



Beyond automation: Arts-based learning and the 4A model for human capability development in the generative AI era

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Abstract

Generative artificial intelligence can improve the speed and apparent quality of cognitive work, but polished output may coexist with shallow comprehension, dependence, homogenised ideas and weakened authorship. This conceptual study develops the 4A model as a human capability architecture for management learning in the generative AI era. A structured integrative review connects arts-based management development, experiential and transformative learning, cognitive offloading, self-determination theory, psychological safety, creativity research and human-AI interaction. The model comprises Aprendizaje (Learning), Actitud (Attitude), Alma (Soul) and Acción (Action). The Spanish terms preserve the original four-A architecture; operationally, they denote authored understanding, adaptive disposition, ethical-relational meaning and responsible behavioural transfer. Arts-based experience is positioned as a transversal medium that expands perception, embodiment, ambiguity tolerance and perspective-taking. AI is positioned as a bounded collaborator that may explain, compare, simulate, challenge and organise feedback, but may not replace first-person judgement, relational recognition or moral accountability. The article specifies eight falsifiable propositions, boundary conditions, design principles, a four-phase learning cycle, a multidimensional assessment rubric and a staged validation programme. Its distinctive contribution is a non-compensatory integration of cognition, disposition, meaning and action: technical fluency alone is insufficient when it does not preserve epistemic agency, ethical coherence and real-world responsibility. The framework offers universities, executive educators and organisational learning teams a practical and testable basis for human-AI learning design.

Keywords:

Generative artificial intelligence; arts-based learning; management development; 4A model; human capabilities; creativity; ethical leadership; experiential learning.

1. Introduction

Generative artificial intelligence has changed the conditions of learning. A participant can obtain a summary, presentation, strategic analysis, draft speech or creative concept within seconds. This capability creates genuine opportunities for access, experimentation and productivity. It also creates a pedagogical illusion: because a polished output appears quickly, learning may appear to have occurred when the learner has not developed the judgement required to evaluate, adapt or defend it.

Early evidence illustrates the paradox. Generative AI can improve performance in writing tasks and support less experienced workers (Brynjolfsson et al., 2025; Noy & Zhang, 2023). It can also increase individual creativity ratings while reducing the collective diversity of outputs when many users rely on similar suggestions (Doshi & Hauser, 2024). In management education, the danger is not only academic misconduct. It is the quiet outsourcing of interpretation, uncertainty, voice and responsibility. A person may produce more while becoming less able to explain what is true, what matters and what should be done.

This article argues that the appropriate response is neither prohibition nor uncritical adoption. Learning design should position AI inside a broader human developmental architecture. The capabilities most valuable in an AI-rich environment are not merely technical. They include the

capacity to notice, question, imagine alternatives, tolerate ambiguity, understand emotion, connect decisions to values and act with accountability. Arts-based learning is especially relevant because it engages embodied, emotional, symbolic and relational forms of knowing that conventional analytical instruction often neglects (Taylor & Ladkin, 2009).

The purpose of the article is to develop the 4A model for management learning in the generative AI era. The model consists of *Aprendizaje*, *Actitud*, *Alma* and *Acción*—Learning, Attitude, Soul and Action. The original Spanish terms are retained to preserve the four-A architecture. *Alma* is used in an operational rather than metaphysical sense: ethical coherence, meaningfulness, emotional presence, relational recognition and responsibility for consequences. The article asks how the four dimensions interact, how arts-based methods activate them, how AI should be bounded, and how learning can be assessed beyond the polish of a final product.

The article makes four contributions. First, it distinguishes output assistance from capability development and places epistemic agency at the centre of AI-enabled learning. Second, it integrates cognitive, motivational, ethical-relational and behavioural dimensions that are usually treated separately. Third, it specifies a human-first, AI-mediated, human-accountable sequence that can be tested against AI-first and conventional instruction. Fourth, it operationalises the model through propositions, design principles, assessment evidence and a validation roadmap. Unlike a generic experiential cycle, 4A defines what human capacities must be protected and developed when a generative system can supply plausible language, alternatives and feedback before the learner has formed an independent judgement.

