

Learning Reviews: A Temporal Handling of the Open-Ended Challenge of Safety

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SUMMARY

Learning Reviews (LRs) are one of the most powerful organisational levers for improving safety, culture and performance. They recognise that adverse events are temporal and often traumatic experiences, shaped by conditions and sense-making that unfold long before the final moment. When used proactively and compassionately, LRs help leaders understand *why* actions made sense at the time, identify upstream influences and address the open-ended challenge, the wicked problem, of safety.

A temporal and trauma-informed LR approach provides the psychological safety people need to speak openly, enabling deeper insight, richer organisational learning and more durable system improvements. In doing so, LRs strengthen trust, support recovery and create the conditions for safer and more humane performance.

KEYWORDS

Safety, Human Factors, Culture, Leadership, Performance, Trauma, Learning Reviews, Wicked Problems, Open-Ended Challenge

Conventional investigations often compress complex human stories into the final seconds before an adverse event. Fact-finding and root cause analysis may offer organisational reassurance, but they frequently increase trauma for those involved and obscure the system conditions that shaped performance. Such methods are poorly suited to the open-ended challenge or wicked problem of safety, where no single cause exists and solutions require ongoing learning, human insight and adaptive thinking.

Learning Reviews (LR) offer an alternate, human-centred and what has proven to be, a highly effective alternative. They widen the investigative lens and lengthen the timeline, exploring the temporal arc of influences that shaped sense-making and behaviour. Instead of focusing on the final moments, LRs examine the organisational, environmental, personal and emotional factors that accumulated long beforehand, workload, fatigue, communication pathways, design issues, risk perception, team dynamics and the meanings people constructed from the cues available to them. This moves attention from individuals to systems, and from blame to understanding and through to learning.

Adverse events are often traumatic, even when the trauma isn't immediately visible. People may experience shock, cognitive disruption, moral injury or fear about the consequences of speaking openly. Insensitive or judgemental investigations can deepen this harm. A trauma-informed LR approach recognises that trauma unfolds across time and that psychological safety is essential. Cognitive interviewing must therefore be gentle, patient and skilled; even subtle blame can shut individuals down and close off learning opportunities. Compassion, by contrast, improves accuracy, trust and organisational outcomes.

Trauma must be managed at every stage, before, during and after the LR. This includes allowing time for emotional settling, recognising distress, offering reassurance and ensuring people feel included and respected. When handled in this way, the LR becomes not only a learning mechanism but a humane part of recovery.

The LR methods are rooted in curiosity, humanity and systems thinking. They draw on Sidney Dekker's tunnel metaphor to explore the corridor of influences, Todd Conklin's separation of events, context and consequences to avoid hindsight bias, and Julia Galef's Soldier-Scout mindset to encourage curiosity over judgement. Double-loop learning challenges assumptions and helps redesign system conditions, while a compassionate approach to safety principles, honour the lived experience of work. The reality of events, as experienced by those involved.

The reviewer's role is not to interrogate but to understand. This requires emotional intelligence, deep listening, skilful questioning and the ability to create and hold a psychologically safe environment. The aim is to uncover *why it made sense* to act as people did, given the pressures, goals and constraints of the time, and to generate meaningful recommendations at individual, team and organisational levels. Temporal and trauma-informed LRs have produced substantial improvements across rail and other safety-critical environments. Such has been their impact, that several organisations, and as outlined in the examples below, undertake pre-adverse event LRs. They also run group LRs where individuals who have experienced similar adverse events are brought together to review what took place. These activities destigmatise adverse events and reduce trauma for those involved. They help to reposition adverse events as unintentional, as being triggered by those involved, rather than caused.

Our results to date include a rich and broad cross section of LRs where learning has improved not only increased safety capacity but also provided a conduit for other conversations. All of which have been aimed at individual, team and organisational learning and development.

