From Workshops to Workflows: A Multilevel Theory of Design Thinking Transfer

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ABSTRACT

Organizations run inspiring design thinking (DT) workshops yet struggle to make the behaviors stick in everyday work. This paper theorizes the transfer gap and advances a multilevel model that explains when learned practices generalize beyond pilots and persist across planning cycles. The model links training design and the artifact lifecycle to unit capabilities, especially absorptive capacity, within a context of leadership expectations, time and budget slack, and fit with operational cadences. Digital and AI tools are treated as moderating contingencies that can widen exploration when introduced after human divergence and governed through traceable artifacts, or compress exploration when introduced early without guardrails. From this architecture, we derive five testable propositions and a Transfer Readiness Index that consolidates signals from climate, cadence alignment, boundary infrastructure, and capability into a diagnostic that supports the sequencing of interventions. The contribution is a focused architecture with actionable measures that turn workshops into workflows in operations settings.

Keywords: Design thinking, Transfer of training, Absorptive capacity, Boundary objects, Operations management

1. Introduction

Organizations have invested heavily in DT to improve problem framing, cross-functional collaboration, and learning through prototyping. Reviews synthesize promising outcomes while noting conceptual sprawl and uneven measurement, which makes it hard to explain when practices persist beyond pilots and workshops [1]. Field reports from large firms describe recurring frictions that slow or stall adoption, including cultural misalignment, legitimacy challenges, and drift once initial champions rotate out [2], [3]. An operations perspective adds that evidence will remain mixed until research connects DT moves to the rhythms and metrics that govern day-to-day work [5]. The central puzzle is not whether teams can run an inspiring event. The central puzzle is whether the behaviors that matter travel into routines where decisions are made and resources are allocated. We approach this puzzle through transfer-of-training theory, which defines transfer as generalization and on-the-job maintenance and situates antecedents in training design, trainee factors, and the work environment [6]–[8].

Two lenses from organizational learning and innovation clarify why transfer varies across units that receive similar training. Absorptive capacity explains how prior related knowledge and integration routines enable recognition, assimilation, transformation, and exploitation of new practices [11], [12]. Units that already coordinate through agile or lean routines can translate DT heuristics into templates and roles that fit their cadence [24], [26]. Boundary object theory explains how shared artifacts enable translation across functions by being flexible in local use yet robust enough to retain meaning as they travel [14], [16]. When journey maps, service blueprints, prototypes, and playbooks are treated as living infrastructure with stewards and version histories, they carry intent across projects and leadership transitions rather than fading after a pilot [16], [19]. These lenses are complementary. Absorptive capacity refers to the capability to take in and routinize. Boundary objects tell us about the carriers that make coordination possible across specialized communities.

Contemporary operations settings introduce a further layer. Coordination already runs on strong rhythms that synchronize teams through planning and review events. Studies of scaled agile show how such cadences create both scaffolding and tensions for new methods, and how effectiveness depends on the local normalization of routines and the clarity of goals [24], [26], [31], [32]. Barrier analyses that focus on DT identify process misfit and weak culture as among the most salient causes of failure to adopt, consistent with transfer research that spotlights the work environment [17]. The implication is practical. Transfer will be higher when DT steps are scheduled within the cadences teams already use, rather than inserted as extracurricular activities that must fight for time and attention.

Digital tools now reshape both cognition and artifact production. Early studies in human-computer interaction and behavioural research on conversational models show that generative systems can alter idea-generation patterns and the way teams work with design artifacts, in ways that depend strongly on when and how they are used [9], [10]. Industry studies report rapid uptake of generative tools for summarization and scaffolding, together with concerns about quality control and integration into team practices [28], [29]. For transfer theory, this foregrounds the timing and configuration of AI as central contingencies, an issue that the literature review and model sections develop in more depth.

This paper develops a multilevel theory that links these strands and highlights levers that managers can pull. The contribution is explicitly conceptual and follows a proposition-based style of theory building that aims to organize mechanisms and identify testable contingencies rather than present new primary data, in line with recent guidance on rigorous conceptual research in management and service studies [41] – [43]. The model locates absorptive capacity at the unit level as a capability that converts design thinking, knowledge, and artifacts into routines, casts boundary infrastructure and governance cadences as carriers and selectors of practice, and positions the digital layer as a structured set of contingencies around these mechanisms. The five propositions and the Transfer Readiness Index are therefore offered as hypotheses and diagnostic scaffolds that future empirical work can operationalize, validate, and refine rather than as instruments that have already been psychometrically confirmed. The contribution sits within management science and operations because it connects decision routines, governance cadences, and AI-mediated artifacts to measurable transfer in everyday workflows, and it specifies a research program that can be executed with established survey instruments, behavioral metrics, and field experiments.

2. Literature Review

Design thinking has matured from an inspirational philosophy into a family of organizational practices that aim to reframe problems, facilitate cross-functional collaboration, and accelerate learning from prototypes. Systematic reviews consolidate their core attributes, tools, and putative outcomes, but also emphasize conceptual sprawl and measurement shortfalls [1]. Industrial accounts document recurring adoption frictions, particularly cultural misalignment, legitimacy deficits, and the struggle to embed DT beyond project teams [2]. At the same time, qualitative work on organizational programs shows that unclear goals and leadership churn often derail institutionalization [3]. More recently, a mechanism-focused synthesis argues that DT's observed effects are best explained by four theoretical mechanisms (i.e., integration, reframing, enablement, and collaborative engagement), rather than by generic process labels [4]. An operations lens further notes that empirical progress requires process measures and models that tie DT phases to operational cadences and digital tools [5]. These streams motivate a conceptual shift: from arguing that "DT works" to explaining when, why, and how DT practices transfer from training rooms into everyday workflows.