2. Literature review

The proposed model connects four bodies of literature: generative AI and creativity, experiential and transformative learning, arts-based management development, and human motivation and psychological safety. Together they suggest that deep learning involves more than information acquisition. It requires experience, interpretation, identity, relationship and application.

2.1 The generative AI learning paradox

AI can lower the cost of producing examples, explanations, simulations and feedback. It can help learners overcome the blank page, compare perspectives and practise scenarios. Yet the same ease can reduce productive struggle. When the system supplies structure, language and alternatives before the learner has formed an independent position, it may anchor thinking and narrow exploration. Doshi and Hauser (2024) show that AI-assisted creative work can be individually stronger yet collectively more similar. This finding has direct pedagogical relevance: educational systems may reward polished convergence while losing unusual, culturally situated or personally authored ideas.

The central issue is therefore epistemic agency—the learner's capacity to form, test and revise judgements. Human-AI interaction design recommends setting expectations, communicating limitations, enabling correction and supporting learning over time (Amershi et al., 2019). In education, these principles imply visible uncertainty, source checking, alternative generation and reflection on how the tool influenced the answer. AI literacy must include not only prompting, but also refusal, verification and the ability to continue thinking without the tool.

2.2 Experiential, reflective and transformative learning

Experiential learning describes knowledge as a cycle involving concrete experience, reflective observation, abstract conceptualisation and active experimentation (Kolb, 1984). Schön (1983) emphasises reflection in and on action, especially in professional situations characterised by uncertainty. Transformative learning adds the possibility that reflection changes the assumptions through which a person interprets experience (Mezirow, 1991). These traditions share an important principle: learning is not the passive receipt of correct content. It is a process through which experience becomes meaning and revised action.

Generative AI can support parts of this cycle, but it cannot substitute for lived experience or assume responsibility for transformation. It may propose interpretations, yet the learner must decide which interpretation is defensible. It may simulate a difficult conversation, yet the learner must experience discomfort, attend to relational consequences and act in a real context. Effective design should therefore alternate between human experience, AI-supported expansion, critical reflection and real-world application.

2.3 Arts-based management development

Arts-based methods use theatre, music, visual art, movement, storytelling, poetry and making as ways of learning about management and organisation. Taylor and Ladkin (2009) identify four processes through which these methods contribute to managerial development: transfer of artistic skills, projective exploration, evocation of essence and the creation of artefacts. Arts-based work

can make tacit assumptions visible, enable multiple interpretations and create an emotional encounter with ambiguity.

This is especially valuable in an AI-rich environment. Art resists reduction to a single correct answer and requires attention to form, context, feeling and audience. Improvisation develops listening and responsiveness; ensemble music illustrates interdependence and timing; visual composition develops perception and reframing; theatre enables role experimentation and embodied perspective-taking. The objective is not to turn managers into professional artists. It is to use artistic processes as laboratories for human capability. These processes are consistent with grounded and embodied accounts of cognition and with scholarship on how the arts develop forms of perception that exceed verbal explanation (Barsalou, 2008; Eisner, 2002).

2.4 Motivation, belonging and the courage to learn

Self-determination theory proposes that autonomy, competence and relatedness support high-quality motivation (Deci & Ryan, 2000). Arts-based learning can strengthen these needs by offering choice, visible progress and shared creation. It can also create vulnerability: participants may fear judgement when asked to perform, draw or reveal a personal interpretation. Psychological safety is therefore essential (Edmondson, 1999). The facilitator must distinguish invitation from coercion, provide multiple modes of participation and frame artistic work as inquiry rather than artistic competition.

The introduction of AI creates another form of vulnerability. Some learners fear replacement; others fear appearing incompetent if they do not use the newest tools. A psychologically safe environment allows both enthusiasm and concern to be expressed. It also allows participants to show uncertainty, challenge an AI output and acknowledge when they relied on it too heavily.

