of the last ten years published in 2023 (McArthur, 2023; Webb et al., 2023). Contemporary thus refers not to a closed or historically settled scholarship, but rather to an active, constantly evolving field of scholarship which is constantly being revised and expanded, much of which has come from the previous one to three years.

Classical Islamic pedagogical thought, however, is the collection of scriptural and early scholarly sources from which notions of tarbiyah and ta’dib are derived and their elaboration in the medieval and early modern period of Islamic scholarship. This classical body of work is far older than the theoretical thinking of the 20th century Western cognitive sciences and adult-education theory, and did not stand in dialogue with it or anticipate it. The position of classical and contemporary in this paper is, therefore, not a confrontation of one with the other; contemporary work in the fields of tarbiyah and ta’dib does not reject or dismiss the classical texts, but rather organizes, cross references, and re-states them with a different focus for contemporary students and institutions, as explicitly done in Abdalla (2025) and Anwar et al. (2025) respectively, through the critical literature review methodology.

Three changes set the contemporary period apart from the classical and early-modern periods that came before it can be identified, and each can be traced to the development of a particular method or institution. First, the modern era brought controlled experimentation and quantitative synthesis into the picture as ways to test claims about learning that the traditions that had preceded it could only assert, albeit on theological, experiential, or philosophical grounds. Reber (1977) and, later, Webb et al. (2023), show this shift in practice by sending the phenomenon of learning without awareness from description to laboratory testing and meta-analysis. Second, the modern era gave rise to a model of unconscious learning that was process-oriented, as earlier traditions were concerned with the product of holistic formation rather than a model of how the unconscious learning occurs (Reber 2022). Third, new methodological tools such as systematic and critical literature review, qualitative interview-based inquiry and cross-referencing between

English and Arabic language resources (Abdalla, 2025) have been introduced to contemporary Islamic educational scholarship, bringing a new dimension of comparative and interdisciplinary approach that can directly relate with non-Islamic educational theory.

Even with these adjustments to the methods, contemporary theory in each thread discussed in this paper is clearly dependent on the preceding one, and so is not a replacement of it. A non-technical analogy is used to make this relationship concrete. Let's talk about a historic building, which is being modernized: Electricians install wiring, the plumbers install new pipes, and the architects improve the insulation to meet the needs of today, but none of these changes are made to the structure, original foundations, or load-bearing walls, because they are the essential building blocks on which the rest of the structure depends for its reconstruction. It is necessary to get rid of the original foundation; then all the additional wiring and piping collapse; The additional structures work only by retaining the weight of the original structure. The contemporary theory of education is related to the classical theory and early theory in the same manner. There has been no demolition and reconstruction since 1978 of the transformative learning theory, but rather an addition to the original model of transformative learning, cognitive-rationalist approach, that was being added to an existing structure, with later researchers adding an emotional dimension to Mezirow's original theory (Carter & Nicolaides, 2023; Hoggan, 2023). The same applies to implicit learning theory: Reber's (2022) synthesis and consolidation of the original 1977 formulation is still basically the same construct (tacit, structurally organized knowledge acquired without conscious effort) that was originally studied, and the applied work in healthcare and in language acquisition (Lyng et al., 2023; Webb et al., 2023) adds new rooms onto the same foundation, testing the same underlying construct (tacit, structurally organized knowledge acquired without conscious effort) in domains that the original theory itself did not examine. The same rationale of renovation and not demolition is evident in contemporary scholarship in the field of tarbiyah and ta'dib, where Abdalla (2025) and Anwar et al. (2025) each explicitly base their contemporary theoretical claims on primary and secondary classical sources, treating the classical corpus not as an outdated structure to be abandoned, but as the load-bearing foundation upon which their own contemporary work is structurally dependent and which would not stand alone without it.

