THESIS FOR THE DOCTORAL DEGREE OF SCIENCE

Organizational learning for improvement of fragmented healthcare systems

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Abstract

Healthcare systems face increasing demands for adaptability, integration, and continuous improvement, driven by challenges such as aging populations, staff shortages, and budget constraints. However, efforts to support organizational learning in healthcare systems can be hindered by fragmentation, complexity, and structural constraints. Consequently, a persistent gap remains between the ambition to become learning healthcare organizations and the ability to fulfil this ambition.

The purpose of this thesis is to contribute new knowledge on strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems. The research addresses four questions:

(1) What strategies can support organizational learning across fragmented healthcare systems?
(2) What learning actions can support organizational learning across fragmented healthcare systems?
(3) What factors can influence learning-oriented leadership in fragmented healthcare systems? and
(4) What are the key elements for supporting organizational learning in fragmented healthcare systems?

A participatory action research approach was applied, using a qualitative-dominant mixed-methods design. The research is based on three studies and five papers, combining case studies, interviews, focus groups, document analyses, and a cross-sectional survey. Inductive, deductive and abductive analysis are applied. The design enabled both in-depth analysis and broader validation of findings across settings and roles.

This thesis suggests that organizational learning in fragmented healthcare systems is supported by concrete, participatory actions, including cross-site feedback on shared tools, joint reviews of patient records, structured group sessions to surface conflicting logics, and rapid co-creation and prototyping across involved actors. These actions appeared to be effective insofar as they were embedded within broader strategies of iterative refinement, participatory approaches, purpose-built organizational network architectures, and collaborative leadership. Learning-oriented leadership was found to be shaped by contextual factors like multiple external drivers for change, broad ranges of diverse actors, siloed structures, environments of emergent and unpredictable change, restricted availability of organizational resources and restricted individual leadership autonomy. Despite such constraints, healthcare leaders sustained learning through leadership behaviors of providing support, building climates for learning, and facilitating knowledge dissemination. Taken together, the findings point to a four-part model in which context, organizational architecture, learning-oriented leadership, and collaborative learning could operate interdependently; it is the alignment of these elements that seems to sustain organizational learning across silos.

This thesis contributes novel insights by identifying concrete, participatory learning actions embedded in coordinated strategies for organizational learning across fragmented healthcare systems. It proposes a context-sensitive refinement to the theory expansive learning by incorporating collaborative leadership as an additional element. It also propose extensions to the current framework of learning-oriented leadership to better reflect the complexity of fragmented healthcare systems. Finally, it offers a system-level model that integrates context, organizational architecture, collaborative leadership, and collaborative learning, providing support for practitioners and researchers seeking to bridge the gap between the ambition to build organizational learning in healthcare and the realities of doing so.

Sammendrag

Det moderne helsevesenet står overfor økende krav til tilpasning og forbedring, drevet av utfordringer som en aldrende befolkning, mangel på personell og stramme budsjetter. Samtidig ser det ut til at ambisjonen om å styrke organisatorisk læring i helsetjenesten hemmes av fragmenterte systemer, høy grad av kompleksitet og strukturelle begrensninger. Resultatet er et vedvarende gap mellom erkjennelsen av behovet å om å styrke evnen til organisatorisk læring og evnen til å virkeliggjøre denne ambisjonen.

Formålet med denne avhandlingen er å bidra med ny kunnskap om strategier, læringsaktiviteter og ledelsesfaktorer som støtter organisatorisk læring i fragmenterte helsesystemer. Forskningen adresserer fire spørsmål:

(1) Hvilke strategier kan støtte organisatorisk læring på tvers av fragmenterte helsetjenester?
(2) Hvilke læringsaktiviteter kan støtte organisatorisk læring på tvers av fragmenterte helsetjenester?
(3) Hvilke faktorer kan påvirke læringsorientert ledelse i fragmenterte helsetjenester?
(4) Hvilke viktige elementer kan støtte organisatorisk læring i fragmenterte helsetjenester?

Et deltakende aksjonsforskningsdesign med en kvalitativt dominert mixed metode-tilnærming ble valgt for dette doktorgradsarbeidet. Forskningen bygger på tre studier og fem artikler, basert på metoder som kvalitative intervjuer, fokusgrupper, refleksjonssirker og dokumentanalyser i kombinasjon med en kvantitativ spørreundersøkelse. Analysen kombinerer induktive, deduktive og abduktive tilnærminger, noe som muliggjorde både dybdeforståelse og enkel validering av funn på tvers av studier og artikler.