2.5 Cognitive offloading, productive struggle and authored judgement

External tools have always supported memory and reasoning, but generative AI expands cognitive offloading from storage and retrieval to formulation, synthesis and apparent evaluation. Offloading is not inherently harmful; it becomes educationally problematic when the learner cannot reconstruct the reasoning, detect failure or decide when delegation is inappropriate (Risko & Gilbert, 2016). AI literacy therefore requires critical evaluation, communication and collaboration with AI, not merely operational fluency (Long & Magerko, 2020).

Learning also depends on productive struggle and learner-generated explanation (Fiorella & Mayer, 2015; Kapur, 2008). When uncertainty, comparison and revision are removed too early, performance can improve while durable understanding remains weak. Arts-based inquiry can preserve productive difficulty because it requires noticing, interpretation and situated expression before a single answer is available. The theoretical opportunity is not to reject cognitive support, but to sequence it so that AI expands a learner's thinking after an authored position exists and before a final decision is owned.

3. Materials and method: conceptual design and integrative review

The study adopts a conceptual design approach informed by a structured integrative review. This method is appropriate for combining mature learning theories with rapidly developing evidence on generative AI and for producing a framework that is explanatory, actionable and empirically testable (Snyder, 2019; Torraco, 2005). The review is purposive rather than exhaustive and does not claim the coverage of a systematic review.

The source corpus combined foundational work on experiential, reflective and transformative learning; peer-reviewed studies of arts-based management development, creativity and embodied cognition; research on human-AI interaction and cognitive offloading; and international guidance on generative AI competencies. Sources were retained when they clarified a learning mechanism, a capability at risk, an instructional boundary, an assessment problem or a plausible outcome. Promotional claims and sources that equated tool use with learning were excluded from the theoretical core.

Framework construction followed five analytical moves. First, the human capabilities potentially weakened or strengthened by generative AI were identified: authored understanding, critical judgement, originality, adaptive confidence, ethical-relational awareness and transfer to action. Second, mechanisms from arts-based, experiential and motivational research were mapped against those capabilities. Third, concepts were consolidated into the four 4A dimensions using criteria of necessity, discriminant meaning and practical observability. Fourth, AI roles and non-delegable human responsibilities were specified for each dimension. Fifth, propositions, programme stages and assessment evidence were derived from the mechanism map.

Quality checks addressed coherence, distinctiveness, boundary conditions and falsifiability. Each dimension had to make a contribution not reducible to the others; every proposition had to identify a mechanism or moderator; and the model had to explain both positive and negative uses of the same technology. The framework is a conceptual prototype, not a validated scale or causal model.

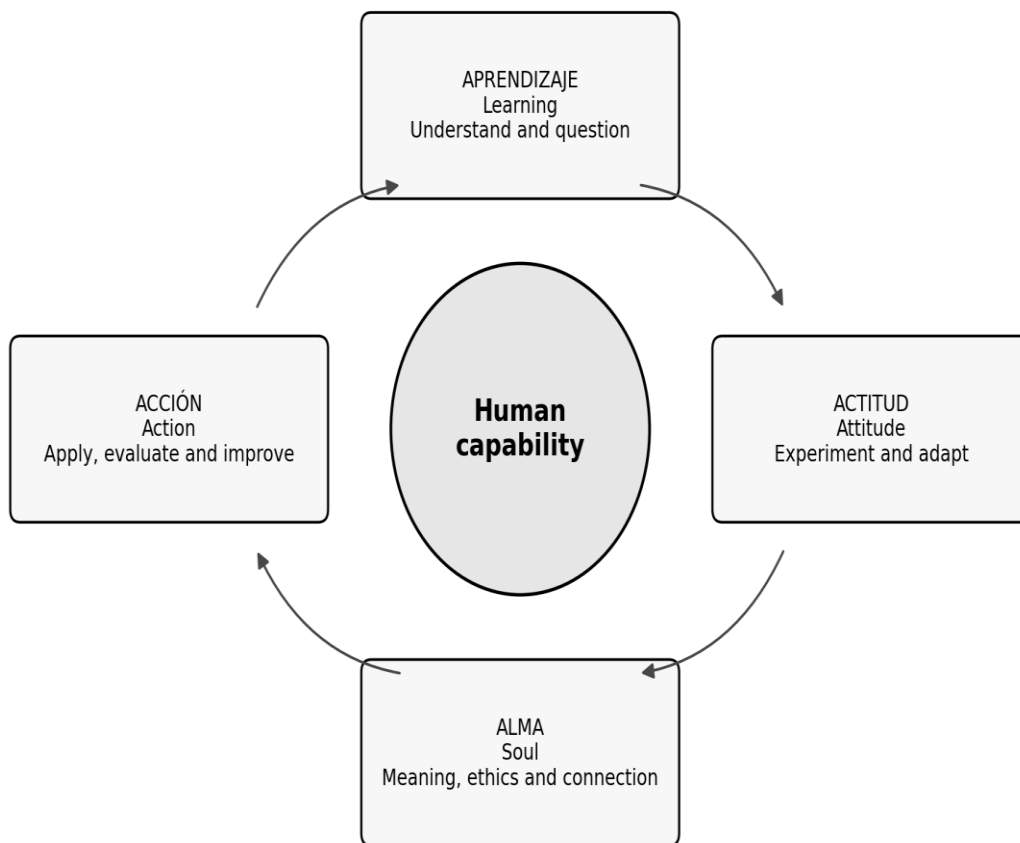
Practice experience informed its usability, but no participant data, intervention outcomes or effectiveness claims are presented.

