Time pressure and teamwork: a quest for quality improvement in hospitals

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Illustration 8. Learning as the place of struggle

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Making Quality Improvement a Habit at the Paediatric Ward
Participatory Action Research practising complexity theory

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ABSTRACT

Introduction

Safety-II theory proposes to learn frequently from adaptations in everyday normal work. However, practical examples are rare and often not sustained over time. This study explores how interprofessional workplace teams in hospitals can cultivate habits of learning.

Methods

We conducted follow-up Participatory Action Research in a paediatric ward of a Dutch hospital that had developed daily learning practices.

Results

The action research team sustained daily learning at the ward by developing skills to organise periodic evaluative rounds at the ward and formulate challenging goals for themselves. They altered their assumptions about the nature of learning and the time needed for successful change. In hindsight they appreciated the insights and results, forgetting the effortful process. Furthermore, they recognised the necessity of a facilitator for addressing relational tensions, developing skills, adding different interpretations, and thus capacity for change.

Discussion

The action research team developed an enactive and relational understanding of daily learning. This transformative learning experience motivated them to continue fostering the daily evaluation routine in the ward after the research concluded.

Conclusion

While improved work processes can become habitual, transformative learning and improving work processes cannot, because it requires disruption of habitual thought and action patterns.

6.1 INTRODUCTION

In 2000, the landmark report To Err is Human (Kohn et al., 2000) revealed that patients in hospitals frequently suffer harm as a result of the care they receive. Consequently, efforts to enhance healthcare safety were intensified, with health systems around the world investing substantial resources in policies and programmes aimed at reducing adverse events. Yet despite these efforts, sustaining and scaling improvements in safety has proven difficult. Multiple studies suggest that there has been no measurable, system-wide reduction in preventable harm (Dixon-Woods & Martin, 2016; Mannion & Braithwaite, 2017; Sujan, 2018; Vogus & Hilligoss, 2016). In the Netherlands, a national monitor showed a significant decrease in preventable deaths between 2008 and 2012 following the introduction of safety management systems, new regulations, and inspections. However, progress stalled between 2012 and 2019 (Langelaan, 2013; Schoten, 2022). These data are only available in absolute numbers, which cannot be meaningfully linked to total patient number or to specific subgroups such as those with comorbidities or advanced age.

Like many other Western countries, the Netherlands faces growing challenges in healthcare: an ageing population with multimorbidity, workforce shortages, rising costs, increasing awareness of environmental impact, and rapid technological change. Without adaptation, these developments will inevitably affect healthcare quality and safety. A major shift may be required to maintain current levels of preventable harm.

To address this, a national programme was launched in the Netherlands (2021–2024) to explore practical applications of Safety-II theory. This approach represents a departure from traditional safety models focused on identifying causes of harm, implementing interventions, and enforcing compliance. Instead, Safety-II conceptualises hospitals as complex socio-technical systems and defines safety not as the absence of incidents, but as the capacity to adapt to the dynamic challenges and tensions inherent in such systems (Bergström et al., 2015; Mannion & Braithwaite, 2017; Norman & Stappers, 2015; Provan et al., 2020). This perspective emphasises adaptability, resilience, patient involvement, and a culture of continuous learning (Hollnagel et al., 2019; Koksma & Kremer, 2019).

To foster adaptability and resilience, Safety-II promotes frequent reflection on variability in everyday practice, that usually results in good care, rather than limiting learning to reflecting on rare errors and adhering to best practices developed at the 'blunt edge' by those removed from direct clinical work (Dixon-Woods et al., 2009; Hollnagel et al., 2019, p. 213). However, the concept has faced criticism (Bergström et al., 2015; Cooper, 2022; Karanikas & Zerguine, 2024). One concern is that Safety-II is primarily aligned with change management and quality improvement, and that it lacks empirical studies demonstrating its real-world application (Karanikas & Zerguine, 2024). This paper aligns with a change management perspective, as it focuses on the practical application of frequent learning within frontline healthcare teams. We recognise that such learning teams are only

one component of a resilient healthcare system, but they are crucial—and particularly challenging to establish in highly protocolised and siloed hospital environments. A large study showed that hospitals with low mortality rates did not necessarily experience fewer incidents but were better able to rescue (Ghaferi et al., 2009).

Safety-II appears to be embraced with enthusiasm (Verhagen et al., 2022) by those working in the field of patient safety, although the practical application of frequent reflection remains challenging in hospital settings. Healthcare professionals often report that they must already attend to too many time-consuming meetings and it was observed that stakeholders primarily interact within their professional silos (Finn, 2008; Morris et al., 2023; Weller et al., 2014). Quality improvement initiatives are frequently introduced by those removed from clinical practice and may not resonate with frontline staff (Sujan et al., 2024; Tresfon et al., 2025).

Several studies have highlighted the challenges of operationalising (safety-II) complexity theory (Cooper, 2022; Haynes et al., 2020; Holmes, 2020; Provan et al., 2020; Rusoja et al., 2018). Similarly, a gap persists between the rhetoric and the actual implementation of interprofessional collaboration during surgical ward rounds, despite its acknowledged importance for patient safety (Morris et al., 2023). One of the most widely known tools for learning from normal work is the Functional Resonance Analysis Method (FRAM). However, as Patriarca et.al. (2020) noted, 'the complexity of the system might be transferred to the corresponding FRAM model potentially leading to overwhelming graphical representations' making it difficult to use in daily practice. These types of interventions are typically grounded in a functional-analytical perspective from the 'blunt edge' of the system, rather than the 'sharp edge' where care is delivered. Sujan (2024; 2019; 2017) has repeatedly raised the question 'How can we learn continuously and meaningfully from everyday work?' He advocates to support informal learning processes that enhance the overall process of learning from experience (Sujan et al., 2017) at the sharp edge supported by the 'blunt edge'. Tresfon et al. (2025) argue for more ethnographic research to better understand how healthcare professionals experience improvement tools, how they learn, and what they find meaningful. In this way, we can avoid the circular trap of treating 'learning culture' both as diagnosis and solution. Only by understanding behaviours and their underlying motivations can we meaningfully describe the learning culture in a given context. Furthermore, it is only through the attempt to transform an existing culture into a learning culture that we begin to grasp its dynamics. In studying a high-performing paediatric ward, Quinn (2004) concluded that the secret of its success did not lie in formal procedures or tools, but in the collective process of 'building the bridge as you walk on it'. Yet most people are naturally averse to the unpredictable nature of experimentation and reinvention that this entails.

