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WHERE TRAINING VALUE DISAPPEARS: A WORKPLACE LEARNING WASTE TYPOLOGY FOR HUMAN RESOURCE DEVELOPMENT

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ABSTRACT :

Organisations continue to invest substantial time, money, technology, and employee effort in training, yet training participation does not automatically produce workplace capability, behavioural change, career progression, or organisational performance. Human Resource Development scholarship has long examined the training transfer problem, but transfer alone does not fully capture how training value disappears before, during, and after formal learning interventions. This conceptual paper introduces workplace learning waste as a lens for explaining avoidable loss of training value across the learning value chain. Workplace learning waste is defined as the avoidable loss of training value caused by weak targeting, poor content relevance, low learner engagement, limited workplace application, absent recognition, and inadequate measurement of learning outcomes. Building on recent HRD, workplace learning, people analytics, and training evaluation literature, the paper proposes a six-part typology of learning waste: targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste. It also develops a training value-chain leakage model and illustrative calculation logic for diagnosing where value is lost. The paper contributes to HRD theory by reframing training failure as a value-leakage problem rather than only a transfer problem. It contributes to practice by offering diagnostic indicators that can help organisations move beyond attendance, completion, and satisfaction metrics toward evidence of relevance, engagement, application, recognition, and improvement. The paper concludes that organisations do not only need more training. They need better systems for preserving training value and converting learning investment into employee capability, career opportunity, and organisational benefit.

Keywords: workplace learning waste; training transfer; human resource development; workplace learning; learning transfer climate; training effectiveness; capability development; HRD evaluation

1. INTRODUCTION

Training is one of the most visible activities of Human Resource Development. Organisations use workshops, leadership programmes, compliance courses, digital-skills sessions, professional-development seminars, coaching interventions, online platforms, and hybrid learning systems to improve employee capability (Nkwusi, 2025). In a labour market shaped by digital transformation, skills disruption, hybrid work, and changing organisational demands, training has become even more strategically important. The World Economic Forum (2025) reports that a substantial share of workers' core skills is expected to change by 2030, while recent workplace-learning literature argues that organisations increasingly need flexible, contextual, and technology-enabled learning systems that can support continuous capability renewal (Nkwusi et al., 2026; Suravi, 2023; World Economic Forum, 2025).

However, training activity is not the same as training value. A training programme may produce attendance records, completion rates, satisfaction scores, certificates, and learning-platform analytics without producing meaningful change in work behaviour. Employees may attend training without deep engagement. Content may be poorly aligned with real job problems. Supervisors may not support application. Employees may return to jobs where they lack time, tools, authority, or opportunity to use what they learned. New skills may remain invisible in appraisal, promotion, work allocation, or career development. In these cases, organisations do not merely experience weak transfer. They lose training value.

The transfer problem has been recognised for decades. Baldwin and Ford (1988) defined training transfer as the generalisation of trained knowledge and skills to the job and the maintenance of those skills over time. Later reviews and meta-analyses showed that transfer depends on trainee characteristics, training design, and work-environment factors, including motivation, self-efficacy, perceived utility, transfer climate, support, follow-up, and opportunity to perform (Blume et al., 2010; Grossman & Salas, 2011). More recent studies confirm that the problem remains current. Dixit and Sinha (2022) found that transfer tools and techniques matter for workplace application of trained knowledge and skills. Mehner et al. (2023) showed that training transfer and knowledge sharing influence individual organisational outcomes, with peer and supervisor support functioning as antecedents. Ardondi et al. (2025) further showed that workplace training-transfer evaluation tools remain heterogeneous and fragmented, which points to continuing methodological and practical gaps.

This paper argues that the transfer problem, although essential, is too narrow to capture the full range of training value loss. Transfer usually directs attention to what happens after training, especially whether learning is applied on the job. This is necessary but incomplete. Training value can be lost before training begins if learning needs are poorly diagnosed or if the wrong employees are selected. It can be lost during training if content is generic, poorly designed, or disconnected from actual work. It can be lost at the learner level if participants attend but remain cognitively, emotionally, or motivationally disengaged. It can be lost after training if there is no opportunity to apply learning, no supervisor reinforcement, no peer support, no

recognition, and no measurement of behavioural change or capability outcomes.

This paper therefore introduces workplace learning waste as a conceptual lens for understanding how training value disappears across the training value chain. Workplace learning waste is defined as the avoidable loss of training value caused by weak targeting, poor content relevance, low learner engagement, limited workplace application, absent recognition, and inadequate measurement of learning outcomes. The concept shifts attention from training as an event to training as a value-creation process. It asks not only whether learning transferred, but where value was lost, why it was lost, who lost it, and what organisational conditions allowed the loss to occur.

The term "waste" is used deliberately. In many organisations, training is treated as positive by default. A completed programme may be counted as evidence of investment, compliance, employee support, talent development, or institutional reform. Yet training can consume employee time, organisational funds, managerial attention, and opportunity cost without producing meaningful capability. When employees attend irrelevant training, when learned skills remain unused, or when new capabilities are ignored in career decisions, training value is wasted. This is not only an efficiency problem. It is also a capability and fairness problem because employees may invest effort in learning that does not improve their work, recognition, or career prospects.

Recent research strengthens the need for this wider framing. Brion (2022) argues that local culture shapes adult learning transfer and that HR professionals must understand how culture affects the process from pre-training to follow-up. Kim and Lee (2023), using evidence from Korea's National Human Resource Development Institute, show that public-sector training transfer is linked to individual characteristics such as motivation, interest, self-efficacy, psychological state, and capacity to transfer learning. Shen and Feng (2024) demonstrate that training guided by Holton's Learning Transfer System Inventory can improve practical application when design, learning environment, motivation, action, observation, and reflection are deliberately integrated. Together, these studies suggest that training value depends on a wider social and organisational system, not only the training session itself.

Workplace learning waste differs from training inefficiency, training ineffectiveness, and poor transfer. Training inefficiency usually concerns whether resources were used economically. Training ineffectiveness concerns whether learning objectives were achieved. Poor transfer concerns whether trained knowledge and skills were applied on the job. Workplace learning waste includes all these concerns but extends beyond them. It includes lost targeting value, lost content value, lost engagement value, lost application value, lost recognition value, and lost measurement value. In this sense, it reframes the training problem as a value-leakage problem rather than only a transfer or evaluation problem.

This reframing is necessary because HRD practice often overcounts training activity and undercounts learning value. Training dashboards may capture participation, learning hours, course completion, satisfaction scores, and digital platform usage. These indicators are useful, but they do not show whether employees apply learning, whether supervisors reinforce new skills, whether jobs are redesigned to use new capability, whether learning supports career mobility, or whether capability gaps close over time. Zafar et al. (2022) argue that training evaluation practices need modernisation through evidence-based workforce analytics, while Ardondi et al. (2025) show that transfer assessment tools remain fragmented across contexts. These findings support the need to examine training value loss more systematically.

The idea of learning waste also responds to a practical HRD problem. Organisations invest in training because they face skills gaps, strategic change, technological disruption, regulatory pressure, service-quality problems, leadership weaknesses, or performance demands. If training fails to produce application, recognition, or capability, the cost is not limited to wasted expenditure. It may also involve delayed transformation, continued performance gaps, employee frustration, repeated training cycles, and lost career-development opportunities. Training value loss therefore has strategic consequences.