4. Results: the 4A model

The 4A model is a cyclical rather than sequential theory of human development. Each dimension begins a movement that is completed by the others. Learning without attitude may remain inert; attitude without learning may become enthusiasm without rigour; soul without action may become good intention; action without soul may become efficient but directionless execution. AI and the arts operate differently within the cycle. Arts-based experience expands perception and emotional-relational awareness. AI expands access, alternatives, simulation and feedback. Human judgement connects both to responsibility.

The model is recursive and non-compensatory. Strong performance in one dimension does not cancel failure in another: extensive knowledge cannot justify unethical action; openness without evidence is not learning; meaningful reflection without behavioural transfer is incomplete; and rapid action without relational awareness can amplify harm. The proposed mechanism is that arts-based experience increases attention, embodiment and plurality; bounded AI use expands comparison, challenge and rehearsal; structured reflection integrates evidence with values; and accountable field action creates transfer and new experience.

The 4A cycle for human learning in the generative AI era



Arts-based experience is a transversal medium; AI is a bounded collaborator, not the author of judgement.

Figure 1. The 4A cycle for human capability development. Source: author's conceptual development.

Table 1. Generative AI opportunities, risks and protected human capabilities

Learning use	Opportunity	Risk	Capability to protect
Drafting and summarising	Reduces entry barriers and supports rapid iteration	Shallow comprehension and loss of personal voice	Independent explanation and authorship
Idea generation	Expands options and helps less confident learners begin	Anchoring and collective homogenisation	Divergent thinking and situated originality
Simulation and role-play	Provides scalable scenarios and rapid variation	Plausible but emotionally thin interaction	Empathy, presence and relational judgement
Feedback	Offers immediate suggestions and pattern recognition	Overconfidence in generic or inaccurate advice	Verification and contextual discernment
Personalisation	Adapts pace, examples and practice	Opaque profiling and dependence	Autonomy, privacy and self-directed learning
Assessment support	Helps organise evidence and identify gaps	Confuses polished output with capability	Process evidence and behavioural transfer

Table 2. The 4A model and its learning mechanisms

Dimension	Human question	Arts-based mechanism	Bounded AI role	Evidence of learning
Aprendizaje (Learning)	What do I understand, and what might I be missing?	Observation, interpretation, metaphor and reflective making	Explain, compare, challenge and generate counterexamples	Independent reasoning, source judgement and metacognition
Actitud (Attitude)	How do I meet uncertainty, difficulty and change?	Improvisation, rehearsal, ensemble work and experimentation	Vary constraints, simulate objections and support practice	Curiosity, adaptive confidence and calibrated reliance
Alma (Soul)	Why does this matter, to whom, and with what consequences?	Story, theatre, music and visual symbolism	Surface stakeholders and alternative narratives	Ethical coherence, empathy, meaning and relational awareness
Acción (Action)	What will I do, test and learn from next?	Performance, prototyping and public commitment	Plan, rehearse, organise feedback and compare scenarios	Behavioural change, stakeholder evidence and iterative improvement

Table 3. Construct definitions and discriminant boundaries

Dimension	Operational definition	Discriminant boundary
Aprendizaje	Authored understanding, evidence evaluation, metacognition and the capacity to revise a reasoned position	Not information volume, prompt fluency or reproduction of generated language.