Educational scientists drawing on complexity theory, emphasise that learning extends beyond cognitive analytic reflection; they conceptualise workplace learning as essentially a dynamic process of immediately responding to disrupted expectations (Davis & Sumara, 2005; Madsen et al., 2024; McCaffrey, 2024; Sim & Nicolaides, 2024; Snoeren et al., 2013). From this view, learning is enacted, embodied, happenstance, relational, embedded in context, and often emergent in the flow of everyday work. Aligning with this perspective, Snoeren (2015, p. 170) defines workplace learning as 'the on-going and relational adapting through the enactment of small and large perturbations in which both agent(s) and environment change and co-evolve towards enlargement of the space for possible action.' However, this does not imply that learning and enlargement of the space for possible action emerge spontaneously. Scholars in both resilience engineering and education emphasise that learning and transformation in complex systems emerge from diversity, interaction, and decentralised control.

The point is that meaningful interaction about the work between different professions or participants is often lacking in hospitals. Physicians and nurses interact about patients, but seldom about how they value and experience the work processes and each other's contribution to them (Finn, 2008; Morris et al., 2023; Weller et al., 2014).

In a PAR study conducted on paediatric ward rounds (van Harten, Ernst-Kruis, et al., 2025) such interactions did begin to take place. Parents, nurses and physicians experienced that in daily short reflective interactions about the ward round, they learned how to improve it. This led to enhanced shared situational awareness, more effective information exchange during the medical visit, improved efficiency and work satisfaction and ultimately higher perceived quality and safety of care. However, the study left unclear whether the improvements and the daily learning had become a sustainable habit or whether it had spread across the entire team. As in other studies (Tresfon et al., 2025), adherence to newly agreed- procedures weakened at the arrival of new ward physicians. Furthermore, it seemed unlikely that frequent reflections about the work would persist after the conclusion of the study, which had prompted the interactions.

Reasoning that habituation leads to sustained behaviours (van Harten, Niessen, et al., 2025c; Vogus & Hilligoss, 2016), this ward provided a valuable opportunity to conduct a follow-up PAR study to explore the question: *How can interprofessional healthcare teams develop a habit of learning and improving in the workplace?*

To our knowledge, there are currently no practical thick descriptions of interprofessional hospital teams developing sustained learning from daily practice. Nor did we encounter within the safety-II literature an analysis of this process grounded in learning and transformation theories informed by complexity theory.

6.2 METHODS

Methodological Framework

In PAR, researchers collaborate with those whose life or work is at stake to improve their life and work (Abma et al., 2019; Abma et al., 2017) and participants start changing a phenomenon to understand that phenomenon; they build the bridge as they walk on it. Therefore, PAR is well suited to our explorative and actionable research question directed at learning at the sharp edge of daily professional practice. The PAR team, in which all participants were represented, was familiar with the methodology from previous research that had concluded one year earlier. Team members held a positive attitude towards integrating learning and doing.

To study self-organised daily learning over time, we adopted a minimal intervention approach, reducing the role of the action researcher in comparison to the previous study. This was made feasible by the action researcher 's prior prolonged engagement with the ward, which is considered a quality criterium in PAR. Drawing on social complex adaptive systems theory (Stacey, 1995), the action researcher fostered pluralistic sensemaking, daily interactions among all participants, and decentralised control. To achieve this, she posed critical questions and facilitated constructive conflict around issues that participants imbued with meanings of appreciation and position (van Harten et al., 2025b). Such issues are easily avoided, thus impeding frequent and spontaneous work-related interactions.

In addition, the action researcher concentrated on capacity building and organisational strengthening by fostering skills, insights, routines, and conducive conditions. While interventions and improvements are often context-specific, skills and insights may be transferable across topics and contexts and tend to have enduring effects.

In PAR, authenticity is the primary quality criterion, meaning, the results are recognised and affirmed by the participants as mutually beneficial (Abma et al., 2019, p. 14). This authenticity was ensured by the PAR team composition and the collaborative multi-stakeholder and multi-phased research design.

The authors enhanced the trustworthiness of the research (Korstjens & Moser, 2018; Lincoln & Guba, 1985) through four procedures. First, transferability was ensured by rendering thick descriptions (Shenton, 2004) evoking 'vicarious experiences.' (Abma & Stake, 2014) Second, dependability and confirmability were addressed by detailing the research design and data collection process. Third, reflexivity was sought in all study phases by discussing our conceptual lenses, assumptions, and the role of the participant observer. Fourth, credibility was ensured through triangulation of methods (interviewing parents, observing, one-to-one conversations, team discussions), data (contrasting observations and interviews with team opinions), and investigators (authors and co-researchers), along with prolonged engagement and member checking.

Research Team and Reflexivity

We distinguish between the Participatory Action Research (PAR) team at the ward, which conducted the research, and the author research team, who undertook the analysis and wrote this article.

The PAR team comprised two registered nurses, a paediatrician and a back-up paediatrician, a ward physician (resident), a pedagogical medical care provider (PMCP), all acting as co-researchers, and the action researcher. The co-researchers were invited by the paediatrician project lead, and all agreed to participate. All care providers were regularly involved in daily ward rounds, except for the PMCP. All team members were women, apart from the paediatricians. To explore how to develop a habit of learning and improving, the team engaged in this very process. The improvement goals centred on enhancing mutual monitoring and support, as well as time management. Table 1 outlines the specific goals per action-reflection cycle.

The PAR formed part of a larger study involving two additional hospitals. Three cross-site reflection meetings were held, bringing together paediatricians and nurses from all three research teams, the action researcher, and the director of the Foundation for Child and Hospital. The director contributed as a patient expert to safeguard the perspective of parents and children. Due to availability the paediatrician from this PAR team did not attend these sessions. The meetings facilitated shared learning through comparison of similarities and differences across sites. Contributions from this ward's participants were included in the dataset.