The central argument of this paper is that HRD should move beyond asking only whether training transferred and should also ask where training value disappeared. This argument does not reject training transfer scholarship. Instead, it builds on that scholarship and extends it. Transfer remains a core part of the problem, but it becomes one form of waste within a wider learning value chain. The paper therefore proposes a workplace learning waste typology as a conceptual contribution to HRD theory and practice.

The paper makes four contributions. First, it introduces workplace learning waste as a concept for analysing lost training value across the learning value chain. Second, it distinguishes six forms of learning waste: targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste. Third, it reframes training failure as a value-leakage problem involving resources, time, effort, opportunity, recognition, and capability. Fourth, it provides the basis for future diagnostic indicators and empirical research on where, how, and why training value is lost in organisations.

The paper is organised as follows. Section 2 explains the conceptual shift from training transfer to training value loss. Section 3 defines workplace learning waste. Section 4 presenst the typology of workplace learning waste. Section 5 develops the training value-chain leakage model. Section 6 proposes illustrative calculation logic for learning waste. Section 7 discusses implications for HRD practice and research. Section 8 concludes the paper.

2. FROM TRAINING TRANSFER TO TRAINING VALUE LOSS

2.1 The contribution of training transfer scholarship

Training transfer scholarship provides the foundation for this paper. Baldwin and Ford's (1988) model remains important because it located transfer within trainee characteristics, training design, and work-environment conditions. This model made clear that training outcomes are not produced only inside the training room. They depend on what learners bring to training, how training is designed, and whether the workplace enables application after training.

Subsequent research strengthened this position. Blume et al. (2010), in a meta-analysis of 89 empirical studies, found that transfer is associated with learner characteristics, motivation, training interventions, and supportive work environments. Grossman and Salas (2011) further identified factors with consistent influence on transfer, including self-efficacy, motivation, perceived utility of training, behavioural modelling, realistic training environments, transfer climate, support, opportunity to perform, and follow-up. These foundational studies remain necessary because they provide the conceptual base on which newer work has built.

Recent scholarship shows that the transfer problem remains active rather than settled. Mehner et al. (2023) found that training transfer and knowledge sharing both influence individual organisational outcomes and that peer and supervisor support are important antecedents. Dixit and Sinha (2022) showed that transfer tools and techniques can facilitate workplace implementation of trained skills and knowledge. Ardondi et al. (2025) mapped workplace training-transfer evaluation tools and found that instruments remain heterogeneous, with standalone, composed, and tailored tools used across sectors.

This recent evidence supports the continuing relevance of transfer while also showing that organisations still lack a simple, integrated language for diagnosing value loss.

Training transfer scholarship is valuable because it challenges the assumption that training delivery equals training success. If trainees learn but cannot apply, training has not created full workplace value. If supervisors do not reinforce application, transfer may weaken. If the job does not provide opportunity to use skills, learning may decay. If transfer is measured only through self-report, completion data, or immediate reaction, organisations may overestimate effectiveness. These insights remain essential for HRD.

However, transfer research also reveals a persistent practice gap. Baldwin et al. (2017) argued that although research on training transfer has expanded considerably, too little of the science of transfer informs how professionals design and execute training initiatives. This point remains consistent with more recent evidence showing that transfer and transfer assessment are still shaped by fragmented tools, contextual variation, social support, and organisational conditions (Ardondi et al., 2025; Brion, 2022; Mehner et al., 2023). The issue is therefore not only whether transfer matters, but whether organisations can diagnose where training value disappears.

2.2 Why transfer alone is not enough

Although transfer is central, it does not capture all forms of lost training value. Transfer usually focuses on whether knowledge or skills are applied and maintained in the workplace. This focus is necessary, but it is often positioned too late in the training value chain. By the time a transfer failure is observed, value may already have been lost through weak needs assessment, poor participant selection, poor content design, weak learner engagement, or limited alignment with job demands.

For example, if employees are nominated for training because there is a budget to spend rather than because they need the competence, the organisation has already created targeting waste. If the content is generic and unrelated to actual work problems, content waste occurs before transfer is possible. If learners attend passively because training is compulsory, poorly timed, or poorly facilitated, engagement waste weakens the learning base. If the workplace provides no time, tools, authority, or managerial support to apply learning, transfer waste follows. If new skills are applied but never recognised in appraisal, promotion, role allocation, or career development, recognition waste occurs. If the organisation counts completion but does not measure application, behaviour, or capability outcomes, measurement waste hides all other forms of waste.

This wider view is supported by recent studies that emphasise context, culture, support, and application conditions. Brion (2022) argues that learning transfer should be understood as culturally situated, with local culture influencing the process from pre-training to follow-up. Kim and Lee (2023) show that public-sector HRD programmes need to account for trainees' personal characteristics and customised transfer conditions if learning is to move into workplace performance. Shen and Feng (2024) show that action research guided by transfer-system logic can improve practical application when training is embedded in planning, action, observation, and reflection. These studies point to a broader conclusion: transfer is not just a post-course outcome. It is shaped across the entire learning value chain.

Training transfer is therefore one part of a wider value-preservation problem. Transfer asks whether learning is used. Learning waste asks where training value is lost across the full process. This distinction matters because organisations may respond differently depending on how the problem is framed. If the problem is "poor transfer," the solution may be post-training follow-up. If the problem is "learning waste," the solution may require redesigning participant selection, content relevance, learner engagement, supervisor accountability, work allocation, recognition systems, and evaluation metrics.

2.3 From delivery metrics to value-chain thinking

Many organisations continue to rely heavily on delivery metrics. These include number of employees trained, training hours, completion rates, attendance, satisfaction scores, and certificates issued. These indicators are not useless. They show whether training occurred and whether employees accessed learning opportunities. However, they do not show whether training produced capability, behaviour change, performance improvement, knowledge sharing, or career value.

Recent work on evaluation and workplace learning reinforces this concern. Zafar et al. (2022) argue that organisations need to modernise training evaluation practices through evidence-based workforce analytics. Ardondi et al. (2025) show that tools for assessing workplace transfer remain varied and fragmented, which makes consistent diagnosis difficult. Mehner et al. (2023) also show that training impact is connected not only to application but also to knowledge sharing and social support. These findings suggest that training value must be examined beyond attendance and completion.

Value-chain thinking offers a more useful perspective. Training should be understood as a sequence of value-conversion points. First, organisational needs must be translated into learning priorities. Second, the right employees must gain access. Third, content must match work demands. Fourth, learners must engage meaningfully. Fifth, the work environment must support application. Sixth, applied learning must be recognised and reinforced. Seventh, outcomes must be measured and used to improve future decisions. At each point, value can either be preserved or lost.

This value-chain view does not replace established transfer models. It extends them by asking where training value leaks. For HRD practice, this is useful because it makes failure more diagnosable. A programme may have high attendance but weak relevance. It may have strong content but low engagement. It may generate learning but no opportunity to apply. It may produce new capability but no career recognition. It may have positive reactions but no evidence of behaviour change. Each case represents a different type of learning waste and requires a different response.

2.4 The need for a workplace learning waste typology

A typology is needed because training value loss is not a single problem. Different forms of waste occur at different points and have different causes. Without a typology, organisations may treat all training failure as a transfer issue or as a problem of learner motivation. This can lead to weak diagnosis. For example, blaming employees for not applying training may be unfair if supervisors did not provide time, tools, authority, or support. Similarly, redesigning content may not solve the problem if the real issue is that new skills are not recognised in role allocation, appraisal, or career decisions.