Transfer-of-training theory provides a strong foundation for that shift. The classic Baldwin–Ford model codifies three antecedent clusters (i.e., training design, trainee characteristics, and work environment) that drive transfer, defined as the generalization and maintenance of learned behaviors on the job [6]. Meta-analytic evidence confirms that transfer climate (supervisor/peer support, opportunity to perform), goal setting, behavioral modeling, and realistic practice environments reliably predict transfer outcomes across domains [7], with integrative reviews reinforcing the centrality of work environment factors and post-training support [8]. Porting this logic to DT suggests that workshop quality alone is insufficient; unless the work environment affords time, incentives, and scaffolds for enacting DT behaviors, the learned routines decay. In DT specifically, environment–design interactions are likely to be strong because DT emphasizes open-ended, socially distributed tasks (e.g., stakeholder co-creation), which are especially sensitive to local norms and routines.

Absorptive capacity (ACAP) offers a meso-level engine for uptake. Defined as the capability to recognize, assimilate, transform, and exploit new knowledge [11], ACAP has been reconceptualized into potential (acquisition and assimilation) and realized (transformation and exploitation) components that differentially condition application [12]. Critical reviews caution against reifying ACAP as a black box and call for specifying processes and boundary conditions [13]. In DT transfer terms, units with prior related routines (e.g., agile, lean) and established knowledge-integration practices should more readily translate DT principles (e.g., iterative prototyping, user-journey sensemaking) into standard operating procedures. Potential ACAP enables DT vocabulary and artifact comprehension; realized ACAP enables routinization and performance consequences. This meso-level lens also helps explain variance across departments facing identical training: the same workshop can "stick" in product development but not in compliance because ACAP architectures differ.

Boundary-object theory complements ACAP by specifying how shared artifacts mediate cross-functional translation. Boundary objects are "plastic" enough to travel across communities yet "robust" enough to preserve meaning [14], enabling knowledge integration across functional boundaries [15]. In innovation management, an extensive systematic review maps how different boundary-object categories (e.g., prototypes, blueprints, journey maps, playbooks) support information processing, cognitive alignment, and learning [16]. Emerging work extends this to "boundary infrastructure," highlighting the shift from isolated artifacts to coherent, versioned systems that persist across projects [19]. For DT transfer, the implication is concrete: training should deliberately produce artifacts designed to live beyond the workshop, e.g., service blueprints tied to metrics, version-controlled journey maps, and SOP-embedded prototypes, so that teams have durable carriers for the practices they learned.

Operations-oriented evidence on adoption barriers sharpens these theoretical lenses. A recent DEMATEL study identifies misfit with existing processes/structures as the most prominent barrier to DT adoption, followed by weak culture and implementation difficulties [17]. That pattern aligns with field reports of legitimacy challenges and leadership turnover hampering DT programs [3]. For transfer theory, these findings specify the "work environment" node: process cadence alignment (e.g., integrating DT activities into Program Increment (PI) planning or Quarterly Business Reviews (QBRs), governance, and leadership expectations are not marginal; they are first-order moderators of whether behaviors persist.

Recent work on generative systems shows that the digital layer introduces specific contingencies for early-stage ideation rather than a generic productivity boost. Experimental studies with image generators in design tasks report that AI-supported teams often produce fewer ideas with lower variety and originality and display greater fixation on initial examples compared to human-only baselines, indicating that AI prompts can anchor attention in narrow regions of the search space [9]. A complementary line of research finds that generative tools can broaden the design space when configured to inject semantic diversity and used after an initial human divergence phase, suggesting that the timing and configuration of AI assistance are central to its creative impact [30], [36]. In this paper, the digital and AI layer is therefore treated as a structured set of contingencies that shape both the quality of ideas generated in design thinking workshops and the ways in which the resulting artifacts are stored, recombined, and audited in everyday operations, and the conceptual model in Section 3 makes this role explicit. For DT transfer, digital and generative AI tools matter because early-stage divergence depends on the production of varied candidate frames, concepts, and hypotheses that can later be selected, tested, and institutionalized. Evidence from creative task settings indicates that generative AI can reduce idea diversity and shift groups toward earlier convergence when used as a primary generator of options, which raises the risk that participants leave workshops with a narrower behavioral repertoire to generalize to work [19]. At the same time, studies in human-computer interaction show that generative assistance can amplify fixation effects under common usage patterns, which implies that tool choice and timing can shape whether workshop learning becomes portable practice [17]. Research on generative AI adoption in user experience design and interface work further suggests that these tools are increasingly integrated into everyday design production, meaning that transfer models must treat tool governance as a boundary condition rather than a background detail [4], [10]. A transfer-aware approach, therefore, distinguishes between generative AI used too early as a substitute for divergence and generative AI used later as an accelerator for execution tasks such as visualization and prototyping, while preserving human-led exploration as the primary source of upstream variety.