The action researcher, and first author, is a senior change consultant and PhD candidate with a background in psychology and business administration. She brings expertise in complexity theory, group dynamics, project management, and change processes. The action researcher, the nurses and the paediatricians in this study also participated in the preceding PAR.

To incorporate the experiential knowledge of parents -children were usually too young - parents were interviewed in their rooms at the end of each research cycle. The interviews were conducted by the PMCP who was skilled in engaging with families and was tasked with representing the parental perspective.

Throughout the study, the action researcher reflected on the research and her role in field notes, in dialogue with an external paediatric researcher, and in dialogue with one of the co- authors (author JK). At the study's conclusion, all authors reflected on the actions researcher's contributions and discussed their conceptual lenses and assumptions in interpreting the data.

Setting and Design

The research was conducted in the paediatric ward of a Dutch teaching hospital with many acute short admissions of patients with various conditions and diseases (van Harten, Ernst-Kruis, et al., 2025). A broad range of experts and parents are involved and there is a fluctuating and unpredictable workload which made this an interesting research setting for interprofessional learning. The patients were typically under six years old and therefore not directly involved in the study.

The ward had 13 single-patient rooms. Some parents had extensive hospital experience, while others had none. The nursing team consisted of 40 female nurses, including students. Two male paediatricians regularly supervised the ward, and eight additional paediatricians (men and women of all ages) supervised occasionally. Typically, two residents - physicians in training to become specialised consultants- fulfilled the role of ward physician for three months, and one intern – medical students - attended the ward for one week.

We use the term 'medical visit' for a single patient visit; the ward round comprises all medical visits on a day. Medical visits are critical moments for generating shared understanding among parents, nurses, and physicians regarding the child’s condition and treatment plan. Furthermore, the medical visit is an important educational moment for the ward physician and the intern. They also serve as key educational moments for the resident and intern. Medical visits were held five days a week and always attended by the patient and parents, nurses, the residents; and usually also an intern. The paediatricians joined approximately half of ward rounds. When not present, they discussed the ward round afterwards with the residents and intern for educational reasons and to finalise treatment decisions.

The study was structured into three action-reflection cycles, with findings from earlier phases informing subsequent phases. The research project concluded after action cycle 3, with the team reflecting on the overarching research question and planning future actions for a next cycle.

Table 1 summarises the improvement goals and outcomes, providing context for team discussions presented in the results.

Table 1. improvement Goals and Results per Action Cycle

Cycle	Goals, Improvement Actions	Status of Results
Action Cycle 1	Time management Informing parents with poster	Time management barely improved Attention to informing with poster could be more frequent
	Using the Tractus information sharing method correctly	Information sharing method goes well
	Discharge targets are written on the board in the patient's room	Discharge targets on the board could be more often (routine is slipping)
	Cross-monitoring and mutual aid	Cross-monitoring mainly done to supplement patient information, room for growth Learning points are picked up over the 10 evaluation days. Team spirit/work enjoyment grow through evaluation round
Action Cycle 2	Activate more parents with poster	Co-researchers think parents participate well, their responses provide little insight
	Further Improve discharge targets on the board through autocue in the physicians' app and by nurses standing near the board	Discharge targets (almost) always on the board and concrete.
	Provide feedback/education between nurses and physicians during medical visits and in the corridor.	Feedback was not visible in evaluation data, co-researchers think it does happen. Learning points are picked up over the 10 evaluation days. Team spirit/work enjoyment grow through evaluation round
Action Cycle 3 (2 meetings to decide on goals)	Improve time management	Time management well deployed appropriate to the situation. (Un) timely policy no longer an issue
	Provide compliments and mutual aid	Concrete, personal compliments on how a participant had done their work or what they had done. Greater awareness of purpose and operation of agreements Learning points are picked up over the 10 evaluation days. Team spirit/work enjoyment grow through evaluation round
Action Cycle 4	Continue to evaluate 3 days a week Quarterly formulate good questions for evaluation Whiteboards replaced in all rooms with fixed pre-printed layout to support discharge criteria and questions on the board Sharing feedback from parents via poster with speech clouds	Outside the research period

Data Collection

Table 2 summarises the nature and scope of the data collection.

Table 2: Data Collection

Data Type	Number	Hours
Interviews with parents	54	18
Evaluations of ward rounds	25	4
Meetings of the research team	7	7
Central reflection meetings (3 hospitals)	3	5
Field notes		

The research comprised three action cycles conducted over the course of one year. At the conclusion of each cycle, parents were interviewed over a ten-day period (Monday to Friday) by the PMCP about their assumptions, expectations, wishes, and experiences regarding the medical visit. The semi-structured interviews were guided by an interview guide with open-ended questions, and responses were recorded in writing. Where specific improvements had been introduced—such as writing discharge criteria at the whiteboard—parents were explicitly asked for their views on these changes.

During the same ten-day period, professionals who had participated in the ward round convened immediately afterwards to evaluate the process using a structured list of questions. Occasionally, these evaluations were missed. In the first cycle, responses were written down, but this yielded limited insight for the action researcher. Consequently, in the second and third cycles, the evaluations were audio-recorded, allowing the action researcher access to more immediate, rich 'direct observations.

All parent interviews and team evaluations were forwarded to the action researcher, who collated the data in Excel to support structured analysis and facilitate discussion during research team meetings.

All PAR team meetings were audio-recorded and transcribed, as were the three central cross-site reflection meetings—held during the second and third action cycles and at the end of the research. PAR team meetings focused on goal setting, progress reviews, and practical arrangements for the continuation of the research activities.

In addition, the first author maintained detailed field notes throughout the study. These notes included observations, email correspondence, meeting minutes, telephone conversations, and reflections on both the research process and her role within it.

Data collection concluded at the end of the third action cycle, as had been agreed in advance by the PAR team. The three cycles yielded sufficiently rich data to identify development and recurring patterns. As Gersick (1989) has shown, task-oriented teams

tend to accelerate their progress midway through a fixed timeline. Thus, the pre-agreed one-year timeframe proved beneficial in allowing the team to structure and pace its efforts effectively.