The workplace learning waste typology proposed in this paper is designed to improve conceptual precision. It distinguishes six forms of waste: targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste. These categories are not intended to be exhaustive in a final empirical sense. They are proposed as a conceptual starting point for analysing how training value disappears across organisational learning systems.

The typology also provides a bridge between HRD theory and practice. For researchers, it offers a new way to study training failure beyond transfer outcomes alone. For practitioners, it provides diagnostic language for locating the source of training value loss. For organisations, it reframes training investment as something that must be protected across the full value chain. The next section develops the concept of workplace learning waste in detail.

Table 1. From transfer problem to learning waste problem

Conventional transfer framing	Workplace learning waste framing	Analytical shift
Did employees apply what they learned after training?	Where did training value disappear before, during, and after training?	From post-training application to full value-chain diagnosis
Transfer depends on trainee characteristics, training design, and work environment	Value loss can occur through poor targeting, irrelevant content, weak engagement, limited application, absent recognition, and poor measurement	From transfer predictors to waste categories
Training success is judged by learning and application	Training value is judged by relevance, engagement, application, recognition, capability conversion, knowledge sharing, and evidence	From activity and transfer to value preservation
The transfer problem is often treated as a learner or work-environment issue	Learning waste is treated as a system-level HRD and organisational design issue	From individual responsibility to organisational accountability
Evaluation often focuses on learning and behaviour outcomes	Diagnosis examines leakage points across the training value chain	From evaluation levels to value leakage points
The main risk is that learning is not used	The wider risk is that resources, time, effort, opportunity, recognition, and capability are lost	From unused learning to lost organisational value

3. CONCEPTUALISING WORKPLACE LEARNING WASTE

Workplace learning waste refers to the avoidable loss of training value across the learning value chain. It occurs when training consumes organisational resources, employee time, cognitive effort, managerial attention, and development opportunity without producing proportionate workplace application, capability improvement, recognition, or organisational benefit. The concept does not assume that every training programme must produce immediate measurable performance gains. Some learning outcomes may be developmental, preventive, relational, cultural, or long term. However, training becomes wasteful when avoidable design, access, engagement, application, recognition, or measurement failures prevent learning from becoming usable value.

The concept builds on, but extends beyond, training transfer. Training transfer focuses on whether knowledge, skills, and attitudes acquired during training are applied and maintained in the workplace. This remains essential because training without application has limited organisational value. Recent studies continue to show that transfer is shaped by support, motivation, volition, knowledge sharing, evaluation tools, culture, and transfer conditions (Ardondi et al., 2025; Brion, 2022; Mehner et al., 2023). Yet transfer is only one point in the learning value chain. Training value can disappear before transfer is even possible. It can be lost when the wrong people are trained, when content is poorly aligned, when learners are disengaged, or when evaluation systems fail to detect whether application occurred.

Workplace learning waste therefore shifts the unit of analysis from the training event to the training value chain. A training event is the visible intervention. The value chain includes the decisions and conditions that come before, during, and after the intervention. These include needs diagnosis, participant selection, content design, learner engagement, delivery quality, workplace support, supervisor reinforcement, opportunity to perform, peer learning, recognition, evaluation, and feedback into future HRD decisions. A waste perspective asks how value leaks at each point.

This is important because organisations often interpret training failure too narrowly. A common explanation is that employees failed to transfer learning. This may be true in some cases, but it can also conceal organisational responsibility. Employees may not apply learning because the training did not address real work problems, because supervisors did not support experimentation, because the workload left no time to practise, because the organisational culture discouraged new behaviour, or because new skills were not recognised in appraisal or career decisions. Blaming the learner in such cases misdiagnoses the problem.

Recent evidence supports a system-level view. Mehner et al. (2023) found that training transfer and knowledge sharing both contribute to individual organisational outcomes and that peer and supervisor support function as antecedents. Dixit and Sinha (2022) showed that transfer tools and techniques are relevant to workplace application of trained skills. Brion (2022) argued that local culture influences the whole adult learning-transfer process from pre-training to follow-up. Ardondi et al. (2025) further showed that workplace transfer evaluation tools remain heterogeneous and fragmented. These studies indicate that training value depends on social, cultural, methodological, and organisational conditions.

Workplace learning waste also differs from simple financial waste. Financial waste concerns money spent without return. Learning waste is broader. It includes wasted time when employees attend irrelevant training. It includes wasted attention when learning design overloads participants or fails to support deep processing. It includes wasted opportunity when trained employees are not given tasks that require the new skill. It includes wasted recognition when applied learning does not influence appraisal, promotion, or career mobility. It includes wasted evidence when organisations collect attendance and satisfaction data but fail to measure behaviour, application, or capability conversion.

This broader view is especially important in modern HRD because training is increasingly used to respond to complex organisational pressures. These pressures include digital transformation, artificial intelligence adoption, public-sector reform, professional upskilling, regulatory compliance, leadership development, service improvement, and sustainability transition. In these contexts, training waste is not a minor operational defect. It can delay transformation, reproduce skills gaps, weaken employee trust in development systems, and produce repeated cycles of training without capability growth.

The proposed concept has three defining features. First, workplace learning waste is avoidable. It does not refer to every imperfect learning outcome. Some uncertainty is normal because learning depends on people, context, time, and organisational change. Waste refers to preventable or reducible value loss caused by weak HRD design, poor organisational support, or inadequate measurement. Second, workplace learning waste is systemic. It is not located only in the learner, trainer, course, or supervisor. It may emerge from misalignment among all of them. Third, workplace learning waste is cumulative.

Small losses at several points can combine into major value failure. A slightly misaligned course, weak engagement, limited supervisor support, and no recognition may together prevent training from producing meaningful capability.

The language of waste is analytically useful because it makes value loss visible. Training transfer asks whether learning was used. Workplace learning waste asks what was lost when learning was not converted into value. This distinction changes the diagnostic question. Instead of asking only why employees did not apply learning, HRD professionals can ask whether the training reached the right people, whether the content matched work, whether the delivery supported cognitive engagement, whether the workplace allowed practice, whether supervisors reinforced use, whether new skills were recognised, and whether evidence was collected.

This paper therefore conceptualises workplace learning waste as a value-leakage problem in HRD. It does not replace training transfer theory. It integrates transfer into a larger typology of value loss. The next section presents six forms of workplace learning waste.

4. A TYPOLOGY OF WORKPLACE LEARNING WASTE

A typology is needed because training value does not disappear in one way. Different forms of waste occur at different points in the training value chain. They also require different organisational responses. If the waste is caused by poor targeting, the solution is better needs diagnosis and participant selection. If it is caused by weak content relevance, the solution is work-based curriculum redesign. If it is caused by disengagement, the solution is not only post-training follow-up but improved learning design, facilitation, timing, and cognitive relevance. If it is caused by poor transfer conditions, the response must address supervisor support, opportunity to perform, workload, tools, and social reinforcement.

The proposed typology identifies six forms of workplace learning waste: targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste. These categories are conceptually distinct, but they may overlap in practice. A single training programme may contain several forms of waste at once.