Direct empirical signals of a DT transfer gap strengthen the case for a dedicated model. Recent organizational research reports a measurable difference between employees' DT knowledge and their application of DT in everyday work, with individuals rating their own DT practice higher than their company's, suggesting mismatches in climate and routinization [18]. Mechanism-focused DT syntheses, while not written in transfer language, implicitly call for this translation by centering integration and enablement processes [4], and operations reviews underline the need for process-level measures and institutional embedding [5]. This synthesis motivates an explicit multilevel transfer model, developed next in Section 3.

3. A Multilevel Model of DT Transfer

The model links what is taught, how it is materialized, and where it must live. Training design is the first lever because it shapes the cognitive and behavioral raw material that participants carry back to their roles. In DT programs that emphasize first principles and decision heuristics rather than tool recipes, learners leave with portable rules that can be enacted across situations, when post-training supports are present, such as implementation-intention planning that turns intentions into if–then scripts for enactment. Transfer gains are observable in field studies that target on-the-job behavior rather than only knowledge checks [23]. In operations contexts, close each DT workshop with an enactment plan that specifies the next cycle, the practice, the owner, and the target routine, which translates intention into behavior under time pressure, a recurrent finding in transfer research.

The second lever is what the training produces beyond people. Design thinking programs generate artifacts during framing, ideation, and prototyping, and prior research shows that such artifacts can act as boundary objects that help functions coordinate even when their perspectives and vocabularies differ [16], [20], [21]. Building on this work and on recent studies of boundary infrastructure, the model treats governed, versioned bundles of artifacts as part of the mechanism of transfer because they carry intent across projects and make learned practices visible in everyday decisions [16], [19]. Rather than treating artifacts as outputs separate from transfer, the model positions the artifact lifecycle as a central channel through which training content enters operational routines. Figure 1 depicts the multilevel design thinking transfer model, linking training design and artifacts to outcomes through unit capabilities, with context and a digital layer moderating use. These artifacts feed into unit capabilities, where absorptive capacity and knowledge integration routines translate them into recurring behaviors in local processes. The surrounding context band signals how leadership expectations, slack, and cadence alignment condition those pathways, while the digital layer overlays each component as a set of tools and safeguards whose effects depend on when they are introduced relative to human divergence and convergence.

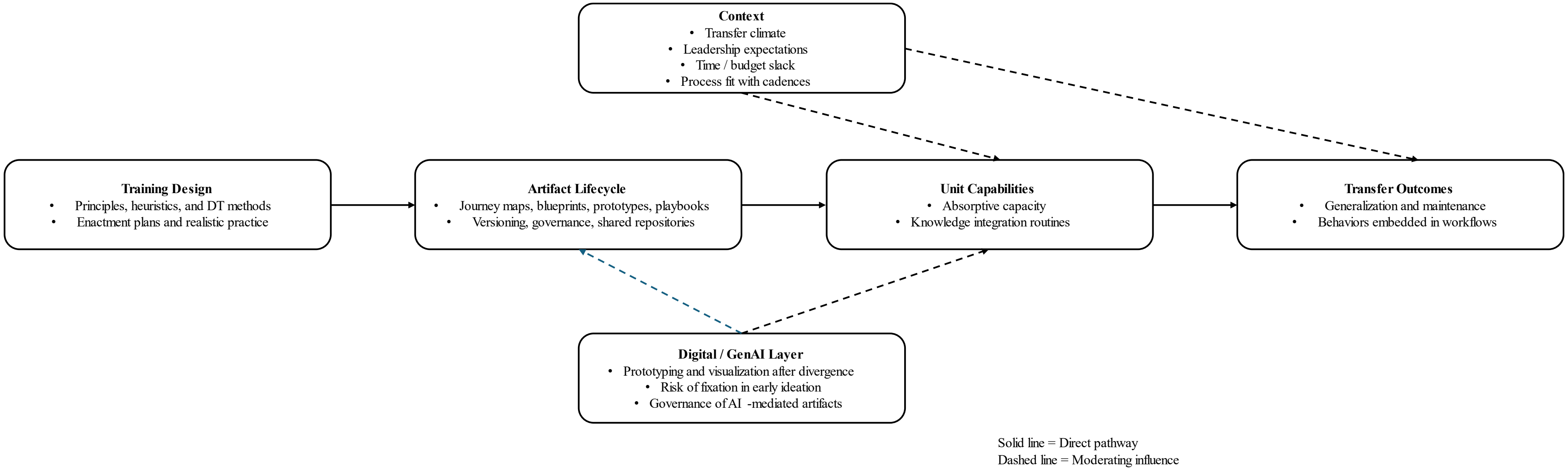

Figure 1. Multilevel Model of Design Thinking Transfer

Source: By author.

Context is the third lever because climate and cadence condition whether people can enact what they learned and whether artifacts will be picked up. Large organizations already run strong operational rhythms. They plan in quarterly increments, synchronize teams during portfolio events, and use governance reviews to adjust course. Studies of large-scale agile programs describe how cadenced coordination routines such as PI planning or release planning create shared goals and opportunity structures for cross-team work [24], [25], [32]. When DT activities are scheduled into these existing rhythms rather than run as isolated workshops, teams gain time windows, visibility, and leadership attention for the work that makes transfer visible and durable. Research on agile at scale also shows that scaling approaches create both enabling scaffolds and new tensions, and that effectiveness depends on how routines are localized and normalized inside the organization [26], [27].