This continuity is important to explain why the present paper chooses to adopt a contemporary theoretical framework instead of engaging with classical primary sources as such. First, by providing independently falsifiable evidence, methodologically transparent evidence, experimental results and evidence from meta-analysis, that evidence is evidence that is strong enough to support the classical claim, and not in place of that claim, because the two types of evidence are on different foundations and point to the same conclusion. Second, while contemporary theory may be considered an unclosed field, which is experiencing continuous revision, as recently as 2023 and 2024, transformative learning theory was reformulated (Carter & Nicolaides, 2023, Hoggan, 2023), it is structurally able to accommodate the type of extension this paper brings to it, which is a different kind of integration than that provided by the historical canon. In the third place, the scholarship of tarbiyah itself is the one that makes the classical pedagogical ideas accessible in an interdisciplinary academic discourse, and it is contemporary scholars, rather than the classical sources directly, who translate, cross-reference and systematise these ideas for engagement with non-Islamic educational theory (Abdalla, 2025; Anwar et al., 2025). The emphasis on contemporary theory is therefore methodological, not historical, and

based on evidence and current scholarly debate rather than on a preference for the present over the past; as the renovation analogy above suggests, contemporary scholarship in each of the traditions examined here is conscious of its own structural reliance on the past – its foundations, its tradition, and its current status as a product of their context.

4. Literature Review

Until recently there has been little dialogue between existing scholarship on implicit learning, on the one hand, and on transformative learning and tarbiyah, on the other. In cognitive psychology, the tradition going back to Reber (1977) and elaborated in Reber (2022) has led to a large amount of empirical work showing that complex, structured knowledge can be acquired without knowledge of the learning process and product. This literature has since been extended to applied areas, such as the development of professional expertise and health care practice, where tacit knowledge is seen to underlie good judgment even when health care practitioners are unable to provide a rationale for their decision making. (Lyng et al., 2023)

In applied linguistics, the empirical research into incidental learning in reading has progressed significantly, from individual case studies to large-scale, quantified and well-structured meta-analyses. Based on the results of thousands of learners across a variety of settings, Webb et al. (2023) summarized that, despite the fact that students were not explicitly taught to memorize the word being learned, there was a general agreement that meaning-focused reading leads to lasting vocabulary growth. Within a limited linguistic area, perhaps the most forthright quantitative evidence of the general phenomenon which this paper is addressing is to be found in this literature: that the reader, by reading, is changed by factors the reader did not purpose to change.

In Islamic education scholarship, there has been a renewed focus in recent years to understand and formalize the basic elements of tarbiyah, ta'lim, and ta'dib. Abdalla (2025) has provided a critical review of English and Arabic language research on tarbiyah, suggesting that it is a paradigm of an integrative nature and that it is a paradigm of God-centeredness that puts instructional processes at the service of the larger goals of ethical and spiritual formation, and that Islamic education should place tarbiyah more clearly at the heart of curriculum design, pedagogy, and educator formation within the Islamic school. This is complemented by Anwar et al. (2025) who reconstruct ta'dib as a theoretical model, which is appropriate for Islamic boarding-school education, highlighting the inseparability of moral and intellectual development in Islamic boarding-school education. This is followed by an elaboration of the concept of character formation in developmental psychology by Aziz et al. (2025) which emphasizes that character formation is the result of a combination of innate traits and nurturing through continuous environments, rather than being the result of separate development interventions.

Transformative learning theory has been significantly revised since its inception within the field of adult education. Forty-five years after Mezirow's original conceptualization, Hoggan (2023) follows the development of the theory over the years, noting how it has been developed in response to criticisms of its rationalist assumption and the relative lack of attention to emotional and social aspects of change. Carter and Nicolaides (2023) directly address this gap, suggesting that the disorienting dilemma often seen as the catalyst for transformative learning is first an

emotional process and needs active engagement with challenging emotions in order to move to a productive critical reflection. Collectively, this sequence of theories that have been revised within the field of transformative learning theory has brought the theory closer to the holistic, dispositional language that long has been employed in Islamic pedagogical thought, without the two literatures having been cited by one another's names directly, in many cases.