4.1 Targeting waste

Targeting waste occurs when training is provided to the wrong employees, excludes the right employees, or is not linked to a clearly diagnosed capability need. It is a pre-training form of waste because it occurs before the learning intervention begins. Organisations may create targeting waste when training nominations are driven by hierarchy, favouritism, availability, budget exhaustion, compliance rituals, or generic staff-development routines rather than evidence of need.

This form of waste is important because no training design can fully compensate for poor targeting. If the wrong employees attend, the training may not address the real capability gap. If the right employees are excluded, the organisation may continue to experience performance problems even after spending resources on training. If training is offered without a clear link to work demands, employees may complete the programme but return to roles where the new knowledge is irrelevant.

Targeting waste is connected to the wider transfer literature because trainee characteristics, readiness, motivation, self-efficacy, and opportunity to use learning all influence transfer (Blume et al., 2010; Grossman & Salas, 2011). Recent public-sector evidence also supports this point. Kim and Lee (2023) argue that HRD programmes that ignore individual characteristics such as capacity, motivation, interest, self-efficacy, and psychological state may fail to promote learning or transfer motivation. This suggests that participant selection and pre-training diagnosis are not administrative details. They are value-preservation mechanisms.

Reducing targeting waste requires needs analysis at organisational, job, and individual levels. It also requires transparent criteria for training access. HRD teams should ask whether the intended participants need the training, whether they have roles where the learning can be used, whether they are prepared to learn, and whether their supervisors understand why they are attending. Without these conditions, training begins with a value leak.

4.2 Content waste

Content waste occurs when training content does not match the real tasks, problems, decisions, contexts, or capability needs of employees. It may arise when training is generic, outdated, over-theoretical, poorly localised, poorly sequenced, or disconnected from the organisation's actual work systems. Content waste is not simply a problem of poor materials. It is a misalignment between what is taught and what work requires.

This form of waste is common when organisations buy standardised training packages without adapting them to job realities. A leadership course may discuss abstract leadership styles but not address the actual conflicts, constraints, and accountability pressures leaders face. A digital-skills programme may teach software functions without linking them to workflow redesign. A compliance course may explain rules without helping employees handle real ethical or operational dilemmas. In such cases, training may look professional while still producing limited workplace value.

Recent learning research supports the importance of content design. Lin (2025) proposes an extended cognitive-load framework for workplace training and learning, arguing that presentation quality and task depth influence learning and developmental outcomes through different forms of cognitive load. This matters for content waste because poorly designed content can overload learners, reduce comprehension, or fail to create deep processing. Content that is not cognitively manageable or meaningfully connected to work is less likely to become usable capability.

Content waste also has cultural and contextual dimensions. Brion (2022) argues that local culture affects adult learning transfer from pre-training to follow-up. This means that content may be technically accurate but culturally misaligned. For example, training on communication, leadership, ethics, safety, or decision-making may fail if it ignores local norms around hierarchy, voice, authority, gender, language, power distance, or professional identity. Content relevance is therefore not only technical. It is also contextual.

Reducing content waste requires work-based design. HRD teams should build training around real tasks, cases, scenarios, tools, decisions, and performance gaps. Content should be reviewed with supervisors, job experts, and employees before delivery. It should be adapted to sector, culture, job level, and organisational constraints. Content that cannot be connected to workplace application should be questioned before it consumes employee time.

4.3 Engagement waste

Engagement waste occurs when employees physically or digitally attend training but do not meaningfully engage with the learning process. This includes

passive attendance, low motivation, distraction, resistance, fatigue, low psychological relevance, and minimal cognitive effort. Engagement waste is especially easy to overlook because attendance and completion metrics can make the programme appear successful.

This form of waste is distinct from content waste. Content may be relevant, but learners may still disengage if the timing is poor, workload pressure is high, facilitation is weak, delivery is monotonous, or employees do not see the value of participation. In online and hybrid learning, engagement waste may be even less visible because employees can complete modules while multitasking or clicking through content without deep learning. Suravi (2023) notes that training and development must adapt to the hybrid workplace, where technology enables new delivery forms but also requires redesign of learning methods and evaluation.

Engagement waste has cognitive and motivational dimensions. Lin's (2025) cognitive-load perspective suggests that learning quality depends partly on how information is presented and how deeply learners process the task. If training is too shallow, learners may complete it without developing capability. If it is too overloaded, learners may disengage or fail to retain usable knowledge. Motivation is also important. Mehner et al. (2023) identify motivation and volition as mediating mechanisms in the relationship between support, training transfer, knowledge sharing, and organisational outcomes. This suggests that engaged participation is not automatic. It must be designed and supported.

Reducing engagement waste requires more than making training entertaining. It requires relevance, interaction, challenge, psychological safety, clear purpose, manageable cognitive load, and visible connection to work. Learners should understand why the training matters, how it connects to their role, and how they will be supported to apply it. Training should include active practice, discussion, feedback, and reflection rather than only information delivery.

4.4 Transfer waste

Transfer waste occurs when employees learn but do not apply, maintain, or generalise that learning in the workplace. This is the form of waste most directly aligned with traditional training transfer scholarship. It occurs when training produces learning outcomes but those outcomes do not become work behaviour.

Transfer waste may be caused by several factors. Employees may lack time, tools, authority, confidence, supervisor support, peer support, or opportunity to perform. Work routines may be too rigid to allow new practices. Managers may expect employees to return immediately to old performance patterns. The organisation may reward speed and compliance rather than experimentation and learning. In such cases, the employee may have learned, but the workplace blocks application.

Recent research continues to support the importance of social and organisational conditions for transfer. Mehner et al. (2023) found that peer and supervisor support function as antecedents of training transfer and knowledge sharing. Shen and Feng (2024) showed that a training programme guided by Holton's transfer-system logic and implemented through planning, action, observation, and reflection supported practical application in nursing quality-improvement projects. Dixit and Sinha (2022) similarly emphasise transfer tools and techniques that facilitate workplace implementation of skills and knowledge. These studies reinforce the point that transfer is not simply an individual act. It is enabled or inhibited by the work system.

Reducing transfer waste requires structured post-training application. Supervisors should discuss the training before and after participation. Employees should be given tasks that require the new skill. Peer support and communities of practice can help sustain application. Workloads should allow practice and adjustment. HRD teams should follow up beyond immediate post-course evaluation. Transfer should be treated as a planned phase of the training value chain, not as something expected to happen naturally after delivery.

4.5 Recognition waste

Recognition waste occurs when employees apply new learning but the organisation fails to recognise, reward, use, or develop that capability. This is an underexamined form of waste because many training systems stop at transfer. Yet from an HRD perspective, applied learning should influence how employees are deployed, developed, appraised, promoted, or included in future opportunities.

Recognition waste can occur in several ways. A trained employee may use new digital skills but remain in the same limited role. A manager may complete leadership training and improve team practice, but appraisal systems may not capture the change. A public-sector employee may gain policy or project-management capability, but promotion remains based only on seniority or informal networks. A woman employee may complete career-development training, but organisational norms may still exclude her from stretch assignments. In each case, learning is not fully wasted because some application may occur, but organisational value is reduced because the new capability is not formally integrated into talent decisions.

Recognition waste links training to career development and organisational capability. Training becomes more valuable when it is connected to work allocation, performance management, career mobility, succession planning, and role redesign. Without such links, employees may become frustrated and may reduce future engagement in learning. This is also a fairness issue because employees invest time and effort in development with an expectation that new capability will matter.