Avhandlingen viser at organisatorisk læring i fragmenterte helsetjenester støttes av konkrete læringsaktiviteter som for eksempel systematiske tilbakemeldinger på ideer på tvers av involverte aktører, felles journalgjennomganger, strukturerte gruppesesjoner for å avdekke motsetninger og uenigheter, og iterativ utvikling av konkrete prototyper aktørene imellom. Læringsaktiviteter viste seg effektive når de var forankret i overordnede strategier som iterativ tilnærming, bred deltakelse fra alle involverte parter, etablering av nettverk på tvers og ledere som samarbeider om å lede utviklingsarbeidet på tvers av grenser og siloer. Læringsorientert ledelse i form av beskrevne lederatferder viste seg å bli påvirket av kontekstuelle faktorer i fragmenterte helsetjenester, som det høye antallet eksterne drivere av endring, det høye antallet ulike aktører, organisering i siloer, høu grad av uforutsigbarhet når det kommer til endring, begrensede ressurser og begrenset autonomi hos den enkelte leder. Til tross for slike utfordringer skapte lederne organisatorisk læring i egen enhet og ut mot andre gjennom ledelsesatferd som å gi støtte, bygge læringsklima og legge til rette for kunnskapsdeling på tvers. Samlet peker funnene mot en fire-delt modell der kontekstuelle faktorer, organisatoriske nettverk, læringsorientert ledelse og felles læring er elementer som er gjensidig avhengig av hverandre; det er samspillet mellom elementene som ser ut til å opprettholde læring på tvers av siloer.

Doktorgraden bidrar med ny innsikt ved å identifisere konkrete læringsaktiviteter forankret i definerte, koordinerte strategier for organisatorisk læring i fragmenterte helsesystemer. Den foreslår en kontekstsensitiv videreutvikling av teorien om ekspansiv læring ved å integrere såkalt samarbeidende ledelse som et tilleggselement. Videre foreslås utvidelser av den eksisterende modellen for læringsorientert ledelse slik at de beskrevne lederatferdene bedre reflekterer lederatferder som effektivt skaper organisatorisk læring i våre fragmenterte helsetjenester. Til slutt presenteres en systemnivåmodell som integrerer kontekst, organisatorisk arkitektur, samarbeidende ledelse og samarbeidende læring, og som kan støtte både praktikere og forskere i arbeidet med å bygge lærende helsesystemer i praksis.

List of appended papers

Paper 1

Lørum, R.M., Eriksson, H., Smith, F. (2023) Promoting organizational learning facing the complexity of public healthcare: How to design a voluntary, learning-oriented benchmarking, *International Journal of Computer and Information Engineering*, 17(05)

Conference paper

The paper was presented orally at the ICKMOL 2023: International Conference on Knowledge Management and Organizational Learning, Rome, Italy, May 4–5, 2023 (Available at www.waset.org)

Contributions: Lørum was the lead author, collected the data, and conducted most of the analysis. Smith and Eriksson contributed to the study's design, data analysis, and paper writing.

Paper 2

Lørum R.M., Skyvulstad H., Eri-Montsma A., Smith F. (2025). Understanding inter-organizational learning for improvement in integrated healthcare – a Norwegian case study about collaboration across borders. *The Learning Organization: An International Journal*, Vol. 32 No. 3 pp. 503–521

An earlier version of the paper was presented orally at The Norwegian Conference of Patient Safety, Department of Healthcare, Oslo, November 24–25, 2023, and at The Norwegian Conference on Healthcare Research at Stavanger University, November 2–3, 2024.

Contributions: Lørum was the lead author, collected the data, and conducted most of the analysis. Smith contributed to the study's design, data analysis, and paper writing. Skyvulstad and Eri-Montsma assisted in collecting data, contributed to data analysis, and proofread the paper.

Paper 3

Lørum, R. M., & Smith, F. (2024). Strategies and practices for organizational learning in integrated healthcare. *Journal of Health Organization and Management*, *38*(6), 942-960.