Dimension	Operational definition	Discriminant boundary
Actitud	Curiosity, humility, perseverance, ambiguity tolerance and calibrated willingness to experiment or refuse	Not general positivity, compliance with technology or uncritical enthusiasm.
Alma	Ethical coherence, meaningfulness, emotional presence, relational recognition and responsibility for foreseeable consequences	Not spirituality as a required belief, sentimentality or abstract values without stakeholder attention.
Acción	Specific behaviour, field experimentation, stakeholder feedback, accountability and iterative improvement	Not intention, workshop participation or a polished action plan without implementation evidence.

4.1 Aprendizaje: Learning to understand and question

Aprendizaje includes conceptual knowledge, critical inquiry, metacognition and the ability to learn from evidence and experience. In the AI era, it requires a shift from information possession to question quality and source judgement. Learners should be able to explain a concept in their own words, identify assumptions, compare interpretations and state what evidence would change their position.

AI can serve as a tutor, comparator or adversarial questioner, but the learner should first create an initial interpretation. This sequencing reduces premature anchoring. Arts-based observation exercises can deepen attention before analysis: participants may interpret an image, listen to a musical passage or observe a scene and record what they notice, infer and feel. The separation of observation from interpretation is a powerful discipline for both management and AI evaluation.

Proposition 1. Learning designs that require an independently authored first response before AI consultation will produce stronger epistemic agency than designs that begin with AI-generated content.

Proposition 2. Arts-based observation followed by structured comparison with AI output will improve learners' ability to distinguish evidence, interpretation and assumption.

4.2 Actitud: The disposition to experiment and adapt

Actitud refers to the orientation with which a person meets uncertainty: curiosity, humility, courage, perseverance and willingness to revise. Technology changes quickly, so static competence is insufficient. A constructive attitude is neither technophilia nor technophobia. It combines openness to experimentation with disciplined scepticism.

Improvisational theatre is particularly useful because it requires participants to accept an emerging situation, listen to others and contribute without controlling the entire outcome. AI simulations can extend this practice by generating stakeholders, objections or changing constraints. The facilitator should, however, prevent the tool from determining the emotional truth of the scene. Participants must observe real reactions and discuss the difference between plausible language and authentic relationship.

Proposition 3. Psychological safety will strengthen the effect of arts-based and AI-supported experimentation on adaptive confidence.

Proposition 4. Learners who practise both using and deliberately refusing AI in appropriate situations will develop better calibrated reliance than learners trained only in tool use.

4.3 Alma: Meaning, ethics and connection

Alma is the distinctive centre of the model. It describes the capacity to connect knowledge and behaviour to purpose, dignity, emotion, relationship and ethical consequence. In organisational terms, it asks not only whether a decision works, but whom it serves, what it asks of people, what it may silence and what kind of organisation it helps create. Its emphasis on significance, coherence and contribution also connects with established accounts of meaningful work (Rosso et al., 2010).

Art provides a language for dimensions that are difficult to express through analytic propositions alone. Storytelling can reveal the lived experience behind a process metric. Music can make interdependence audible. Theatre can expose power and moral distance. Visual metaphor can help teams represent the organisation they have and the one they wish to become. AI may contribute alternative narratives or surface possible stakeholders, but it cannot bear responsibility or experience the consequences of a decision. Alma therefore sets a boundary: moral accountability remains human.

Proposition 5. Learning activities that integrate emotional, relational and ethical reflection will increase the transfer of AI literacy into responsible managerial judgement.

Proposition 6. The perceived meaningfulness of a learning experience will mediate the relationship between arts-based participation and commitment to behavioural change.