Analysis

The data were coded in relation to the research question after action cycle two and after the final meeting, independently by two researchers (the first author and JK). Using reflexive thematic analysis (Braun & Clarke, 2019) the initial 41 codes were compared and grouped into nine codes (Appendix A1). This analytical approach entails a reflexive and iterative process aimed at identifying concepts and themes pertinent to habituation and capacity building. After the two authors agreed upon nine relevant themes, as shown in Table 3, they shared the codes and themes with all authors. Subsequently, all authors engaged in thinking with theory, (Jackson & Mazzei, 2022) collaboratively interpreting the data from multiple theoretical perspectives preventing confirmation bias and supporting a holistic interpretation. This approach aligns with a complexity perspective on systems and learning. All authors were also engaged in the preceding studies (van Harten, Ernst-Kruis, et al., 2025; van Harten et al., 2025a; van Harten et al., 2025b) about this ward.

Table 3. Themes Resulting from Analysis

Theme	Description
Changing assumptions and expectations (deeper learning)	The PAR team became aware and changed their assumptions about issues including: the nature of progress, unwritten rules, the cognitive vs experiential nature of knowing, evaluating as a form of registration.
Acquired notions on learning and change	The PAR team learned how to stimulate ongoing daily learning.
Appreciation of the unexpected	The PAR team recognised that unexpected events and setbacks could become opportunities for improvement.
Changed concepts of time	The PAR team expanded their short-term horizon with a longer-term perspective.
Altered notions of quality	Co-researchers enhanced their appreciation of standardised routines and gained appreciation for non-measurable results.
Being seen and heard	It was important for the PAR team, parents, and professionals to be seen, heard, and appreciated by other stakeholders.
Leadership and Agency	The PAR team and professionals showed courage in addressing frictions and taking responsibility for changes in executing agreements
Team Situational Awareness	The PAR team, professionals and parents gained awareness of how to enhance situational awareness in the medical visit.
Availability of the action researcher	The co-researchers realised the contribution and indispensability of the facilitating action researcher in achieving their learning.

The results section presents the interrelated themes as a chronological narrative structured in five acts, designed to offer readers a vicarious experience of the ward's learning journey. This narrative form honours the conceptual richness and interconnections among the

various codes and themes (see Appendix A1), capturing the complexity of the learning process. The quotations were translated from Dutch.

6.3 RESULTS

Prologue: The Owners of the Research

A key takeaway from the previous study (van Harten et al., 2025a) was co-ownership: the importance of having one of the two ward supervisors willing to take on the role of project leader, ensuring that the project truly became 'their project'. The senior supervisor agreed to take this role, provided the meetings were fewer and shorter. The other supervisor, burdened with other responsibilities, took on a peripheral role.

A resident pledged to remain part of the team throughout the year, despite rotations to other departments. The nurses also, agreed to rejoin, while the pedagogical medical care professional (PMCP) shouldered the task of parent interviews. The action researcher accepted responsibility for data curation. With these arrangements in place, the team was ready to begin.

Act 1: Embarking on the Journey: Redefining the Problem

The kick-off meeting is delayed from February 2023 until spring to ensure full attendance. All co-researchers express good hopes and trust for the research, even though the nurses at the ward are sighing at having to do another research project.

The team decides to start with reviving existing agreements on ward round performance, particularly time management. They agree to organise short evaluations with the team of the day after the ward round and to interview parents for two weeks.

When discussing the evaluation results all agree that there is no need to spend much attention to preventing setbacks in performance at the arrival of new ward physicians or night nurses who only incidentally attend the ward round.
Paediatrician R: 'That's going to take a lot of energy and time, with limited gains. [..] As physicians we will ask the nurse for information in a more active and focused way to create situational awareness.'
Nurse J: 'If a new resident is unfamiliar with the procedure, we inform them after the second patient. Then afterwards, we ask: Can you tell the difference? Usually, they appreciate our way of working.'
Paediatrician J: 'Yes, and you can see that for most of us, our work processes have improved over the past two years.'

I, action researcher A, realise that after the closure of the former research, the unit has continued learning while the formulation of the need for further research is frozen in time.

When changing the subject from retaining the improvements to realising continuity in improving, the team shares their surprise that although things were going very well already, there is still enough to be improved since some things have waned.

Paediatrician J: 'At least part of the solution will be to periodically repeat and refresh things.' They decide to adjust the goals for the next round slightly and repeat goals where improvement is still possible.
Action researcher A: 'I do not want to generate additional work for you, because part of the research question was to organise learning and improving with as little hassle as possible, to ensure a sustainable method. However, the written evaluation forms give me very little information. It would help me if during the evaluations you could turn on a dictaphone and send the file to me.'
The project leader J: 'Just make sure you get enough data for your research. Recording evaluation interviews is a small effort and big fun.'
Although she asks this for herself, she hopes this will generate more insights for themselves as well.

Act 2: Crisis and Catharsis: Unexpected Circumstances

Autumn's chill mirrors the unrest within the team. The viruses are affecting the children as well as the professionals. As the PMCP says in the meeting: 'I was rushing the interviews, because there were so many patients'. The nurses and physicians evaluated seven days instead of ten, the other days they failed to come together.
The meeting proved hard to organise, and the nurses are irritated that the physicians reacted slowly to emails. They seem not very involved. They feel that the organisation of the research rests solely on their shoulders. Furthermore, as nurse M states: 'There is a lot of turmoil right now [among the nurses] with the emergency room, and financial hassles, which just, doesn't always create a pleasant atmosphere'. And last but not least, paediatrician J has seriously fallen ill and he will not return. This is a shock and also poses practical and motivational issues.

Nurse M: 'Who is going to be the chair and project leader?'
Paediatrician R: 'I am just insanely busy. I deliberately agreed with J. at the beginning that I'd rather not do this on top of it and that J. would do it. And I also understand that if J. drops out that we have to take over everything. But then I notice that I have the least motivation for this, if I'm honest. Because it takes time, and I don't experience that much profit from it yet. I'd also rather not commit to something that I can then not live up to. So that makes me reluctant to do it.'
The nurses had stated right from the start that they did not want to be the project leader either because: 'If we stick our head above the parapet, they [the colleague nurses] cut it off'. We go on without a formal project leader.

The key issue for the rest of the meeting is: what is the relevance of the research?