Contributions: Lørum was the lead author, collected the data, and conducted most of the analysis. Smith contributed to the study's design, data analysis, and paper writing.

An earlier version of the paper was presented orally at The Norwegian Conference on Healthcare Research at Stavanger University, November 2–3, 2024.

Contributions: Lørum was the lead author, collected the data, and conducted most of the analysis. Smith contributed to the study's design, data analysis, and paper writing.

Paper 4

Lørum, R. M., Eriksson, H., & Smith, F. (2025). Contextual factors affecting learning-oriented leadership in healthcare: a case study. *Journal of Health Organization & Management*, 1-21.

Contributions: Lørum was the lead author, collected the data, and conducted most of the analysis. Smith and Eriksson contributed to the study's design, data analysis, and paper writing.

Paper 5

Lørum, R. M. (Working paper). Learning-Oriented Leadership in fragmented healthcare systems: an exploratory study.

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I would like to express my heartfelt gratitude to my dedicated supervisors, Henrik Eriksson and Frida Smith, whose guidance and support have been invaluable throughout my research journey. I am also deeply thankful to Ostfold Hospital Trust and Liv Marit Sundstøl for their essential support in making this work possible. Furthermore, I am grateful to our valued stakeholders and co-authors for their insights and contributions. Your collective involvement has been instrumental in advancing the study's improvement initiatives and in helping me complete this thesis toward the doctoral degree of science. My heartfelt thanks also go to my supportive colleagues, friends, and family. Your kindness has meant more than words can express.

The research process has been an enriching and challenging journey. The support I received in navigating key decisions, refining methodologies, and strengthening academic writing has been invaluable. Doctoral courses, supervision, and studies have deepened my understanding, allowing me to approach challenges with hopefully greater insight and adaptability. I have experienced that the process has sharpened my analytical thinking and problem-solving, enriching both my academic and professional practice. A formative experience was navigating the particularly challenging review process for one of my papers. Managing many diverse and, on many occasions, conflicting reviewer feedback required substantial revisions, integration of multiple new perspectives, and restructuring of arguments. While demanding, this process deepened my ability to synthesize perspectives and strengthen academic contributions, a challenge made possible through the unwavering support of my supervisors.

As an industrial PhD candidate, balancing research with my professional role in the hospital under study has been both rewarding and demanding. Conducting research within my own workplace provided unique insights into organizational learning in healthcare improvement, allowing me to address ongoing challenges in new ways. At the same time, focusing on maintaining objectivity as an insider required constant reflection, critical engagement, and input from supervisors and colleagues. The journey has also been an ongoing challenge related to workload and prioritizing among often multiple pressing demands and tasks. I am deeply grateful to the hospital's leadership for their support, which made this dual role possible.

Above all, this journey has reinforced my belief in the importance of continuous learning. The iterative process of research, writing, revising, reflecting, and integrating feedback, has been invaluable. I hope this is just the beginning of a lifelong engagement in inquiry and improvement in the interface of research and application of theory and methods in real life settings, enabling me to contribute meaningfully to both research and practice in the years ahead.