4.4 Acción: Application, evaluation and improvement

Acción converts insight into behaviour. It includes experimentation in the workplace, feedback, accountability and revision. Without action, learning remains a private interpretation. Action should be small enough to test but meaningful enough to create evidence. Examples include redesigning a meeting, changing how an AI recommendation is reviewed, conducting a difficult conversation or removing an unnecessary data collection practice.

AI can support action through scenario generation, checklists, rehearsal and after-action analysis. It should not certify that an action was ethical or successful. Evaluation requires human evidence from affected people, outcomes and context. The cycle then returns to Aprendizaje: action generates new experience, which becomes material for further learning.

Proposition 7. Behavioural commitments that are specific, socially witnessed and reviewed with real-world evidence will produce greater transfer than reflective insight alone.

Proposition 8. The positive effect of AI-supported rehearsal on workplace behaviour will be stronger when learners receive human feedback from affected stakeholders.

4.5 Integration logic, boundary conditions and non-delegable responsibility

The 4A dimensions are analytically distinct but developmentally interdependent. Aprendizaje supplies evidence and metacognition; Actitud enables exploration and revision; Alma connects decisions to dignity, meaning and relationship; and Acción exposes ideas to consequence and feedback. The model predicts that programmes integrating all four dimensions will produce stronger transfer than programmes limited to technical AI literacy or reflective insight, provided that facilitation quality and psychological safety are adequate.

The framework is designed for adult, university, executive and organisational learning rather than clinical treatment or professional arts education. Arts-based participation should be invitational, culturally sensitive and accessible through alternative modes. AI use should be proportionate to the learning objective and the risk of the domain. In high-stakes legal, medical, employment or safety decisions, the 4A process cannot replace domain expertise, professional standards or formal governance.

Three responsibilities remain non-delegable within the framework: owning the final judgement, recognising affected people as more than data points, and accepting accountability for consequences. AI may assist analysis and rehearsal, but it cannot consent, repair a relationship, bear professional duty or answer morally for a decision. This boundary gives Alma operational precision and prevents anthropomorphic language from becoming a substitute for responsibility.

5. Design principles for bounded human-AI learning

The following principles translate the model into learning design. They are intended to preserve human authorship while using AI productively.

1. Human first, AI second, human final. Begin with personal observation or judgement, use AI to expand or challenge, and end with a human-owned conclusion.
2. Make influence visible. Learners disclose where AI changed their framing, language or decision and identify what they rejected.
3. Require multiple modes of knowing. Combine analytical reasoning with embodied, visual, narrative, emotional or relational evidence.
4. Protect productive struggle. Do not use AI to remove every difficulty; retain moments that require patience, memory, dialogue and original construction.
5. Use contrast rather than authority. Treat AI output as one perspective to compare, not as the answer key.
6. Keep accountability human. The learner or manager must be able to explain and defend the final judgement.
7. Design for inclusion and consent. Offer alternative artistic modes, respect cultural meanings and avoid forcing personal disclosure.
8. Close the loop through action. Every significant learning experience ends with a behavioural experiment and a review of consequences.

6. A four-phase learning cycle

A practical programme can be organised around four phases that mirror the 4A model. The phases may occur in a single workshop or over several months.

Phase 1—Experience and notice. Participants encounter an artistic stimulus or management situation without immediate explanation. They record observations, emotions, questions and assumptions. AI is initially absent so that independent attention is protected.

Phase 2—Expand and challenge. Participants compare interpretations, consult evidence and use AI to generate alternatives, counterarguments, stakeholder perspectives or scenarios. They verify sources and identify generic or biased patterns.

Phase 3—Meaning and commitment. Participants connect the issue to values, relationships and organisational purpose. They create an artefact—story, image, scene, score, manifesto or prototype—that represents the desired change. They then define a specific action.

Phase 4—Act and learn. Participants implement the action, gather feedback and review outcomes. AI may help organise evidence or simulate next steps, but human stakeholders judge the relational and ethical effects. The cycle restarts with a richer experience base.