In conclusion, the current literature has been questioning the current measurement paradigms as they do not fully reflect the outcomes of interest. McArthur (2023) proposes that the emphasis of authentic assessment in higher education be shifted from the narrow disciplinary competencies to a focus on work, well-being, and contribution to society, thereby questioning the dominance of short-term recall-based assessment practices. This assessment-centred literature offers the practical complement to the above theoretical convergence of dispositional, cumulative and tacit learning: when learning is truly cumulative, dispositional, and in part tacit, assessment regimes based on immediate, explicit recall are structurally unmatched to what they claim to measure.

What is missing in this literature, and what the present paper aims to provide, is a theoretical integration of these three strands of implicit and incidental learning, tarbiyah centered Islamic pedagogy, and revised transformative learning theory, which provides a conceptual and practical framework for guiding the conceptual learning and reform practices of practitioners.

5. Assimilative learning framework: A conceptual model.

In this paper, based on the theoretical background reviewed above, assimilative learning is proposed as a simple conceptual integration to explain how the process of sustained engagement with knowledge (paradigmatically, but not exclusively, in the form of reading) is gradually and unconsciously distributed across several interdependent dimensions of the learner's development. The framework pinpoints four of such dimensions.

First is linguistic assimilation, the progressive strengthening of vocabulary, sentence structure, and expressive ability by repeated exposure to a variety of texts, that is, by incidental vocabulary learning (IL), which has been well documented in the literature (Webb et al., 2023). The second dimension is cognitive assimilation: the internalization of patterns of reasoning, argumentation, and structural thinking, as shown by the implicit learning literature where people extract the structure from complex inputs without explicit rule instruction (Reber, 2022; Reber, 1977). The third dimension is moral and dispositional assimilation, which indicates the gradual development of moral sensibility, values, and habits of judgment in the process of sustained engagement with material that is morally and spiritually significant, a process directly anticipated by the Islamic concept of tarbiyah, which focuses on holistic, worship-oriented formation (Abdalla, 2025; Anwar et al., 2025). The fourth dimension is dispositional or frame-of-reference assimilation which describes how the learner's "overarching habits of mind and meaning perspectives" are changed over time, as noted in the revised version of the transformative learning theory, in which significant change can take place through prolonged engagement rather than a single disorienting event (Carter & Nicolaidis, 2023; Hoggan, 2023).

This four-dimensional model gives rise to three structural claims. First, assimilative learning is non-uniform: the four dimensions will be impacted by any given text or learning episode in an uneven manner and a learner cannot predict in advance which dimension will be most impacted when he/she encounters a given text and learning episode. Second, assimilative learning is both cumulative and threshold dependent: individual learning instances can add up to very small amounts, and transformation only shows up when enough of these learning instances have accumulated, as is reported in the extensive reading (Webb et al. 2023) and incidental vocabulary (Keesing & Ostfeld, 2021) literature. Third, assimilative learning is only partly subject to the learner's introspection: The knowledge base it produces is tacit in Reber's (2022) sense, and learners often do not realize how much and how importantly they have been transformed by the reading; this phenomenon helps to explain why they can feel like they have forgotten a book, but in certain respects they have been meaningfully changed by it.

The assimilative learning approach does not underestimate the role of explicit recall; it is only an overt aspect of a much more significant and important process. On this measure, the educational value of a text ought to be measured as a blend of the content knowledge that can be retrieved and the more difficult to measure, but perhaps more permanent, change over the various linguistic, cognitive, moral, and dispositional dimensions outlined above.

6. Discussion and Implications

Implications for Curriculum Design

In both religious and general education, curriculum designers should revise their design criteria for the near exclusive focus on content coverage and short-term recall, if learning really is assimilative as described above. It is more likely that curricula with sustained, diverse, and extensive reading programs, and with a variety of reading materials and genres, and with repeated exposure to foundational texts over time, will lead to long-lasting assimilative gains than curricula designed for efficient, content-driven transmission. This is in line with evidence that the amount and diversity of meaningful input experienced by learners affect incidental learning gains (Webb et al., 2023), and with the Islamic educational principle that the process of forming character and intellect through *tarbiyah* should be continuous, incremental and not concentrated in specific learning units (Abdalla, 2025).