Table of content

Terms

Term	Definitions/comments
Organizational learning	The science of how organizations learn to achieve and sustain excellent performance. (Lyman *et al.*, 2019)
Inter-organizational learning	The processes through which knowledge and competencies are created and exchanged across organizational boundaries in networks of collaborating entities (Knight & Pye, 2005; Larsson *et al.*, 1998; Popova-Nowak & Cseh, 2015).
Strategy	"Patterns in a stream of decisions" (p. 935, Mintzberg ,1978)
Learning actions	In line with Engeström (2015, 2018), this thesis refers learning actions to deliberate and collective efforts by organizational actors to interrogate and transform existing practices in response to experienced tensions or contradictions in their work. Engeström and Kerosuo (2007) describe such actions as efforts "to analyze the inner contradictions of their activity, then to design and implement a new model for their activity that radically expands its object, opening up new possibilities for action and development" (p. 3).
Learning-oriented leadership	The facilitation of employee learning through direct leader-employee interaction and by fostering a supportive learning environment through structures, systems, and processes (Wallo *et al.*, 2024)
Contextual factors to learning-oriented leadership	"Contextual factors that are enabling or hindering (learning-oriented leadership), e.g., external pressure for change, new technologies, production systems, work organization, organizational culture, control span, resources, support from top management" (Wallo, 2024, p. 247).
Demographic factors to learning-oriented leadership	"Individual factors that are enabling or hindering (learning-oriented leadership), e.g., the employee's learning readiness, the manager's understanding and learning" (Wallo, *et al.*, 2024, p. 247).
Mechanism	Underlying processes, interactions, or conditions that help explain how and why organizational learning is enabled or constrained in healthcare settings. Rather than viewing mechanisms as universal causal laws, they are understood as context-dependent and situated.
Network organizational architecture	Formal and informal structures that enable organizations or units within a network to coordinate activities, manage resources, and achieve shared objectives (Provan & Kenis, 2008; Britto *et al.*, 2018; Fjeldstad *et al.*, 2020).
Learning health systems	"A configuration that facilitates flexible interaction among people, places, and things (e.g., patients, clinicians, researchers, organizational entities, and databases)" (Fjeldstad *et al.*, 2020 p 2).
Fragmented healthcare systems	In line with Greenhalgh and Papoutsi (2018), Fjeldstad *et al.* (2020), Lalani *et al.* (2020), and Cresswell *et al.* (2023), this thesis defines fragmentation as the structural, professional, and organizational divides that challenge coordination and shared learning in healthcare. Fragmentation manifests both horizontally across sectors and vertically between management and frontline practice, complicating sustained learning and system-wide improvement.
Integrated healthcare	"A care plan or a multilateral collaboration, which seeks to meet the goals …, through the coordination of people, information, and physical resources (i.e., aids or medications)" (Berntsen *et al.*, 2019, p. 3).
Collaborative leadership	Leadership is characterized by leadership practices that foster shared ownership, mutual accountability, and collective learning across professional, organizational, and hierarchical boundaries in fragmented healthcare systems.

"Alone we can do so little; together we can do so much."

Keller, H. (1921). The Open Door.Doubleday, Page & Company.

1. INTRODUCTION

In 2021, a healthy newborn girl named Olina died at the Norwegian Ullevål Hospital following delays in an emergency cesarean section (Langsem & Kalin, 2024). In 2024, a government-commissioned investigation concluded that the cause was not lack of clinical expertise, but a failure of the system (Langsem & Kalin, 2024). Operating theatres were unavailable, staffing was insufficient, and coordination broke down. The investigation concluded that her death could have been prevented. Three years after the incident, the systemic issues remained unresolved. As Olina's mother told the press: "It's strange that what happened to us actually happened – and that things have only gotten worse since then" (Eggum Myrvang & Rydning, 2025, para. 29).

This specific tragedy is not an isolated incident. The backdrop to Olina's story is what has been described as an almost perfect storm of challenges confronting healthcare services of today (Amos *et al.*, 2022; Chambers, 2023), including aging populations with multiple diagnoses, staff shortages, increasing societal expectations, budget constraints, coordination issues in patient pathways, regulatory demands, or supply chain disruptions (WHO, 2022a, 2022b). There is a need for more learning-oriented healthcare systems to accelerate the integration of experiences, best practices and research into practice, enhance patient safety, and drive quality improvement in the face of future challenges (Batalden & Foster, 2012; Helsedirektoratet, 2019; WHO, 2020a; WHO, 2022b).

Despite widespread efforts, healthcare organizations most often still struggle to translate existing knowledge, improvement efforts, and research insights into practice in ways that are sustainable and contextually relevant (Ali *et al.*, 2022; Greenhalgh & Papoutsi, 2018). While the ambition to become learning healthcare organizations is widely endorsed (e.g. Helsedirektoratet, 2019; WHO, 2020), many healthcare systems face difficulties in operationalizing this vision. Learning initiatives are frequently fragmented (Lalani *et al.*, 2020), short-lived (Baird, 2023; Hughes *et al.*, 2022), or detached from everyday work realities (Baird, 2023; Hughes *et al.*, 2022), limiting their ability to generate sustained impact (Hughes *et al.*, 2022; Lalani *et al.*, 2020). Challenges related to power asymmetries (Wallo *et al.*, 2024), misaligned incentives (Lalani *et al.*, 2020), and siloed organizational structures (Gustavsson & Halvarsson Lundkvist, 2023) often undermine collaboration and slow down progress (Barnea *et al.*, 2021; Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020). The result is a persistent gap between strategic intentions and practical transformation, where aspirations for organizational learning often exceed the capacity of organizations to enact them in the face of complexity, fragmentation, and competing demands (Ali *et al.*, 2022; Lalani *et al.*, 2020).