Recent workplace-learning research supports the need to connect learning with wider organisational outcomes. Mehner et al. (2023) link training transfer and knowledge sharing to individual organisational results. Hwang and Yoon (2023) argue that workplace learning is especially important for disadvantaged workers who may face unequal access to learning opportunities necessary for job placement and career development. This suggests that learning value should not be assessed only by immediate application. It should also be assessed by whether learning improves opportunity, mobility, and inclusion.

Reducing recognition waste requires HRD integration with performance and talent systems. Skills gained through training should be visible in appraisal, internal mobility, role assignment, succession planning, and career conversations. Managers should be required to identify how trained employees will use and build on new capabilities. HRD teams should track not only who attended training, but whether training changed work opportunities.

4.6 Measurement waste

Measurement waste occurs when organisations fail to collect or use evidence that shows whether training created value. It includes overreliance on attendance, completion, satisfaction, or reaction data while neglecting learning quality, workplace application, behavioural change, capability development, knowledge sharing, performance outcomes, or career effects. Measurement waste is especially damaging because it hides other forms of waste.

If targeting waste occurs but no one examines participant selection, the organisation may repeat the same mistake. If content waste occurs but only satisfaction is measured, irrelevant training may continue. If engagement waste occurs but completion is counted as success, passive participation remains invisible. If transfer waste occurs but application is not assessed, the organisation may assume training worked. If recognition waste occurs but career effects are not tracked, employees may continue to learn without opportunity.

Recent research strongly supports the measurement problem. Ardondi et al. (2025) systematically mapped workplace training-transfer evaluation tools and found that instruments remain heterogeneous and fragmented. Zafar et al. (2022) argue that firms need to modernise training evaluation practices for evidence-based workforce management decisions and identify predictive workforce analytics as a pathway for strengthening evaluation practice. These studies support the need for better diagnostic evidence. Measurement should not merely document training activity. It should show whether value was preserved or lost.

Reducing measurement waste requires a shift from activity metrics to value metrics. Activity metrics include attendance, completion, hours, and satisfaction. Value metrics include relevance, engagement, application, behaviour change, knowledge sharing, supervisor support, opportunity to perform, recognition, performance contribution, and career movement. Not every training programme requires all metrics. However, important programmes should be evaluated beyond participation and reaction.

4.7 Interdependence among the six waste types

The six types of workplace learning waste are interdependent. Targeting waste increases the likelihood of content and engagement waste because the wrong participants may not see relevance. Content waste increases engagement and transfer waste because irrelevant learning is less likely to be deeply processed or applied. Engagement waste weakens transfer because learners cannot apply what they did not meaningfully internalise. Transfer waste may lead to recognition waste because unused skills remain invisible. Measurement waste allows all other waste types to persist because the organisation lacks evidence of where value was lost.

This interdependence is why the typology should not be used as a checklist only. It should be used as a diagnostic map. HRD professionals should examine the sequence of value creation and identify where the largest leakage points occur. In some organisations, the main problem may be weak targeting. In others, it may be irrelevant content, unsupported application, or poor measurement. The typology helps identify the type of waste before prescribing the response.

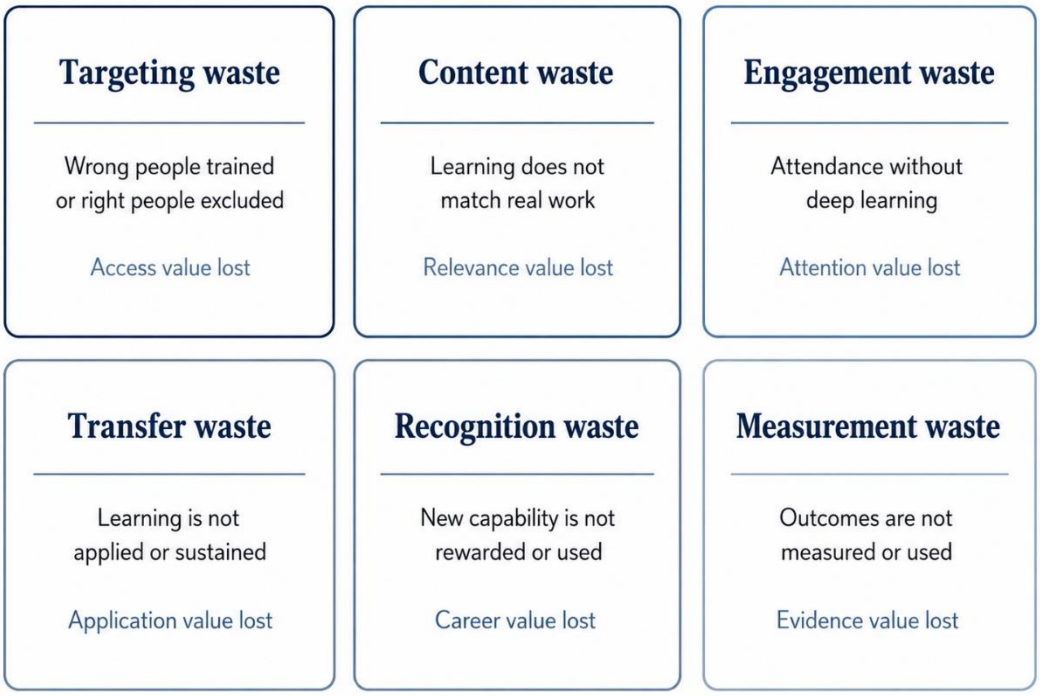


Figure 1. Workplace Learning Waste Typology

Table 2. Six types of workplace learning waste

Waste type	Where it occurs	What is lost	Typical causes	Diagnostic question
Targeting waste	Before training	Access value and capability alignment	Weak needs analysis; wrong participant selection; exclusion of employees who need training	Were the right employees selected for the right capability need?
Content waste	During design and delivery	Relevance value	Generic content; outdated material; weak job alignment; poor contextualisation	Did the content match real work tasks, problems, and decisions?

Engagement waste	During learning	Attention, motivation, and cognitive processing	Passive delivery; low relevance; overload; poor timing; weak facilitation	Did participants engage deeply enough to learn meaningfully?
Transfer waste	After training	Application value	No time, tools, authority, supervisor support, peer support, or opportunity to perform	Did employees use and maintain the learning at work?
Recognition waste	After application	Career and talent value	Skills not reflected in appraisal, role assignment, promotion, or mobility	Did applied learning influence recognition, deployment, or career opportunity?
Measurement waste	Across the full chain	Evidence value	Overreliance on attendance, completion, satisfaction, or self-report	Did the organisation measure whether training produced capability and behaviour change?

5. THE TRAINING VALUE-CHAIN LEAKAGE MODEL

The workplace learning waste typology identifies the forms of value loss. The training value-chain leakage model explains how these losses unfold across time. The model treats training as a sequence of value-conversion points rather than a single instructional event. Each point either preserves learning value or allows leakage.