Nurse J: 'In the first research we realised big changes, but now It feels like just dotting the i's.'
Paediatrician R: 'The feeling of "hey, we're going to move forward" or "we're really gaining something" is lacking.' While speaking about the value of the first PAR, he interrupts and corrects himself and slows his speech. Probably he realises that in the first PAR it was no sooner than at the end that he saw the gains.

After some discussion, the team concludes that to sustain learning in the workplace they need both a collaborative process and a relevant goal. In addition, to stay motivated themselves, they need a belief in the issues and a learning opportunity for themselves. As paediatrician R states: 'There is a kind of interaction. If I myself stand there full of enthusiasm "Come, we are going to do it again", I know that I will also get nurses to join me.' Several goals are brought to the table and rejected, such as time management, feedback and mutual learning. Finally, they decide to ask their colleagues about which issues they want to address.

Additional Meeting Several Weeks Later:

All had asked their colleagues for input, but they have no clear answers. The one thing that now feels valuable is time management; however, they fear this goal may be overly ambitious. As the paediatrician states: 'That is a very difficult goal because it depends strongly on the situation what is wise to do. Can you expect an unexperienced ward physician to be able to judge this?' Nurse J: 'Or a nurse?'. All agree that time management is a team effort and that the ward physician and nurses will collaboratively produce a list with examples of time management measures that, depending on the context, can be applied. This may prevent the standard answer: 'We were (not) ready before 10:30 am.'

The second goal is brought up by the nurses: giving compliments. Nurse J: 'This may improve the atmosphere in our nursing team as well.'

The meeting ends with cautious optimism. The action researcher offers to adjust the evaluation and interview forms since they have such a hectic period, which is appreciated. For her it is an opportunity to change the questions stated on the evaluation forms, such that they will elicit richer and more concrete conversation.

Act 3. New Horizons: What is Needed to Go on Learning and Improving.

Around Carnival in February 2024, the research team has their last meeting. The data from the last action cycle shows several surprises.

One nurse had answered three days in a row that she had not used the poster[1] when informing parents. The fourth day she had thought: 'it's in my head; I'm going to show the poster to the mother'. After she did that, the informed parent had stated to the PMCP: 'The poster was gone through with me step by step. That was very pleasant and clear. I was offered to write my questions on the board, but it was so clear to me that I didn't need it.' Other parents had remarked that the poster helped them in remembering what the medical visit was about and to write down their questions. When discussing that parents' memory functions differently in the hospital setting and that visually supported information is easier to recall, ward physician M says: 'In theory we know that…'.

They sense that the nurse, much like the co-researchers themselves, didn't initially feel a strong urge to show the poster—she believed verbal explanation would do. But once she started using it and saw its impact, her motivation grew. They also realise that the feedback from parents often does not reach the colleagues. Paediatrician R: 'The fact that you (MPCP) also hear it back, I think that's valuable'. And thus, they raise the idea to collect the feedback from parents on a large display they will hang in the nurses' station.

Another surprise is that the participants in the ward round changed their concept of time management from 'being ready in time' to 'taking measures to be ready in time', they learned how to do it, and experienced its effect. Several days in a row nurses and physicians couldn't find the example list produced by the PAR team, but also without the list they were very capable of applying measures fitting the situation. And when evaluating the measures after the ward round, they showed agreement on the decisions taken.

When action researcher A asks them for an explanation of this surprising change paediatrician R answers immediately: 'Yes…, I'll say it again, ward physician P is simply far more advanced in his training than the average ward physician [..]. Therefore, he approaches time management quite differently from a junior doctor who is just starting out.'

Other co-researchers suggest that it is probably because they had discussed and emailed the meaning of time management. Furthermore, the question on the topic list was made more specific, asking which measures had been taken to manage time. All conclude that the more specific formulation of the questions in this evaluation round elicited richer conversations, interesting insights, and concrete meaningful compliments.

They conclude that ongoing interprofessional interaction at the ward focussed at relevant goals are necessary for ongoing learning and sustaining and spreading the improvements.

Paediatrician R: 'I think it's a good idea, to keep some of that evaluation ongoing.'
Nurse J: 'Yes, I think it would be very valuable.'

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1 A laminated coloured paper with pictograms explaining the content and procedure of the medical visit

Ward physician M: 'Indeed, and it would be beneficial to reflect on our focus approximately four times a year during the quality meeting, don't you think?'
Paediatrician R: 'Yes, and then adjust the questions, that's nice.'

They decide to continue the daily evaluations three times a week and update the goals on the form four times a year.

The co-researchers share the conviction that they 'have no time for organising change and data curation'.

Paediatrician R: 'The practical benefits we gain from this are also due to all the effort you [action researcher A] have put into it. If we have to start recording, working it out, or writing it down, or if it requires even a little more administration, it will backfire. Time itself isn't the issue, but administrative time…., we already have quite enough of that.'
Nurse J: 'No, that is not going to work.'
Action researcher A: 'It will take approximately four hours quarterly. Is that too much in relation to the information it generates?' [Answer: 'Yes'].

Action researcher A checked afterwards with the ward manager, whether 16 hours per year for data curation would be a problem for the quality nurse. She answered: 'No, not at all. I think she can do it in the Thursdays she has for quality improvement. But if that is not enough, I am more than willing to give her that extra time.'

Epilogue: Relational Foundations for Sustained Learning

It is 10 minutes after the supposed start of the last meeting in February and nurse J says: 'I'm not surprised that the physicians are late. The study has just no priority for them.' She feels it has entirely fallen upon the nurses. She acknowledges that this is demotivating and threatens the continuation of efforts after the formal research period. We agree that she will raise the issue in the meeting.

However, nurse J does not bring it up in the meeting. Towards the end the action researcher decides to address it instead. The physicians show empathy, acknowledge nurse J's concerns and agree that the nurses had taken on the bulk of the work. They started a dialogue requiring no further moderation.

After the meeting, the action researcher checks whether nurse J feels recognised. With tears in her eyes, she admits she doubts the authenticity of the Paediatricians' response, saying, 'I've known him long enough to recognise this.' When asked what kind of behaviour she expects, she answers: 'that during the research period the physicians ask "How are you doing? What do you hear and see on the floor? Do you need help?" etc.' She expects attention, interest, a compliment, and swift reactions to emails more than action. And she is convinced that the physician knows very well that this is the way to show commitment.