Capabilities at the unit level mediate how training and artifacts become part of everyday routines. As outlined in the literature review, absorptive capacity captures how units acquire, assimilate, transform, and exploit external knowledge. Recent work distinguishes between potential and realized absorptive capacity as complementary dimensions that jointly shape innovation outcomes and knowledge transfer [12], [50] – [53]. In the model, absorptive capacity is treated as the meso-level engine that connects exposure to design thinking and the artifact lifecycle to observable behavior, since units with stronger realized absorptive capacity are more able to translate workshop heuristics into templates, standards, and review prompts that fit their cadence. In contrast, units with weaker capacity may leave insights at the level of vocabulary or rely on a few champions only. This interpretation remains consistent with knowledge integration views that stress the role of routines and shared languages in coordinating specialized expertise, but it focuses attention on the conditions under which design practices are recognized as applicable and then embedded in decision processes.

Digital tools, particularly generative systems, sit across all layers of the model as programmable boundary infrastructure rather than as a separate mechanism. At the level of workshops AI supported tools influence which concepts and examples participants see and preserve, and therefore condition the variety and originality of candidate solutions that later enter operational routines, an effect documented in experimental studies of AI supported visual ideation and team brainstorming where models enhance the creativity of individual ideas but reduce the diversity of ideas in the set [9], [10]. At the level of everyday work, digital platforms determine how design thinking artifacts are named, versioned, and linked to existing process documentation, which connects the model to recent process studies that describe how collections of boundary objects are stabilized into boundary infrastructure that supports cross-functional collaboration over time [19]. In the propositions that follow, the digital layer is treated as a cross-cutting moderator that can either strengthen or weaken the pathways from training inputs and boundary artifacts to generalization and maintenance of design thinking practices, depending on how organizations sequence AI involvement and design governance.

Outcomes are defined as generalization and maintenance of DT behaviors in everyday work, rather than satisfaction with training or one-off project wins. Generalization is evident when practices move beyond their initial context and are applied to adjacent problems. Maintenance is visible when practices persist across planning cycles and leadership changes. The model treats outcomes as behavior in routines that carry operational consequences. For empirical work, we operationalize generalization as the appearance of DT steps outside the originating project and maintenance as the recurrence of those steps across at least two planning cycles with a current, version-controlled artifact. In operations settings, this includes recurring prototyping within cadenced planning cycles, customer co-design rituals embedded in service playbooks, and blueprint updates tied to process metrics. An operations perspective on DT recommends that we track not only whether teams ideate or prototype, but whether those activities are scheduled, resourced, and connected to performance measures that matter to the unit [5]. The model, therefore, implies measurement strategies that rely on behavioral traces and governance artifacts. For instance, the presence of DT steps in planning templates, the counts of blueprint updates across quarters, or the documented use of customer co-design sessions in standard operating procedures.

For empirical operationalization, transfer can be measured as observed enactment of specific design thinking behaviors in post-workshop work episodes, such as problem reframing, structured divergence, rapid prototyping, and user-centered validation, assessed through supervisor ratings, peer reports, or coded trace data from project documentation. Boundary infrastructure strength can be measured by the prevalence and frequency of reuse of versioned artifacts that cross roles and projects, such as canvases, templates, decision logs, and standardized storyboards. Absorptive capacity can be operationalized through measures of knowledge acquisition, assimilation, transformation, and exploitation at the unit level, including the speed with which workshop insights are translated into revised routines and the extent to which those routines are retained over time. Work environment support can be measured using established transfer climate and training climate scales, while cadence alignment can be measured through the fit between sprint or review cycles and the timing of decisions that determine whether prototypes and reframed problems can be acted upon

Putting the pieces together yields a set of linked pathways. Training design influences the creation of durable shared artifacts. Those artifacts mediate cross-functional translation and create handles for governance. Contextual moderators such as leadership expectations, time and budget slack, and cadence alignment strengthen or weaken the link between artifacts and use. Unit absorptive capacity mediates the translation from training and artifacts to behavior because prior related knowledge and integration routines determine whether new practices are recognized as applicable and can be embedded. AI technologies cut across these pathways, speeding up visualization and prototyping when applied after human divergence, and risking premature convergence if used too early.

The model advances beyond advocacy in three ways that matter to operations. First, it converts the loose category of training quality into design features that can be specified and audited, including the presence of post-training enactment plans that are known to support transfer [23] and the production of artifacts designed to act as boundary objects with clear update obligations [16], [20], [21]. Second, it treats process fit and cadence alignment as first-order moderators rather than as implementation details. Evidence from large-scale agile transformations indicates that coordination routines, method normalization, and goal clarity shape whether new practices become natural parts of the work rather than extracurricular activities [24]–[27]. Third, it makes unit capabilities explicit by linking transfer to realized absorptive capacity and knowledge-integration routines, which move attention from individual enthusiasm toward the architecture of integration [11], [12], [22]. This reframing helps explain uneven uptake across departments that receive identical training and points managers to levers outside the classroom.

A final implication concerns durability. Boundary infrastructure makes DT transfer less dependent on charismatic champions because the practices are encoded in artifacts already linked to process metrics and governance reviews [19]. When leadership changes, the infrastructure remains, and new leaders encounter the practice at points where they must make decisions about capacity, risk, and customer experience. In parallel, transfer-aware AI practices can protect variety during early divergence and then accelerate downstream tasks such as reframing visualization or prototyping with traceable links to source materials [9], [10], [28], [29]. The combination of living artifacts, aligned cadences, and explicit capability building gives managers a practical way to turn workshops into workflows without assuming an ideal culture or endless slack.