The model begins with strategic need. Training should start with a defined organisational, job, or employee capability problem. If this starting point is unclear, the organisation risks investing in training that is disconnected from actual need. The second point is learning access. The right employees must be selected and given fair opportunity to participate. The third point is content relevance. Training must be designed around real work demands, not generic abstractions. The fourth point is learning engagement. Participants must process, practise, reflect, and internalise the learning. The fifth point is workplace application. Employees must have the time, tools, authority, and support to use what they learned. The sixth point is reinforcement and recognition. Supervisors, peers, appraisal systems, and talent processes must sustain and value the new behaviour. The seventh point is evidence and improvement. Organisations must measure outcomes and use findings to improve future HRD decisions.

Value leakage can occur at any point. If the strategic need is unclear, the organisation creates misalignment. If access is poor, employees who need development may be excluded. If content is weak, learning becomes irrelevant. If engagement is shallow, completion replaces learning. If application is unsupported, transfer fails. If recognition is absent, new capability remains underused. If measurement is weak, the organisation cannot identify or correct the loss.

This model makes two conceptual moves. First, it positions transfer as one phase of a wider learning value chain. Transfer remains crucial, but it is not the whole story. Second, it treats training value as something that must be protected through design, implementation, application, recognition, and evidence. This moves HRD away from an event-based view of training and toward a value-preservation view.

The model also clarifies why training evaluation alone is insufficient if it occurs too late or uses weak indicators. By the time an organisation evaluates satisfaction after training, targeting, content, and engagement waste may already have occurred. By the time performance gaps remain visible months later, application and recognition waste may have accumulated. Evaluation must therefore be distributed across the value chain. Needs diagnosis, participant selection, content relevance, learner engagement, application opportunity, supervisor reinforcement, and outcome evidence should all be treated as evaluation points.

The training value-chain leakage model is practical because it helps HRD professionals identify where intervention is needed. If leakage occurs at the strategic-need point, the response is better diagnosis. If it occurs at the access point, the response is fairer targeting. If it occurs at the content point, the response is work-based design. If it occurs at the engagement point, the response is improved learning experience and cognitive design. If it occurs at the application point, the response is supervisor support and opportunity to perform. If it occurs at the recognition point, the response is integration with performance and career systems. If it occurs at the evidence point, the response is stronger measurement.

This model is also useful for research. It allows future studies to examine training value loss as a sequence rather than a single outcome. Researchers can test whether earlier forms of waste predict later forms. For example, content waste may predict engagement waste, and engagement waste may predict transfer waste. Recognition waste may weaken future learner motivation. Measurement waste may allow repeated targeting or content waste across training cycles. This creates a richer research agenda than asking only whether transfer occurred.

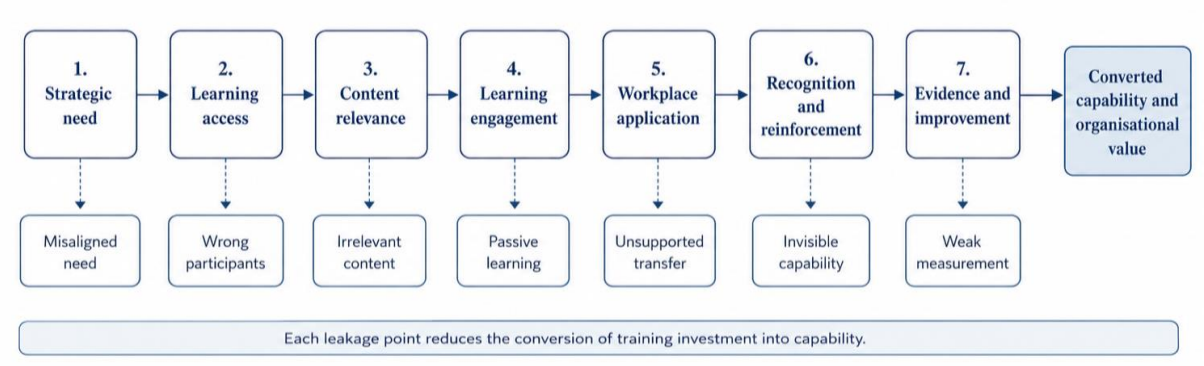


Figure 2. Training Value-Chain Leakage Model

6. ILLUSTRATIVE CALCULATION LOGIC FOR LEARNING WASTE

The workplace learning waste typology becomes more useful when it is linked to diagnostic indicators. The purpose of this section is not to present a validated scale or a final measurement instrument. Rather, it proposes an illustrative calculation logic that HRD researchers and practitioners can adapt, test, and refine. The goal is to make learning waste observable enough for diagnosis, comparison, and future empirical development.

The logic begins from a simple proposition. Training value is created when organisational learning investment is converted into relevant participation, meaningful engagement, workplace application, recognised capability, and evidence-based improvement. Learning waste occurs when value is lost at one or more of these conversion points. Therefore, a learning waste indicator should compare expected value with realised value at a specific point in the training value chain.

This approach is consistent with recent calls for stronger analytics and evidence in HRD. Lee and Lee (2023) argue that people analytics has important implications for HRD because it can help practitioners understand how people-related data can support development decisions. Roul et al. (2024) similarly identify training and development, performance management, artificial intelligence, big data, HR information systems, and organisational development as major themes in human resource analytics research. These studies support the need to move training evaluation beyond attendance and completion data toward more diagnostic evidence.

At the same time, calculation must be used carefully. Training value cannot always be reduced to financial return. Some outcomes are qualitative, relational, developmental, or long term. A leadership programme may improve judgement before it improves measurable performance. A safety programme may prevent future harm. A women's career-development intervention may increase confidence, visibility, and access to mentoring before promotion outcomes are visible. Therefore, the learning waste logic proposed here should be interpreted as a diagnostic framework, not a narrow accounting formula.

6.1 Principles for calculating workplace learning waste

Five principles should guide the calculation of workplace learning waste.

First, the indicator should be linked to a specific waste type. A general statement that training failed is too broad. HRD professionals should identify whether the problem is targeting waste, content waste, engagement waste, transfer waste, recognition waste, measurement waste, or a combination of these. Each waste type requires different evidence.

Second, indicators should compare input, process, and outcome evidence. Input evidence includes cost, time, participants, learning objectives, and target capability needs. Process evidence includes participation, engagement, completion, practice, feedback, and supervisor involvement. Outcome evidence includes application, behaviour change, performance contribution, knowledge sharing, role use, recognition, and career movement.

Third, indicators should use proportional logic where possible. Ratios are useful because they show the size of leakage. For example, if 100 employees attend training and only 25 apply the skill within three months, the completion-to-application gap is 75%. The point is not to claim that the 75% is automatically wasted. Rather, the figure identifies a diagnostic problem that requires investigation.

Fourth, indicators should include context. Training outcomes differ across sectors, job types, skill types, and organisational environments. Beier et al. (2025) argue that workplace learning must be understood within a future-of-work context where workers need to adapt to changing job demands and where a person-centred perspective is needed. This means that training waste should not be assessed only from the organisation's point of view. It should also consider whether learning strengthens the employee's capacity for future work.

Fifth, learning waste indicators should be used ethically. People analytics and HR analytics can improve training decisions, but they also raise issues of data quality, privacy, interpretation, and fairness. Lee and Lee (2023) identify ethical issues as one of the major knowledge categories in people analytics from an HRD perspective. Alam et al. (2025) also show that HR analytics adoption faces data governance, technical, and organisational challenges. Learning waste measurement should therefore support improvement, not surveillance or blame.

6.2 Targeting waste indicators

Targeting waste can be estimated by comparing the employees who needed training with those who actually received it. A basic indicator is the targeting misalignment ratio.