Examples of learning reviews and their impacts:

- **Safer station flooring and chemical sprayers:** Identification of inappropriate matting and spray equipment was caught before slips, trips, falls and chemical exposure had taken place. This also uncovered a highly flexible purchasing system which had poor safety and governance oversight.
- **Refined electrical isolation procedures:** The entrapment of a metal object between the third rail and the running shoe resulted in the energising of a metal station structure and overloading of the electrical systems. This resulted in a contained fire, due to the inappropriate storage of cleaning materials. No disciplinary action took place as inadequate training, policies and equipment were the main contributory factors. This event highlighted inadequate earthing at several other stations.
- **Improved control to driver communications:** Remote monitoring of communications established an unhelpful communication pattern, which through subsequent workshops led to a significant improvement and understanding within the control room as to the pressures that drivers are under.
- **Enhanced emergency evacuation process:** A colleague was taken ill whilst in the HQ buildings. Their subsequent delayed, albeit successful evacuation was examined and found to contain many shortcomings. The review established many gaps in understanding and process shortfalls for first aid, evacuation and dealing with the emergency services. This training was then rolled out at other buildings.
- **Platform hearing protection:** Partially enclosed, curved stations produced wheel squeal which exceeded industry hearing standards. Therefore, hearing protection was required. The perceived wisdom was that platform staff could not wear such protection as it would interfere with the dispatch process. However, it was established that no such standard

existed. Therefore, hearing protection with short distance radios have now been sourced, tested and issued. This programme will be rolled out at other similarly constructed stations.

- **Signal passed at danger (SPAD):** This often results in disciplinary action. However, the LR established 22 recommendations which all resided within the system. None were applicable to the driver. Therefore, their continued driving and their record was unaffected.
- **Train-platform gap:** For 24 years, a train-platform gap had been out of gauge. However, the situation had resulted in a standoff between responsible parties. A LR was undertaken which established unequivocally for both parties that a reprofiling of the track was required to close the gap. This was subsequently undertaken, including a cant of the ballast, in budget, by altering maintenance schedules.
- **CD/RA Markers:** Due to the change in train formation, the Train Ready to Start (TRTS) buttons and Closed Door (CD), Right Away (RA) markers were in a location with poor visibility of the platform staff. A pre-LR was convened and through discussion both parties agreed this was unsafe. It then became possible to move these devices in budget through adjustment to maintenance and renewal programmes.
- **Wheelchair Users:** A wheelchair user entered a station and inadvertently drove off the platform edge onto the tracks. They were recovered without injury. A LR established that wheelchairs have multiple speed settings. The organisation engaged with as many mobility organisations as they could along their network. This resulted in a set of workshops where wheelchair users were advised on the different speed settings and which one to adopt before entering a station.

Additionally, there are ongoing pre-adverse event LRs covering station air quality, fatigue management, air conditioning provision, and wellbeing improvement.

These practical, system-level changes emerge only when organisations examine the full temporal trajectory rather than the final seconds. They have resulted in a diverse set of implementable recommendations, many highly cost effective and easily undertaken. All have resulted in learning not just for those involved, nor even the organisation but for the wider rail network. It has also provided channels for communication. Through which reporting has increased, which has generated dialogue and conversations aimed at establishing preventing through learning to pre-emptively increase the system's safety capacity.

The true power of LRs lies in their ability to act as bridges between work-as-imagined, work-as-prescribed and work-as-done, and between safety teams and their frontline colleagues. They integrate operational goals with human realities, strengthen organisational memory and shift the cultural narrative from “we fix people” to “we improve systems together”. This unlocks discretionary effort, loyalty and morale, and nurtures cultures where colleagues feel valued.

Safety, culture and leadership are interconnected ‘wicked’ problems, open-ended, socially complex and continually evolving. They cannot be solved through linear investigations or compliance-driven oversight. LRs, conducted with temporal awareness, systemic curiosity and trauma-informed practice, offer a powerful means of navigating these complexities. They help organisations understand not only what happened, but *why it made sense*, and what needs to change at a system level to create safer, more compassionate and more effective environments. Environments that set everyone up for success on a daily basis.

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