4. Propositions

Transfer depends on whether workshop outputs become durable carriers of intent that other functions can actually use. Building on research on boundary objects and boundary infrastructure [16], [19], we interpret artifacts that are governed, versioned, and tied to review points as part of the infrastructure that allows practices to survive beyond project teams. When organisations treat artifacts this way, they create memory and make the practice governable rather than driven by enthusiasm.

Proposition 1: Units that maintain versioned boundary infrastructure derived from design thinking workshops will exhibit higher generalization and maintenance of design thinking behaviors than comparable units that archive artifacts after projects while holding training design constant.

Training quality sets the stage, but by itself does not install a practice. As discussed in the literature review, absorptive capacity captures how prior related knowledge and integration routines support recognition and use of new practices and can be distinguished into potential and realized components that jointly shape application [11], [12]. From a knowledge-based view, this mediation is especially significant in cross-functional work because teams with established integration routines and shared languages can translate heuristics into templates, standards, and review prompts that shape daily action [22]. Where absorptive architecture is weak, even excellent programs struggle to move from vocabulary to use.

Proposition 2: The positive effect of training design quality on design thinking transfer is mediated by unit absorptive capacity, operationalized as prior related practices and knowledge integration routines.

Cadence and process fit determine whether people have time and visibility to enact what they learned. Large programs already organize work around planning and review routines that synchronize teams and expose interdependencies [24], [31], [32]. Barrier analyses that focus on DT identify process misfit and weak culture as the most salient causes of failure to adopt [17], consistent with transfer theory, which emphasizes opportunity to perform and supervisory support [7], [8]. When DT steps are scheduled inside existing events, the work becomes visible and resourced, and artifacts gain clear update obligations. When workshops are scheduled off to the side, teams face deadline pressure with no sanctioned space to use new practices.

Proposition 3: Alignment between design thinking activities and existing operational cadences positively moderates the relationship between boundary infrastructure and transfer outcomes measured as generalization and maintenance of behaviors.

Leadership creates both the expectations and the reinforcements that define the climate for transfer. Early work on organizational transfer climate showed that cues and consequences in the work setting shape perceptions of whether newly learned behaviors are appropriate and feasible [33]. Later validation work established reliable scales for climate and confirmed that climate is distinct from attitudes toward training and distinct from general culture [34]. The learning transfer system inventory added a diagnostic for organizational, training, and individual factors that block or enable application at work, and it is now widely used to profile the environment that surrounds training programs [35]. These findings align with qualitative evidence on DT programs that stall when leadership churns or when managers fail to legitimize unconventional practices [3]. In operational contexts, this translates into consistent expectations for goal setting and performance conversations, and into incentives that reward evidence of use within planning and review rituals.

Proposition 4: Leadership expectation-setting and incentive alignment have a direct, positive effect on the maintenance of design thinking behaviors across planning cycles, after controlling for training design, absorptive capacity, and cadence alignment.

These findings imply that the position of generative systems within the process is not neutral with respect to transfer. When teams bring models into the earliest stages of problem framing and idea generation, they risk importing the narrowness and fixation patterns reported in several studies on AI-supported ideation, which, in turn, limits the range of behaviors that can later generalize into everyday work [9], [10], [36]. When teams first generate a sufficiently broad human idea set and then use models to elaborate, cluster, and prototype those ideas, tools are more likely to support the consolidation and maintenance of richer practice patterns, especially when prompts and interfaces are designed to surface semantically diverse options rather than close variants of the same theme [30]. This logic underpins the proposition that the first use of generative systems, supported by simple anti-fixation protocols, will be associated with greater transfer of design thinking behaviors than early, unconstrained use.

Proposition 5: Unconstrained use of generative AI during divergent stages reduces variety and originality and lowers subsequent transfer of design thinking behaviors, while structured divergence-first and anti-fixation protocols attenuate this effect and raise transfer.

5. Managerial Implications

Transfer begins in the room where people learn. Every DT session should close with explicit enactment plans that name the next routine, the specific practice to be used, who will use it, and the trigger. Field evidence shows that if–then planning reliably increases on-the-job behavior [23]. Store plans in the team's operational template repository so they surface at the next planning or review cycle.

Workshop outputs must be designed to live. Treat journey maps, service blueprints, prototypes, and playbooks as boundary infrastructure with stewards, version histories, and update obligations rather than as files that are archived after pilots. To institutionalize this lifecycle, pull artifact updates into standing events such as program increment planning and quarterly reviews so that use is visible and resourced within existing rhythms rather than relegated to ad hoc efforts [24], [32]. This move operationalizes the Training Design and Artifacting pathways in Figure 1 within governance events, turning artifacts into auditable control points.

Units need the capability to absorb and integrate what they learned. Build realized absorptive capacity by linking DT to existing agile or lean routines, pairing designers with operational owners during planning, and standardizing shared language in glossaries and templates used in everyday tools. Managers can profile the environment using validated diagnostics of transfer climate and learning transfer systems to identify weak links in support and opportunities to perform, and to target interventions at the organizational level rather than only at individuals [33]–[35].