Targeting misalignment ratio = Number of trained employees without identified capability need ÷ Total number of trained employees × 100

A second indicator is the unmet training need ratio.

Unmet training need ratio = Number of employees with identified capability need but no training access ÷ Total number of employees with identified capability need × 100

These indicators help show whether training access is aligned with real capability gaps. However, they depend on the quality of needs analysis. If needs diagnosis is weak, the calculation will also be weak. Therefore, targeting indicators should be supported by job analysis, performance data, supervisor input, employee self-assessment, and strategic capability mapping.

Targeting indicators are particularly important for equity. Radovan (2024) found that workplace factors such as company size, flexible working hours, and ability to work from home were associated with adult learning participation. This suggests that access to learning may be shaped by work conditions, not only employee motivation. If certain groups consistently lack training access, the organisation may be producing both learning waste and developmental inequality.

6.3 Content waste indicators

Content waste can be estimated by comparing training content with job requirements and strategic capability needs. One simple indicator is the content relevance score.

Content relevance score = Number of training modules rated as directly job-relevant ÷ Total number of training modules × 100

Another indicator is the content application fit ratio.

Content application fit ratio = Number of trained competencies with identified workplace use cases ÷ Total number of trained competencies × 100

These indicators should not rely only on learner satisfaction. A participant may enjoy a course that has little relevance to work. Conversely, a demanding course may initially receive lower satisfaction but still be highly useful. Content relevance should be assessed by employees, supervisors, job experts, and HRD professionals.

Content waste is especially important in digital and analytics-driven learning environments. Roul et al. (2024) show that training and development is now connected with HR analytics, big data, artificial intelligence, performance management, and HR information systems. This means that content should not only be interesting. It should be aligned with emerging work systems and measurable capability needs.

6.4 Engagement waste indicators

Engagement waste can be estimated by comparing attendance or completion with meaningful participation. A simple indicator is the passive completion ratio.

> Passive completion ratio = Number of participants who completed training but failed minimum engagement criteria ÷ Total number of participants who completed training × 100

Minimum engagement criteria may include participation in discussion, completion of practice tasks, reflective exercises, knowledge checks, simulations, peer feedback, or applied assignments. For online training, engagement evidence may include time-on-task, activity completion, interaction quality, assessment performance, and post-module reflection. However, digital traces should not be interpreted mechanically. A long time spent on a module may indicate careful learning, confusion, distraction, or technical difficulty.

Engagement waste should be assessed carefully because it is easy to confuse attendance with learning. Training dashboards often show completion rates, but completion alone does not prove cognitive effort. The more important question is whether the learner processed the content deeply enough to use it.

6.5 Transfer waste indicators

Transfer waste can be estimated by comparing completed training with documented workplace application. A basic indicator is the completion-to-application gap.

> Completion-to-application gap = Number of trained employees who completed training but did not apply the learning within a defined period ÷ Total number of trained employees who completed training × 100

Another indicator is the opportunity-to-apply gap.

> Opportunity-to-apply gap = Number of trained employees who lacked opportunity to use the skill ÷ Total number of trained employees × 100

These indicators separate two different problems. The first asks whether application happened. The second asks whether the organisation created conditions for application. This distinction is important because non-application should not automatically be blamed on the learner. If the employee had no opportunity, time, tools, authority, or supervisor support, then the organisation created transfer waste.

Transfer indicators should be measured after a realistic interval. The appropriate period may differ by training type. Technical software training may be assessed within weeks. Leadership, mentoring, policy, safety, or strategic decision-making training may require several months. For long-term professional development, transfer may be gradual.

6.6 Recognition waste indicators

Recognition waste can be estimated by comparing documented application with organisational use of the new capability. A basic indicator is the application-to-recognition gap.

> Application-to-recognition gap = Number of employees who applied learning but received no formal recognition or development consequence ÷ Number of employees who applied learning × 100

Recognition may include performance appraisal evidence, new assignments, internal mobility, promotion consideration, certification, role redesign, mentoring opportunities, leadership pipeline inclusion, or professional visibility. This does not mean every training participant must be promoted. Rather, it means applied learning should be visible in talent and performance systems.

Recognition waste matters because employees may disengage from future learning if development has no career consequence. Shiri et al. (2023), in a systematic review, found that continuing professional training and development opportunities were associated with outcomes such as increased intention to stay, reduced intention to leave, and lower turnover intention. This supports the argument that development is not only a skills issue. It is also connected to retention, commitment, and employment continuity.

6.7 Measurement waste indicators

Measurement waste can be estimated by examining whether the organisation collects evidence across the training value chain. A simple indicator is the measurement coverage ratio.

> Measurement coverage ratio = Number of value-chain stages with usable evidence ÷ Total number of value-chain stages × 100

The seven stages may include strategic need, learning access, content relevance, learning engagement, workplace application, recognition and reinforcement, and evidence-based improvement. If an organisation measures only attendance and satisfaction, its measurement coverage is low. If it also measures relevance, engagement, application, supervisor support, performance contribution, recognition, and improvement decisions, its measurement coverage is stronger.

A second indicator is the evidence-use ratio.

> Evidence-use ratio = Number of training decisions changed based on evaluation evidence ÷ Total number of evaluated training decisions × 100

This indicator is important because measurement has little value if it does not affect decisions. HRD teams may collect surveys and reports without using them to redesign training, improve targeting, adjust content, support transfer, or change talent processes. In such cases, evidence itself becomes wasted.

6.8 Composite learning waste index

A composite learning waste index can be developed for organisations that want a broader diagnostic score. This should be treated as exploratory until validated.

Learning Waste Index = Average of targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste scores

Each score can be expressed from 0 to 100, where higher values indicate higher waste. The index can be calculated at programme level, department level, job-family level, or organisational level. However, the index should not be used without examining the sub-scores. Two programmes may have the same overall score but very different problems. One may suffer mainly from targeting waste, while another may suffer mainly from transfer and recognition waste.

The index should also be weighted where necessary. For example, transfer waste may be more important in a technical skills programme, while recognition waste may be more important in a leadership or career-development programme. In compliance training, application and risk reduction may matter more than promotion. In inclusion training, behavioural and cultural indicators may matter more than immediate financial return. Weighting should therefore be based on programme purpose.