The implications for Religious Education

The purpose of religious education in particular is that, as many teachers already know but often can't verbalise, the importance of extended reading of the scriptures, classical texts and moral teachings cannot be summarised and recalled by the student at the end of class. The *ta'dib*-based model of Islamic boarding-school education, which clearly emphasizes the moral, spiritual, and intellectual cultivation of students as complementary goals, can be used as a template for the design of Islamic education curricula that prioritize character development over content test-taking only (Anwar et al., 2025). This does not mean that memorization or recitation was being de-emphasized, which has always been an important aspect of formation in many religious

traditions, but rather, it means that the deliberate focus on the slower, less obvious dimensions of formation as tarbiyah has always valued it is being highlighted alongside the recall-based practices.

The implications for pedagogical assessment

The most important implication of the assimilative learning model for assessment is perhaps on assessment itself. The assimilative learning framework is a natural theoretical ally when applied to contemporary calls to reorient assessment around students' broader development, well-being and contribution to society over a longer period of time than a narrowly defined, immediately measurable competency (McArthur, 2023). Evaluation methods could also include more synthetic, portfolio or reflective methods with a longer time dimension that are better suited to measuring aspects of learning that do not lend themselves to fast or immediate assessment, such as aspects of change in expressive style, reasoning patterns and moral judgment over time. These would not be used in lieu of explicit assessment by recalling, but would put the explicit assessment into its justful place in a wider, more correct, picture of educational value.

Implications for learner self-perception

Last, but not least, the framework has implications for students' own experiences with learning. Learners who define productivity in reading and study as recall of the text or material in detail, and who therefore do not consider it to be unproductive if they cannot, may be using an inappropriate criterion for a process that, as described above, is working exactly as it should: transmitting its impact across the vocabulary, reasoning, and character of the text or material in ways that are not intended to be, and can not be, fully recovered on cue. The explicit communication of this reframing, either through religious pedagogical traditions or in general education, might be of some assistance in empowering learners to avoid unwanted discouragement and to pursue difficult texts with longer-term interest and engagement.

Towards a Cross-Traditional Model of Educational Value

The above ideas together suggest a wider rethinking of the concept of educational value, one that extends beyond the distinction between religious and secular education. The two traditions studied in this paper shared similar insights into the fact that there are outcomes of education that are more meaningful than obvious ones. Classical Islamic thinkers expressed this recognition in the terms of tarbiyah and ta'dib, describing the gradual development of the individual's character as being bound up with the acquisition of knowledge (Abdalla, 2025; Anwar et al., 2025). Controlled laboratory studies of implicit learning by cognitive scientists have led to a similar finding: complex, abstract knowledge can be acquired implicitly, without conscious effort or awareness, (Reber, 2022; Reber, 1977). Adult-education theorists, after decades of evolution and refinement of this concept to make transformative learning theory, also learned that lasting transformation of the learner's frame of reference can emerge incrementally over time, as opposed to from singular disorienting experiences (Carter & Nicolaides, 2023; Hoggan, 2023). The strength of the assimilative learning framework and the suggestion that the core idea, that the value of the learning must be evaluated along the cumulative and dispositional dimensions of

learning, and not solely along the explicit recall dimension, seems to be a genuine and cross-culturally recurring feature of human learning, not some oddity of the intellectual and religious tradition of any one culture.

The cross-traditional convergence also implies a methodological implication for future research. Assimilative learning takes place in cognitive, linguistic, moral and dispositional aspects simultaneously, so it is not likely that any single discipline can give a perfect perspective to study assimilative learning. Each of these three groups of scholars (educational psychologists, applied linguists, and scholars of Islamic and comparative religious pedagogy) has some tools at their disposal for detecting one or another dimension of assimilative change in education, but a more comprehensive account of this phenomenon will likely depend, however, on intentionally interdisciplinary approaches that integrate longitudinal linguistic measures, assessment of moral and dispositional change, culturally grounded accounts of what formation is understood to mean in a particular educational tradition.