Table 4. Example 4A programme sequence

Stage	Activity	AI boundary	Facilitator debrief
1. Notice	Interpret an image, scene or musical passage; separate observation from inference	No AI during first interpretation	What did you notice? What did you assume? What did others see?
2. Challenge	Use AI to generate three alternative interpretations and one counterargument	Every output must be checked and labelled as suggestion	Where did AI expand thinking? Where did it become generic or misleading?
3. Humanise	Create a story, tableau or metaphor from the perspective of an affected stakeholder	AI may suggest missing stakeholders but not write the final artefact	Whose dignity, fear, hope or power became visible?
4. Commit	Choose one workplace action and define evidence of responsible success	AI may help create a checklist; the learner owns the decision	What will change, who will notice, and how will you know?
5. Review	Return with field evidence and stakeholder feedback	AI may organise data but may not judge ethical adequacy	What happened, what surprised you, and what must be revised?

7. Assessment

Assessment should measure capability rather than only output polish. A fluent report may conceal weak understanding, while an imperfect performance may show deep learning. The proposed assessment architecture uses four evidence sources: authored reasoning, process transparency, relational feedback and behavioural transfer.

Authored reasoning assesses whether the learner can explain concepts, assumptions and evidence without relying on generated text. Process transparency records how AI was used and which suggestions were accepted or rejected. Relational feedback asks peers or stakeholders whether the learner listened, included perspectives and acted consistently with stated values. Behavioural transfer examines whether a specific practice changed and what consequences followed. A portfolio containing reflections, prompts, discarded outputs, artefacts and field evidence is more informative than a single final product.

No single indicator should be interpreted as proof of capability. Triangulation is required because self-reports may reflect confidence rather than competence, generated products may conceal dependence, and facilitator ratings may be affected by performance style. Assessment should therefore combine an unaided explanation, an AI-use audit trail, an artefact or decision rationale, stakeholder feedback and evidence from a real or realistic behavioural task. Pre/post comparison should include a delayed assessment where feasible to distinguish temporary fluency from retained capability.

Table 5. Suggested assessment rubric

Criterion	Emerging	Competent	Advanced
Authored understanding	Repeats definitions or generated language	Explains concepts and evidence in own words	Integrates evidence, uncertainty and original interpretation
AI transparency	Use is unclear or treated as authority	Documents prompts, checks and accepted/rejected suggestions	Explains how AI influenced cognition and manages dependence
Ethical-relational judgement	Mentions values abstractly	Identifies stakeholders and foreseeable consequences	Engages tensions, power, dignity and competing obligations
Creative contribution	Output is derivative or convergent	Produces a relevant personal artefact or perspective	Creates a distinctive, context-sensitive form that opens new inquiry
Action and transfer	Commitment is vague or untested	Implements a specific action and gathers evidence	Iterates behaviour through stakeholder feedback and demonstrates learning

8. Application contexts

In university education, the model can support assignments that alternate unaided analysis, AI-assisted comparison and reflective defence. In executive education, arts-based simulations can reveal leadership habits and be connected to live organisational challenges. In corporate academies, the 4A cycle can structure AI literacy, ethical decision-making, innovation and culture programmes. Peer dialogue and repeated participation can also be organised as a community of practice in which meaning and competence develop socially (Wenger, 1998).

The model is also relevant to leadership teams. A team considering an AI investment can begin by interpreting a customer story or employee journey, use AI to explore scenarios, examine ethical and relational consequences, and commit to a bounded pilot with human feedback. The artistic element slows automatic reasoning and makes room for voices that may not dominate conventional business analysis.

Facilitator capability is critical. The facilitator needs enough AI literacy to set boundaries and enough sensitivity to manage vulnerability, symbolism and cultural difference. The quality of debriefing determines whether an activity becomes insight or remains entertainment. Debrief questions should move from description to interpretation, theory, implication and action. Implementation fidelity should be documented. At minimum, programmes should record the sequence of unaided and AI-assisted work, the artistic medium, degree of learner choice, nature of debriefing, facilitator competence, AI model and access conditions, and the time available for field application. Without these details, apparently inconsistent outcomes may reflect different interventions rather than failure of the model.