Table 3. Illustrative learning waste indicators

Waste type	Possible indicator	Illustrative calculation logic	Required evidence	Interpretation
Targeting waste	Targeting misalignment ratio	Trained employees without identified need ÷ total trained employees × 100	Needs analysis, participant list, capability gap evidence	Shows whether training access matched actual capability need
Targeting waste	Unmet training need ratio	Employees with need but no access ÷ employees with identified need × 100	Capability assessment, training access data	Shows whether employees who needed development were excluded
Content waste	Content relevance score	Job-relevant modules ÷ total modules × 100	Module review, job analysis, supervisor and employee ratings	Shows whether training content matched work demands
Content waste	Content application fit ratio	Competencies with workplace use cases ÷ total trained competencies × 100	Curriculum map, work-process map, use-case evidence	Shows whether taught competencies had clear application routes
Engagement waste	Passive completion ratio	Completers below engagement threshold ÷ total completers × 100	Participation data, practice tasks, reflection, assessment records	Shows whether completion represented meaningful learning
Transfer waste	Completion-to-application gap	Completers who did not apply learning ÷ total completers × 100	Follow-up survey, supervisor report, work evidence	Shows whether trained learning became work behaviour
Transfer waste	Opportunity-to-apply gap	Trained employees without opportunity to use skill ÷ total trained employees × 100	Work allocation data, supervisor report, employee report	Shows whether the workplace enabled application
Recognition waste	Application-to-recognition gap	Employees applying learning without recognition ÷ employees applying learning × 100	Appraisal, promotion, role assignment, talent records	Shows whether applied capability influenced organisational decisions
Measurement waste	Measurement coverage ratio	Value-chain stages with evidence ÷ total value-chain stages × 100	Evaluation plan, evidence map, HRD reports	Shows whether the organisation measures value across the chain
Measurement waste	Evidence-use ratio	Training decisions changed by evidence ÷ evaluated training decisions × 100	Evaluation reports, redesign records, decision logs	Shows whether evidence improves future HRD decisions

7. IMPLICATIONS FOR HRD PRACTICE AND RESEARCH

7.1 Implications for HRD practice

The workplace learning waste typology has several practical implications. First, HRD professionals should diagnose value leakage before designing new training. Many organisations respond to performance problems by offering more training. This may increase activity without reducing waste. Before a new programme is approved, HRD teams should ask whether the problem is truly a learning problem, a work-design problem, a motivation problem, a resource problem, a leadership problem, or a recognition problem.

Second, HRD dashboards should move beyond participation metrics. Attendance, completion, training hours, and satisfaction scores are useful, but they are not enough. A stronger dashboard should include targeting accuracy, content relevance, engagement depth, application rate, opportunity-to-apply evidence, supervisor reinforcement, recognition outcomes, and evidence-use decisions. This is consistent with the growing importance of people analytics and HR analytics in HRD. Lee and Lee (2023) show that people analytics has direct implications for HRD practice, while Roul et al. (2024) identify training and development as an important theme in the HR analytics literature.

Third, training should be connected to work allocation. Employees cannot apply what they learned if their roles do not allow it. Supervisors should identify post-training tasks, projects, cases, or responsibilities where new skills can be used. This should be planned before training begins. If the organisation cannot identify where the learning will be used, it should reconsider the training design.

Fourth, learning should be connected to recognition and career systems. Training should not be isolated from appraisal, promotion, succession planning, internal mobility, and role redesign. If employees apply new learning but the organisation ignores that capability, recognition waste occurs. This weakens the motivational basis for future learning and may reduce trust in HRD systems.

Fifth, measurement should be used for improvement rather than blame. Learning waste indicators should help organisations identify where the system failed. They should not be used to punish employees for non-application when the workplace did not provide time, support, or opportunity. This is especially important in analytics-driven HRD. Alam et al. (2025) show that HR analytics adoption faces data governance, technical, and organisational challenges. Learning waste measurement must therefore be supported by ethical data practices, transparent interpretation, and shared accountability.

Sixth, organisations should consider equity in training value. Training waste may affect groups differently. Employees in lower-level positions, insecure jobs, smaller firms, rigid schedules, or low-autonomy roles may have less access to workplace learning. Radovan (2024) found that work characteristics and flexibility are associated with adult learning participation. Beier et al. (2025) also argue for a person-centred perspective on workplace learning that includes vulnerable workers and workers outside traditional organisational structures. HRD systems should therefore ask not only whether training value is created, but who receives it and who is excluded from it.

7.2 Implications for HRD research

The typology also creates several research opportunities. First, future studies can develop and validate a workplace learning waste scale. The six proposed dimensions provide a starting structure, but empirical work is needed to test whether they are distinct, reliable, and predictive of training outcomes. Scale development could begin with qualitative interviews, expert validation, item generation, exploratory factor analysis, confirmatory factor analysis, and tests of criterion validity.

Second, future research can examine the sequence of learning waste. The training value-chain leakage model suggests that earlier waste may predict later waste. For example, targeting waste may increase content and engagement waste. Engagement waste may increase transfer waste. Transfer waste may increase recognition waste. Measurement waste may allow all other forms of waste to continue across training cycles. Longitudinal studies would be useful because learning value unfolds over time.

Third, researchers can test the relationship between learning waste and organisational outcomes. These outcomes may include performance improvement, innovation, employee retention, internal mobility, productivity, safety, service quality, inclusion, and career progression. Shiri et al. (2023) show that professional training and development are associated with employment-retention outcomes. This suggests that workplace learning waste may have consequences beyond immediate skill use.

Fourth, future studies can integrate people analytics with learning waste measurement. People analytics can help connect training data with role data, performance data, mobility data, supervisor support, engagement, and retention. However, this must be done carefully. The purpose should be to improve HRD decisions, not to create simplistic rankings of employees or departments. Ethical issues, privacy, bias, and data quality should be central to future research.

Fifth, comparative studies are needed. Learning waste may differ by sector, country, work arrangement, occupation, skill type, and organisational culture. Public-sector training, healthcare training, digital-skills training, leadership development, and career-development programmes may all produce different forms of waste. Comparative research can show whether the typology travels across contexts or requires adaptation.

Sixth, future research should examine informal and non-formal learning. This paper focuses mainly on organisational training, but workplace learning is broader than formal programmes. In many workplaces, employees learn through mentoring, peer support, problem solving, job rotation, stretch assignments, shadowing, and communities of practice. Learning waste can also occur in these informal spaces when employees learn but are not allowed to use, share, or be recognised for what they know.

7.3 Boundary conditions

The concept of workplace learning waste should be applied with caution. Not every unmeasured outcome is waste. Not every delayed outcome is waste. Not every training programme should be judged by immediate financial return. Some training is preventive, developmental, ethical, relational, or compliance-based. A harassment-prevention programme, for example, may produce value by reducing risk, improving climate, and clarifying behavioural expectations, even if direct financial return is difficult to isolate.

The typology should therefore be used as a diagnostic framework, not as a rigid audit tool. Its purpose is to make value leakage visible. It should help HRD professionals ask better questions. Where did value disappear? Was the right person trained? Was the content relevant? Did the learner engage deeply? Was there an opportunity to apply learning? Was new capability recognised? Was evidence collected and used?

8. CONCLUSION

This paper introduced workplace learning waste as a conceptual lens for understanding how training value disappears across the learning value chain. The argument is that training failure should not be understood only as weak transfer. Transfer remains important, but value can be lost before, during, and after transfer. The proposed typology identifies six forms of workplace learning waste: targeting waste, content waste, engagement waste, transfer waste, recognition waste, and measurement waste.

The central contribution of the paper is its shift from a training-event view to a value-leakage view. This shift helps HRD scholars and practitioners move beyond counting participation and asking whether learning transferred. It directs attention to where training value is lost, why it is lost, and how organisations can preserve value across the full chain from need diagnosis to evidence-based improvement. The paper also proposed illustrative indicators that can guide future measurement, audit, and empirical validation.

For practice, the paper suggests that HRD teams should diagnose learning waste before designing more training. They should connect training to work

allocation, supervisor support, recognition, career systems, and evidence use. For research, the paper opens a pathway for scale development, longitudinal testing, analytics-based evaluation, and comparative studies across sectors and worker groups. The wider implication is simple but important. Organisations do not only need more training. They need better systems for preventing the disappearance of training value.

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