Afterwards, the action researcher checks by telephone with nurse M whether she shares the feeling, and she asks nurse J if she has any objections to her calling paediatrician R to check whether the paediatrician understands what the nurses expect from them. She has no objections.

It appears he was unaware that a simple show of interest could make such a difference. He neither expected nor desired reciprocal interest. The depth of emotion and potential motivational impact on sustaining daily learning had escaped him.

It is April 2024, and the cherry trees are in full bloom. The right time to share the learnings and improvements of the research in the central reflection meeting with the three hospitals. In the learnings nurse M reveals some notions on the sustainability of the learnings and improvements.

'What I'm proud of is that the improvements that had subsided, were immediately back in place after the first action cycle, and that everyone understood […] the goal behind the agreements about the visit, and that everyone grew to experience, "Hey, it works". In the first project, it was like "We have to do this" and now it was like "Ah! This is the way to do it". She realises that progress is a process of setbacks, swift comebacks and further development.

'We always insisted on being ready by 10.30 a.m. And all at once that was abandoned. It was no longer "it must be ready at 10.30" but "how can we best allocate our time?" If everyone is good, well then we will be ready at a quarter to eleven. And all at once nobody grumbled about that. And that was very weird: we finished later but everyone is more satisfied.'

She continues: 'And because of our reminders, writing down the discharge criteria became more of a habit. […] We support each other in the medical visit, thus not: "You are the physician, I am the nurse, and they are the parents", no, "We have to do it together and we help each other, and we learn from each other." This took the situational awareness of all of us, to the next level. It surprised us that small things can do a lot. In hindsight it was a large step, even though it was a very small thing.'

When sharing that the project leader fell ill: 'We did learn that we need to demonstrate more leadership in other areas if we, as nurses, truly want to achieve something. Yes, that also provided valuable insights. However, we noticed that an external agency was needed to give us all that little push to say, "Yes, we're going to do this now." Otherwise, it could easily drag on for five years.'

When asked by the others why the Paediatrician did not participate in the central reflection meetings: 'The paediatrician had to take over this project from his colleague on top of other assignments. But at the ward, there is support; he attends the meetings, communicates to

his colleagues, and three times a week he attends the ward round. So, although we had to pull more, we have a good feeling about it now.'

When asked how to go on after the research: 'We continue three times a week the professional evaluations. We asked A to send us the questions of this and the first research, to learn to formulate them in the right way. Four times a year we will interview the parents and re-evaluate goal setting. A made a nice bridge to the team manager to say, "give them time for that." Furthermore, there is an important anchoring among the nurses to stand for the way we want to work, also when there are newcomers.'

6.4 DISCUSSION

Our research question was: How can interprofessional healthcare teams develop a habit of learning and improving in the workplace?

The results indicate that ongoing learning was a process characterised by stagnation, disruption, and acceleration. Initially, professional participants on the ward were reluctant to 'start all over again,' but they swiftly reacquainted themselves with the insights from the previous research. Learning and improvement occurred through experiencing in practice the value of implemented measures and by exchanging experiences, considerations, and compliments.

The research team encountered setbacks in maintaining a sense of relevance and progress due to unexpected developments. However, after establishing an ambitious and relational goal, the team achieved a significant leap in learning because of challenged assumptions and by becoming more aware of how to sustain learning and act accordingly by themselves.

Despite these advancements, the team still felt dependent on the action researcher for addressing relational issues and providing motivation when enthusiasm waned and the path forward was unclear.

We will further discuss what these findings mean for the development of habitual, and thus sustained, learning and improving along the lines of three themes and there concurrent theoretical perspectives: 1) changed notions on learning and improving; transformative learning 2) the relevance of being seen and heard; the relational nature of learning and improving and 3) the role of the action researcher, the outsider inside.

Changed Notions on Learning and Improving, Transformative Learning

Participants in the ward round engaged in perspective taking, experienced the purpose and relevance of measures, learned how to provide concrete compliments and learned to manage time more effectively (Act 3 and Epilogue). A large part of the learning came about by following the evaluation routine and other measures sustaining new work routines.

The ward had developed into a culture in which interprofessional learning, feedback, and mutual help (including parents) had grown more accepted, and several incremental small changes had accumulated over a period of three years and gradually transformed their practice.

The research team members also learned at a deeper, transformative level (Act 3 and epilogue). They acquired new or broader notions on change and learning, such as:

- One does not act because one is motivated but becomes motivated by acting (Act 3).
- One must continue a process without knowing beforehand whether or when it will yield in terms of learning and improvement, and having experienced this before does not make it easier the next time (Act 1 and 2).
- Small or less visible changes, can, in fact, accumulate into 'a large step' (Epilogue).
- We are not 'nurses having to do all the work,' but in fact the leaders of the project (Epilogue).
- Progress is a process of setbacks, comebacks and leaps forward (Act 1 and 3).
- Development becomes visible over the years (Act 1 and 2).
- Good (concrete as well as open) questions render good reflections (Act 3).
- Learning requires repetition, interprofessional reflections, appreciative relations, addressed tensions, audacious relevant goals, and dedicated time for data curation to make changes visible (Act 3 and Epilogue).

The physicians noticed that to stay motivated for initiating initiatives, they wanted to learn themselves; otherwise, they lost interest. We consider these learnings as a major disruption of their habits in thinking and acting.

The differences in learning between the ward and the PAR team show that there is a fine line where learning becomes more transformative. Transformative learning is defined as 'learning that transforms problematic frames of reference to make them more inclusive, discriminating, reflective, open, and emotionally able to change' (Mezirow & Taylor, 2009, p. 22). Assumptions were changed, but every small change alone cannot be called transformative. However from an enactivist viewpoint we think that most changes come about in gradual evolutionary processes in which small perturbations originating in interactions between participants can interfere or accumulate over the years into transformation of the ward (Niessen, 2007, p. 90; Stake, 1986, pp. 89-102). Particularly, gaining more experience with professional situations that elicit perspective taking, may, lead to broadening one's horizon; as is suggested by literature on patient participation (Myren et al., 2022).