Managers rarely have the capacity to activate every lever at once, which makes a staged approach to transfer more realistic than a comprehensive rollout. At the outset, managers can concentrate on one or two pilot units and treat enactment planning and artifact stewardship as the minimum viable infrastructure for transfer, for example, by requiring teams to write simple if-then plans that link new behaviors to concrete situations and by storing these plans and supporting templates in shared systems that are easy to find and reuse. Once these fundamental patterns are visible, they can be wired into existing governance cadences so that design thinking artifacts appear on the agenda of regular planning, review, or portfolio meetings rather than only in dedicated innovation forums, which aligns with evidence that sustained transfer depends on integration with work processes and opportunities to perform rather than on training alone. When pilot units show stable practice and visible behavioural change, leaders can then extend incentives, recognition systems, and digital guardrails that favour the first use of generative tools by divergence, while using transfer diagnostics to prioritize where support is most needed next.

Leadership makes transfer normative rather than optional. State expectations during goal setting, ask for visible evidence of use in planning documents, and align incentives to reward maintenance across cycles. A simple portfolio-level audit can track three signals of institutionalization for each unit. First, the presence of a current blueprint or playbook under version control. Second, a timestamped update within the last quarter. Third, a link from the artifact to a performance measure monitored by the unit.

Digital tools that rely on generative models, therefore, require explicit guardrails if organizations wish to protect design variety before convergence and support durable transfer. Managers can specify sequences in which teams first conduct human-only divergence and only later invite the model into the workflow; they can adopt interfaces that highlight semantically distant suggestions rather than nearest neighbors, and they can couple model use with simple practices such as asking teams to record at least one idea that contradicts the first AI proposal. Evidence from creativity-support research indicates that such staged, diversity-oriented use of generative systems can broaden the explored design space and counteract the tendency of models to repeat familiar patterns. In contrast, studies of AI-supported ideation caution that unstructured reliance on model outputs tends to amplify fixation and narrow the behavioral repertoire that teams bring back to their day jobs [9], [10], [30], [37]. Within the model, these guardrails are part of the digital boundary infrastructure that links design thinking artifacts to operational cadences and can be audited like any other governance mechanism. The measurement should mirror the outcomes shown in Figure 1. Track behavioral traces that indicate generalization and maintenance, such as counts of artifact updates across quarters, the presence of DT steps in planning templates, and the recurrence of customer co-design rituals in standard operating procedures [5]. Table 1 presents a concise Transfer Readiness Index that consolidates the dimensions of training design, boundary infrastructure, absorptive capacity, governance cadences, leadership support, and digital guardrails into a practical diagnostic for executives. The indicators draw on long-standing evidence that transfer climate and systemic support shape the application of training. They echo constructs embedded in widely used diagnostic instruments, such as the Learning Transfer System Inventory and related transfer climate scales, which show stable internal structure and predictive validity across national and sectoral settings [35], [44] – [46]. The index is intentionally pragmatic and should be read as a design prototype rather than as a fully validated measurement instrument. Managers can use it to locate weak links in their current environment and to prioritize interventions across units, while researchers can treat it as a starting specification that will be refined and possibly rescaled as empirical work accumulates.

Table 1. Transfer readiness index

Dimension	**Indicator (example)**	**Evidence source**	**Scoring**
Transfer climate	Manager asks for DT evidence in planning reviews	Goal forms; review decks	0 absent, 1 sometimes, 2 routine
Cadence alignment	DT steps scheduled in PI planning or QBR agendas	PI or QBR agenda docs	0 none, 1 ad hoc, 2 scheduled
Boundary infrastructure	Current blueprint or playbook under version control	Repo link; version log	0 none, 1 outdated, 2 current
Absorptive capacity	Linkage to agile/lean routines and shared templates	SOPs; templates	0 none, 1 partial, 2 embedded
Leadership & incentives	Incentives reward maintenance across cycles	HR policy; OKRs	0 none, 1 informal, 2 formal
Digital guardrails	Divergence-first and anti-fixation prompts in playbooks	Playbooks; checklists	0 none, 1 optional, 2 required

Note: Compute a 0–12 total. Units scoring 9–12 are transfer-ready, 5–8 are partial, and 0–4 require *foundation work.*

The index can be applied as a rapid diagnostic during the workshop planning stage and again two to four weeks after the workshop to identify which transfer conditions are deteriorating under operational pressure. As shown in Figure 2, the Transfer Readiness Index can be used to diagnose distinct transfer bottlenecks across organizational settings and to select interventions that directly target the limiting condition. In a compliance-heavy unit, the profile combines high motivation and strong enactment planning with low cadence alignment, because decision cycles are infrequent and tightly controlled, making generalization and maintenance of workshop behaviors vulnerable once participants return to operational work. In this scenario, transfer is strengthened by translating workshop outputs into governance-compatible boundary artifacts, including templated evidence narratives, versioned decision logs, and risk rationale documentation, so that design thinking outputs can travel through established review gates as legitimate work products rather than competing for attention outside formal workflows. By contrast, Figure 2 also shows a product development scenario in which cadence is strong but boundary infrastructure is weak, leading the priority to shift to establishing shared repositories and explicit stewardship practices that preserve artifacts for reuse and sustain design thinking behaviors beyond the initial workshop episode.