Alignment with Sustainable Development Goal 4: Lifelong Learning (LLL)

The assimilative learning model proposed in this paper also resonates with the global policy agenda of education found in Sustainable Development Goal 4 (SDG 4), which advocates for inclusive quality education for all, including a focus on lifelong learning opportunities for all learners, not just those enrolled in formal education. In this agenda, lifelong learning is defined not as a slogan but as a substantive commitment; lifelong learning as a learning that takes place throughout the life course; a learning that is not restricted to certified learning episodes at the end of the life course; a learning with values and dispositions that transcends the content examined by the end of the life course and that is expressly tied to SDG lifelong-learning agenda (Sholeh et al., 2024). The assimilative learning framework adds an additional missing element in this policy commitment: it provides a theoretical basis for the value of LLL that happens outside the formal credentialed learning setting, as the overall impact of LLL can be additive over the life span of a learner and can be manifested in linguistic, cognitive, and moral ways that cannot be assessed by examination, but continue to manifest themselves and grow as the learner continues his or her life.

The connection is not just a rhetorical one. Empirical studies in Islamic educational contexts have demonstrated that transformative learning processes are found to enhance the deepening of religious knowledge, critical thinking, and the continuation of students' interest and desire to learn long after the classroom has ended, and that this ability to change perspective and shift orientation of learning is very much what SDG 4 is aiming to achieve (Guefara et al., 2024). This finding directly supports the core tenet of assimilative learning theory: this type of learning takes place over time and cumulatively, and so it is the type of learning that is least likely to be assessed by formal, short-cycle assessment, but is also the one that SDG 4 aims for as the ultimate function of learning throughout the life course.

In practice, this alignment implies that, for institutions interested in achieving SDG 4's goal of lifelong learning, sustained, cumulative engagement with reading, reflection and study, religious and general, is a legitimate and measurable progress toward the goal, not just formally accredited

courses and measurable outcomes. In addition, the recognition of assimilative learning as a legitimate form of lifelong learning brings the concept of SDG 4 beyond institutional boundaries, and validates self-directed, informal, and often uncredentialed reading and learning activities many adults engage in throughout their lives, especially in religious and community-based learning traditions, as a legitimate and policy-relevant part of the broader concept of lifelong learning for all.

7. Limitations of the Study

Theoretical and conceptual, it does not introduce new empirical data, and cannot, alone, make causal statements about the amount or how of assimilative learning along the dimensions it is proposing. The framework is based on empirical literature in cognitive psychology and applied linguistics with other objectives and the patterns they document support assimilative learning model, but do not test it. Specific claims made here would require future empirical studies, such as longitudinal research on linguistic, cognitive, and dispositional changes over time in the lives of students involved in a sustained reading activity or a religious study.

8. Conclusion

The results of this paper imply that the classical Islamic pedagogical thinking, which is grounded in the concept of tarbiyah, and the contemporary cognitivist and educational thinking, which is based on the concepts of implicit learning, tacit knowledge and the revised transformative learning theory, converge to a common and significant insight: that the most important learning consequences of long-term exposure to knowledge are frequently ones that can not be directly called to mind or reported verbatim by the learner. Based on this convergence, the paper has introduced assimilative learning as an integrative theory to explain the way reading and study impact on the learner's language, cognition, morality and disposition, cumulatively and largely unconsciously. The implications for curriculum design, the organisation of RE and most significantly the evaluation of educational value are of significance. The assimilative learning framework does not count forgetfulness of a text or its meaning as an educational failure, but rather encourages teachers, schools, and students to acknowledge the more subtle and cumulative learning transformation that sustained interaction with text can bring.

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