Snoeren (2015, p. 170) defines workplace learning as 'the on-going and relational adapting through the enactment of small and large perturbations in which both agent(s) and environment change and co-evolve towards enlargement of the space for possible

action.' This definition fits our observation of learning at the ward. It contains 'on-going' and 'co-evolving', expressing learning and change over time in a slow process of incremental change. Furthermore, it contains the element of 'small and large perturbations.' We define large perturbations - disruptions of assumptions - as part of transformative learning (the so-called 'disorienting dilemma') and small perturbations as part of daily learning. Transformative learning requires slow effortful thinking, whereas daily learning requires fast thinking and acting simultaneously (Kahneman, 2011).

In general, humans prefer habits and predictability over surprises (Duhigg, 2012; Neal et al., 2012). Genuine disruption brings people into a 'liminal zone' that they find difficult to endure (McClain, 2024; Milazzo & Soulard, 2024). Some of the disruptions were enforced on them by circumstances, like the project leader falling ill, the issues in the nursing group, and the clash of expectations about each other's commitment. In hindsight, it was rewarding to realise that one had learned things, but the learning itself felt unsettling. The colleagues were sighing about having to evaluate again but felt energised when they did. The nurses felt victimised when they had to organise the research but were proud when they realised, they were in the lead. And the paediatrician, participating out of loyalty, became enthusiastic afterwards when he saw results which he had not anticipated.

Small and large perturbations, and thus workplace learning and transformative learning, both form a breach of habit. Yet since the small breaches are action/reflection, we think it can become habitual to develop them, whereas the large breaches require slow thinking and as such cannot become a habitual part of daily practice.

The results bring us to the conclusion that habitual (transformative) learning is somewhat of a contradiction in terms. One can set the stage for improving and learning by creating a 'reflection structure' and by developing the habit of mutual help during the work, but transformative learning requires substantial disruption and slow thinking, which is irreconcilable with habit. Nevertheless, it is possible that over time small incremental - non-transformative – changes together result in transformation.

This is a relevant conclusion for safety-II theorists. Following Argyris (Schön & Argyris, 1996) Sujan (2017) discerns single loop learning, such as individuals or teams learning to improve their information sharing with parents, and double loop learning questioning underlying values, assumptions and policies which may be necessary when a unit or a hospital needs to adapt at a fast pace or a more fundamental level. The elements of double loop learning are also incorporated in transformative learning. Our results show that the PAR team could develop transformative learning as a team, because they were in the position to engage in deeper reflection and in the position to foster daily learning at the ward. In the combination of daily learning and transformative learning lies the potential to realise the adaptability necessary to maintain safe care.

Being Seen and Heard; the Relational Nature of Learning and Improving

The findings show that 'feeling seen and heard' and 'seeing and hearing the other' is a basic condition for learning and improving (Epilogue), since it is a prerequisite for interacting with the other and seeing other perspectives.

Act 2 describes that the co-researchers lost the sense of relevance, for reasons we cannot fully grasp. Probably it was a combination of factors. The workload was high, and the results were not directly visible; they had more urgent matters on their minds and had no bandwidth left for learning (Mullainathan & Shafir, 2013). Besides that, the nurses missed the feeling that it was still a road they were traveling together, whereas the paediatrician had the feeling that it was not 'his' project, but the project of his colleague who had fallen ill.

It shows differences between the nurses and the physicians that were found in other studies as well (Espin & Lingard, 2001; Jeffs et al., 2013; Lingard et al., 2005; Makary et al., 2006; Tang et al., 2013; Thomas et al., 2003). Physicians speaking in terms of (not being) 'my' project and the need to feel ownership. The nurses stressing shared ownership and togetherness in the team. We can read in the epilogue how this led to mismatching expectations. It indicates the importance of being seen and heard for ongoing learning and improving.

Finally, in the example of using the poster to prepare the parents (Act 3), we saw the importance of seeing and hearing the parents and understanding their needs to fully participate in the medical visit. This enabled the change in perspective necessary for learning. Consequently, the team decided to share the parents' experiences with their colleagues at the ward.

Most research on learning and improving from a Safety II perspective stresses the importance of reflection as the way to improve, resulting in reflection methods and instruments to structure and improve the analytic cognitive process of reflecting on work processes (Jansen et al., 2024; Lips et al., 2024; Patriarca et al., 2020; Schlinkert et al., 2023; van Stralen et al., 2024). However, our results show that interprofessional team learning is mediated by feeling and acting and show the relevance of addressing the emotional sensemaking layer of the interaction. This fits our enactivist view on learning (Niessen, 2007; Varela, 1991; Varela, 1999).

The practical implication of this relational foundation of learning is that there are no simple solutions to copy. It is like learning to dance; you don't learn dancing by reading and watching, you must learn while doing and endure the uncertainty and mishaps.

Availability of the Action Researcher; the Outsider Inside

The results show that the facilitation of the process by the action researcher was crucial for developing sustained learning. Her presence played a vital role in multiple ways. She provided alternative interpretations of events, shared expertise on change management and insights from other hospitals, maintained focus on the research question, and acted as an intermediary between participants when needed. In doing so, she actively contributed to broadening the diversity of perspectives and facilitated meaningful interactions among differing viewpoints. From the perspective of social complex adaptive systems, such a role is critical. The development of complex systems relies on the dynamic exchange of meanings, which necessitates a variety of interpretations, the creation of spaces for interaction among them, and a decentralised approach to managing this exchange of meanings and the subsequent actions (Homan, 2023; Stacey, 2001).

Stacey (2001) underscores that these processes are rarely linear or entirely predictable but are instead emergent and adaptive. Homan (2023) adds that facilitating such interactions requires not just observation but an active role in encouraging open and reflective conversations where participants feel safe to explore new ideas and question assumptions.

Mullainathan and Shafir (2013) argue that in times of scarcity (of time) it is important that there are reminders to help actors stick to their goals. Simply being present and reminding the participants in the action research team was already a valuable role, which in this case was not fulfilled by the team members themselves.

Simultaneously, the ability to shift between different roles and approaches reflects the concept of 're-actorship.' This entails not passively waiting or attempting to steer through an overarching vision but actively creating iterative interventions that foster spaces where new patterns can emerge. This approach aligns with the idea that complex systems cannot be directly controlled but evolve through local interactions where participants gradually discover what works and is meaningful.