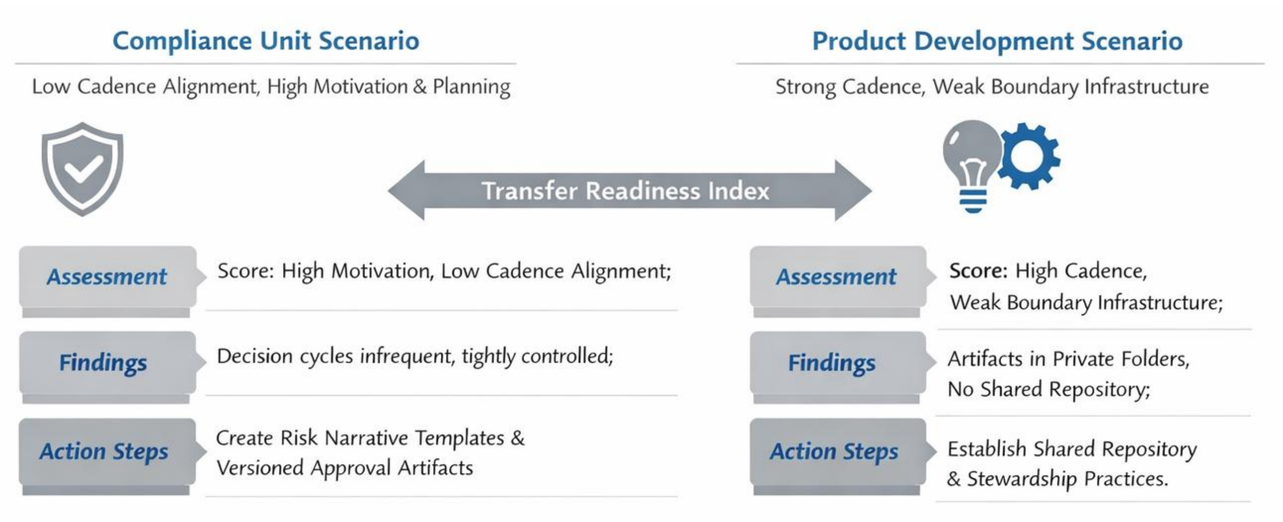

Figure 2. Applications of the transfer readiness index across organizational contexts

Source: By author.

Common failure modes can be anticipated and linked directly to the levers in this model. Qualitative studies of design thinking programs show that unclear goals, limited legitimacy, cultural resistance, and leadership turnover often stall initiatives before new practices can stabilize, while action research on training transfer identifies lack of supervisory support, weak incentives, and unsupportive policies as primary barriers to applying learning in the workplace [3], [47], [48]. Case work in both private and public organizations further indicates that compliance-heavy or risk-averse units are particularly vulnerable to reverting to established routines once formal projects end, even when frontline staff are enthusiastic about design methods [49]. Within the present framework, such patterns can be interpreted as symptoms of thin boundary infrastructure, misaligned cadences, and weak absorptive capacity at the unit level, exacerbated by leadership signals that inconsistently reward experimentation and cross-functional collaboration. The Transfer Readiness Index offers managers a way to surface these vulnerabilities early by scanning for gaps in leadership support, governance integration, and digital guardrails, which in turn can guide targeted interventions in units where the risk of backsliding is highest.

Activation should be phased to align with resource constraints and prevent overextension. In an initial phase, managers should secure transfer foundations by clarifying the intended work behaviors, establishing enactment plans that specify when and where the behaviors will be used, and ensuring a minimum level of supervisory reinforcement. In a second phase, the focus should shift to durability by creating boundary infrastructure that is versioned, searchable, and stewarded so that workshop outputs remain accessible and legitimate across teams and over time. In a third phase, scaling should concentrate on cadence alignment, ensuring that design thinking episodes recur in rhythm with operational decision windows so that exploration is repeatedly connected to implementation.

Common failure modes should be treated as predictable rather than exceptional. Leadership turnover can quickly remove sponsorship and deprioritize design thinking programs, making artifact-based stewardship and workflow integration essential because they reduce reliance on individual champions. Misalignment with compliance-intensive functions can also stall transfer when design thinking outputs cannot enter formal governance channels, which can be mitigated by translating outputs into boundary artifacts that conform to required documentation forms and approval routines. When generative AI tools are introduced without guardrails, early divergence can narrow and fixation can increase, so managers should specify tool timing rules that protect human-led exploration and restrict generative use to later execution tasks where speed is beneficial, and variety loss is less harmful

6. Research Agenda

Progress hinges on better observation of transfer in the flow of work. Empirical tests of the model will require outcome measures that capture the generalization and maintenance of design thinking behaviors, as defined in Section 3, rather than satisfaction with training events or perceptions of culture. Researchers can combine behavioural traces such as the frequency of user interviews, prototype iterations, or co-design sessions embedded in standard operating documents with ratings of transfer climate and learning transfer systems using validated inventories that have been translated and tested in multiple countries, including the Learning Transfer System Inventory and its adaptations. These data streams can support multi-level models in which unit-level transfer climate and infrastructure indicators predict individual behaviour change and project outcomes while controlling for training design and trainee characteristics, and they can inform refinement of the propositions about absorptive capacity, boundary infrastructure, and governance cadences. Section 5 translates the same constructs into a practical diagnostic for managers and offers an initial scoring scheme that can guide early use in the field while formal validation work is underway. Transfer climate and learning transfer systems can be profiled using validated inventories to identify environmental bottlenecks at each site before interventions are staged [33]–[35]. Field experiments can randomize implementation-intention planning and add governance and versioning to artifacts, wiring updates into planning events; primary outcomes are counts of artifact updates and the inclusion of DT steps in planning templates across cycles.