9. Discussion

The 4A model contributes to management learning by placing human formation, not content delivery, at the centre of AI integration. It does not romanticise human judgement; people are biased, inconsistent and sometimes resistant to evidence. Nor does it treat art as inherently ethical. The model instead creates a disciplined encounter among evidence, imagination, emotion, relationship and action.

The model's incremental contribution lies in the architecture of integration. Experiential learning explains movement between experience, reflection, concepts and experimentation; AI literacy clarifies competencies for understanding and evaluating systems; arts-based learning broadens perception and expression. The 4A model combines these traditions around a specific contemporary problem: how to use generative assistance without allowing assistance to become authorship, simulation to become relationship, or fluency to become evidence of learning.

A key theoretical implication is that AI literacy should be nested within broader human capability. Prompting skill without ethical orientation may accelerate poor decisions. Critical thinking without relational awareness may produce technically defensible but socially damaging

choices. Emotional insight without action may remain symbolic. The four dimensions operate as a system of mutual correction.

The model also reframes creativity. In many organisations, creativity is reduced to idea quantity or novelty. Arts-based learning highlights attention, interpretation, form, audience and meaning. Generative AI can widen the idea space, but human creators must curate difference and protect against convergence. Originality is not simply the absence of AI; it is the presence of a situated voice that can explain its choices. This view is consistent with definitions of creativity that combine novelty and usefulness, while recognising creative work as contextual, social and developmental rather than purely individual (Csikszentmihalyi, 1996; Glăveanu, 2015; Runco & Jaeger, 2012; Sawyer, 2012).

Finally, the model proposes a constructive meaning for ‘irreplaceably human’. It does not claim that machines will never perform a particular task. It refers to responsibilities that organisations should not surrender: moral accountability, recognition of dignity, participation in relationship and ownership of consequences. These responsibilities remain human even when AI contributes to the process.

10. Limitations and future research

The framework is conceptual and reflects a practice-informed synthesis rather than a validated causal model. The term Alma may be interpreted differently across cultures and therefore requires careful operationalisation and translation. The four dimensions may also correlate strongly, creating a risk that the model is experienced as rhetorically attractive but psychometrically indistinct. Future research must test whether the dimensions are empirically separable, whether the cycle produces measurable transfer and how outcomes vary by artistic medium, learner preference, access to AI and cultural context.

Experimental studies could compare human-first and AI-first sequencing, measure independent judgement and test whether arts-based observation reduces anchoring. Longitudinal studies could examine whether behavioural commitments are sustained. Qualitative research could explore how participants experience vulnerability, authorship and meaning. Researchers should also investigate accessibility, because some artistic formats may exclude participants unless alternatives are designed.

A further research need concerns collective diversity. Studies could test whether heterogeneous artistic prompts, culturally varied examples and intentionally diverse AI personas reduce convergence. Finally, the model should be compared with conventional AI literacy training to determine whether integrating ethical, emotional and action dimensions creates incremental value. A staged validation programme should begin with content-validity panels and cognitive interviews across cultures to refine the operational meaning of Alma and the boundaries among dimensions. Scale development should then test factor structure, reliability, discriminant validity and measurement invariance. Experimental studies can compare human-first, AI-first and no-AI sequences using common tasks, while field studies can test behavioural transfer over several months. Incremental validity is essential: the model should explain outcomes beyond conventional AI literacy, critical-thinking and engagement measures before strong effectiveness claims are warranted.

11. Conclusion

The challenge of generative AI is not that machines can produce words, images or analyses. The deeper challenge is that humans may confuse production with learning and fluency with wisdom. Management education must therefore protect the spaces in which people notice, struggle, feel, question, relate and take responsibility.

The 4A model—Aprendizaje, Actitud, Alma and Acción—offers a practical architecture for this purpose. Arts-based experience expands perception and human presence; AI expands alternatives and feedback; disciplined reflection connects both to responsible action. The aim is not to teach people to outperform machines at machine-like speed. It is to develop people capable of deciding when speed serves life, when it does not, and what they are prepared to do about it.

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Author contribution: The author conceived the framework, conducted the integrative synthesis, developed the propositions and implementation tools, and wrote the manuscript.

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