Understanding the need for and the role of a facilitator, implies that hospitals can foster their capacity for sustained learning and change by offering units the support of facilitators that help the units to develop insights and skills, and that can support at times when projects stall.

6.5 CONCLUSION AND PRACTICAL IMPLICATIONS

We conclude that the habitual creation of situational awareness and thus quality and safety is possible. However habitual transformative learning in the workplace is not possible, since the element of disrupted assumptions and slow thinking is inherent to transformative

learning. Yet it is possible to transform-as-a-team over time by the accumulation of small disruptions and fast reflection-action cycles.

Second, to sustain daily learning and improving, it was important that the co-researchers developed transformative learning by reconceptualising the nature of learning and improving as a relational and enactive process. The redefinition of signals of stagnation into signals of progress, and the acknowledgement of their feelings and perspectives by the other co-researchers, motivated the co-researchers to continue.

Third, we conclude that to develop the capacity for daily learning and improving at the workplace, an interprofessional (research) team needs a facilitator who can develop missing skills, knowledge, and organisational conditions in the team, challenge assumptions, broaden perspectives, and address tensions in interactions.

The conclusions have relevance for policy. A facilitator helps clinical leadership to flourish without a heavy burden besides primary tasks. It requires, however, that there are facilitators in the hospital who have the skills to fulfil the roles as described above and that are available and affordable for teams. Policymakers can take care of the education and availability of facilitators.

Glossary

Bedside medical visit: a meeting between patient and family, nurses and physicians, to create a shared mental model about the patient's condition and treatment plan.

Ward round: all medical visits held in one morning

Supervisor: a consultant supervising the resident in his role as ward physician

Consultant: a physician that completed his training in a specialty such as paediatrics.

Resident: a physician in training to become a consultant, who for a period of several months fulfils the role of ward physician.

Intern: a student in training to become a physician

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Declarations

CRediT Author Statement: **Annet van Harten**. Conceptualisation, Methods, Data curation, Funding acquisition, Formal Analysis, Investigation, Writing- Original draft, Project administration **Theo Niessen:** Formal Analysis, Writing- Reviewing and Editing **Tineke Abma:** Formal Analysis, Writing- Reviewing and Editing **Jur Koksma:** Formal Analysis, Writing- Reviewing and Editing**,** Supervision

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Ethics and Consent: The institutional ethics committee, METC- Oost Nederland (Medical Ethical Assessment Committee Eastern Netherlands), reviewed the study and determined the Medical Research Involving Human Subjects Act did not apply to this project: Niet-WMO advies verklaring METC Oost-Nederland: 2022-15831.

All interviewed parents signed an informed consent form, all research team members consented orally to audiotaping and the use of quotes.

In addition to confidentiality and informed consent, the following ethical principles were taken into consideration: participation, mutual respect, reflexivity, representation, and power (Banks & Manners, 2012). Parents received a lay version of the final report. Research team participants were given the opportunity to engage in a discussion on the final results in the last meeting and to provide their reactions to the written summary of findings. All colleague professionals were given the opportunity to engage in a discussion in a work meeting.

Data Statement: Due to the sensitive nature of the questions asked in this study, participants were assured raw data would remain confidential and would not be shared; if shared, the data would be anonymised. Furthermore, the qualitative data were in Dutch and of no value to an outsider without knowledge of the context.

Declaration of Interest: We have nothing to declare.

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6.7 APPENDIX A1 CODE TREE RESULTING IN NOTIONS ON (HABITUAL) LEARNING AND IMPROVING

1. Learning from each other, rather than within one's own professional group 2. Focusing on setbacks, coming back, and continuing 3. From knowledge to action and embodied knowledge 4. Encouraging action rather than persuading people of the goal 5. Deeper change: small actions can later prove to be significant 6. Shifting from agreements to intent of the agreements 7. Requesting time for measuring rather than assuming there is no time 8. Evaluating as administration versus evaluating as learning 9. People arriving late does not mean they lack motivation	Changing assumptions and expectations (deeper learning)	Changing assumptions and expectations
10. Repetition is not the failure of spreading but the act of spreading 11. Both routine and reflection/challenge are essential 12. The research team adjusting goals 4 times a year 13. Understanding how visual and auditory triggers function 14. Insight: asking the right question to facilitate a meaningful conversation 15. Developing a routine in which the right questions are regularly posed 16. Integrating feedback and appreciation into (existing) routines	Acquired notions on learning and change	
17. Recognising that the project leader's illness became an opportunity to shift from a victim mentality to increased leadership among the nurses 18. Setting periodic goals to align with current concerns and needs 19. Spontaneous initiatives from the sidelines evolve into key elements of the change 20. Modifying agreements spontaneously throughout the process (self-organisation)	Appreciation of the unexpected	
21. Time for meetings is relevant 22. Time management is not about finishing on time, but about ensuring we have done the right things. 23. It takes time to embed new working methods and see results 24. Reflecting is also work	Changed concepts of time	
25. Recognising mindful routines (teamwork routines, triggers, standards) 26. Insight: the role of standardisation 27. Notions on improvement (concrete and measurable versus less tangible) 28. Insight: the strive for situational awareness concerns the department as well as the patient	Altered notions of quality	

29. Articulating expectations, interpretations, and disappointments (recognising differences in mindset) 30. Actively engaging parents to ensure their different perspective 31. Providing specific compliments during daily evaluations	Being seen and heard	Relational dynamics
32. Courage in interpersonal relationships: addressing conflicts and offering compliments 33. Modifying agreements throughout the process	Leadership, Agency	
34. Clear roles and responsibilities, with an emphasis on mutual support 35. Insight: We tend to complement each other on medical content, but not on how the work is done 36. Parents experiencing the value of writing questions and discharge criteria on the whiteboard	Team Situational Awareness	
37. Facilitator with the following skills is necessary: 38. The 'stick' behind the door 39. Dedicated time en project management skills 40. Maintaining focus on the underlying goal 41. Enabling self-experience and discovery 42. Redefining and recognizing subtle changes by zooming in and out	Availability of the action researcher	Catalyst, facilitator