The digital layer invites field experiments and quasi-experimental designs that vary the timing and configuration of generative tools across comparable teams and then track effects on both creative output and transfer outcomes. One pragmatic design would assign units to conditions in which design thinking workshops are run with human-only divergence and model-supported convergence, with unconstrained early AI involvement, or with no AI support, while curriculum and facilitation remain constant. Researchers could then compare the diversity and originality of workshop artifacts, the evolution of boundary infrastructure such as templates and checklists, and the generalization and maintenance indicators specified earlier, while also measuring perceived transfer climate with instruments such as the Learning Transfer System Inventory and related diagnostics that have been repeatedly validated in different organizational and national settings [35], [38] - [40]. Such studies would clarify whether divergence-first protocols and diversity-oriented interfaces help organizations capture the benefits of generative systems without reinforcing narrow patterns of practice, and would provide empirical evidence to refine the model's contingencies. Durability deserves longitudinal attention because leadership churn and reorganizations are common. Multi-site panels can compare units that differ in absorptive capacity and initial governance, tracking whether boundary infrastructure remains active as people move and strategies shift [19]. Difference-in-differences designs are feasible when organizations roll out cadence alignment or incentive changes in waves. These studies would turn the model into a cumulative program that explains not only whether DT travels, but also how it survives.

The five propositions form a coherent testing program that stays close to operations. They can be assessed through unit-level panels that couple behavioral traces with climate diagnostics, and through field experiments that shift specific levers. Boundary infrastructure can be manipulated by adding governance and versioning to workshop outputs and by tying updates to review events. Training design can be manipulated through implementation-intention planning, which names specific if-then enactments for upcoming cycles and has shown transfer benefits in management development settings [23]. Cadence alignment can be achieved by embedding DT rituals directly into program increment agendas or quarterly business reviews, and by assigning explicit stewardship roles for artifacts. Leadership levers can be tested through expectation setting at goal time and through incentive nudges that require visible evidence of use in planning templates. The digital layer can be studied through the staged introduction of generative tools, with human divergence preceding model use, and anti-fixation prompts and provenance logging built into the artifact pipeline. Focus on measured outcomes related to generalization and maintenance rather than on training satisfaction, using counts of blueprint updates per quarter, the presence of DT steps in planning templates, and observed use of customer co-design rituals in standard operating procedures [5].

7. Conclusion

This paper argues that many design thinking programs do not fail for lack of methodological merit but because the transfer from workshops to operational routines is weak. It reframes DT transfer as an operational problem of moving from episodic events to everyday work. The multilevel model explains transfer as the joint effect of prepared minds, living artifacts, supportive rhythms, and measured use. Training design equips participants with portable principles and concrete enactment plans. Artifacts and their lifecycles create boundary infrastructure and shared representations that can travel across functions, anchor version histories, and enter organizational memory. Unit capabilities convert what people know and what they make into coordinated routines with consequences for customers and operations. Context, including leadership signals, incentives, slack, and cadence fit, determines whether these links hold over time, while the digital layer, timing, and safeguards around generative tools can narrow or widen the path as teams adopt new systems.

The model positions training design, artifact lifecycles, unit absorptive capacity, and context as interacting levers that shape whether learned practices generalize beyond pilots and persist across planning cycles. By specifying pathways rather than slogans, it connects design thinking to established transfer and capability literatures and explains why units that receive similar training diverge in sustained use. The argument thus shifts the conversation from advocacy to engineering. Rather than asking whether DT ‘works’, managers and researchers can ask which levers move transfer in a specific setting and which measures reveal progress in the flow of work.

For managers, the contribution is an architecture that can be translated into audits and interventions. The playbook turns the model into actions such as writing if–then implementation plans at the close of training, embedding enactment planning inside workshops, assigning artifact stewards and maintaining version histories, aligning design rituals with existing cadences and planning events, and attending to leadership signals, incentives, and maintenance responsibilities across cycles. These moves treat workflows, not workshops, as the locus of value creation.

For researchers, the propositions and Transfer Readiness Index define a cumulative program that can be tested with behavioral traces, climate diagnostics, and staged interventions that manipulate specific levers, including the timing and safeguards around digital and generative tools. Future studies can administer the Index alongside established transfer climate and Learning Transfer System Inventory scales to assess incremental predictive validity for generalization and maintenance outcomes and to calibrate cut-off values for each dimension. Cross-context designs that compare sites, industries, firm sizes, public agencies, and national settings can test whether the Index captures variance beyond existing diagnostics and identify which dimensions travel robustly and which require local adaptation.

Scope conditions deserve emphasis. Effects may attenuate in highly regulated or safety-critical domains that restrict experimentation, in environments with chronic capacity constraints that remove slack for cadence changes, and in units with fragmented data or governance that undermine version control. The mechanisms may be most straightforward to observe in large organizations with formalized processes and digital collaboration systems, but future work should examine how they operate in smaller firms, public agencies, and hybrid arrangements with different governance and resource profiles. The model is therefore best read as a design space that requires local tailoring rather than a universal recipe. The practical message is simple. Workshops create energy and insight, but workflows carry value. Transfer occurs when the artifacts people make, the routines that govern their use, and the capabilities that weave them into decisions are designed together. Organizations that build this architecture can enable DT to travel across problems and persist through change, not as a campaign, but as a way of working.

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Conflicts of Interest

The author confirms that there are no conflicts of interest.

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