Cases like that of Olina tragically illustrate what is at stake when systems fail to translate knowledge and experience into coordinated cross-boundary organizational learning. This thesis addresses how fragmented healthcare systems can evolve into learning organizations able to continuously improve their services in response to the challenges they face.

1.1 Problem discussion

In response to such shortcomings, there is growing interest in exploring the conditions under which healthcare systems can develop more robust learning cultures (e.g. Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020). This includes questioning the continued reliance on traditional problem-solving approaches (Hughes *et al.*, 2022), understanding how collaboration across boundaries fosters adaptive learning in fragmented healthcare systems (Cresswell *et al.*, 2023; Engeström, 2018; Fjeldstad *et al.*, 2020), examining the role of leadership in enabling such learning (Lundqvist *et al.*, 2023; Wallo *et al.*, 2024), and clarifying what kinds of infrastructure are needed to sustain learning efforts (Lalani *et al.*, 2020).

The following sections outline how highly complex healthcare systems are in need of collaborative organizational learning across borders and silos – supported by healthcare leaders fostering such learning processes.

Healthcare organizations operate within a highly complex environment where ensuring high-quality services remains a persistent challenge (Buckmaster & Mouritsen, 2017; Coles *et al.*, 2020; Lyman *et al.*, 2019). Patient pathways often span multiple specialized services and settings, requiring the coordination of both human and technological resources. This creates strong interdependencies that can be difficult to manage effectively (Fjeldstad *et al.*, 2020). Traditional departmental structures, which frequently emphasize cost control within organizational silos, further compound these challenges by limiting opportunities for integrated, patient-centered care (Fjeldstad *et al.*, 2020).

In such environments, conventional problem-solving approaches often fall short (Chassin & Loeb, 2013). Their tendency to reduce complex issues to isolated causes risks overlooking the systemic and interrelated nature of many healthcare problems. This narrow framing has contributed to repeated failures in quality improvement efforts, as they lack a comprehensive understanding of the underlying dynamics of local contexts (Buckmaster & Mouritsen, 2017; Coles *et al.*, 2020). As Batalden and Davidoff (2007) emphasize, quality improvement in healthcare involves "the combined and unceasing efforts of everyone - healthcare professionals, patients and their families, researchers, payers, planners and educators - to make the changes that will lead to better patient outcomes (health), better system performance (care), and better professional development" (p. 2). This broader view underlines the need for approaches that mobilize diverse stakeholders across the care continuum to address service gaps and activate the system's full potential for learning and sustainable improvement (Engeström & Pyörälä, 2021; Lalani *et al.*, 2020).

In consequence, collaboration across organizational and disciplinary silos and borders is essential for organizational learning in fragmented healthcare systems (Engeström, 2018; Gustavsson & Halvarsson Lundkvist, 2023). Inter-organizational learning has been identified as a valuable approach for reducing risks and uncertainties by enabling shared knowledge, resources, and best practices across different organizations (Rupčić, 2021). Vaughn *et al.* (2019) note that dysfunctional external relationships are a common issue for healthcare providers struggling to improve quality, underscoring the importance of building effective connections for learning and collaboration. Strengthening organizational learning can enhance resilience, helping healthcare organizations to better anticipate threats, manage adverse events, and adapt to evolving conditions (Evenseth *et al.*, 2022).

Recognizing that healthcare organizations are inherently complex systems characterized by unpredictability and dynamic interdependencies (Buckmaster & Mouritsen, 2017; Coles *et al.*, 2020; Lyman *et al.*, 2019), healthcare leaders must navigate interrelations, tensions, and emerging activities in non-linear and adaptive ways (Greenhalgh & Papoutsi, 2018; Overton *et al.*, 2023; Spanos *et al.*, 2024). In response to these challenges, there is a growing need for more knowledge on leadership that fosters organizational learning in fragmented healthcare systems. Leaders who engage in learning actions that enable organizational learning are better equipped to facilitate learning processes, build reflexive systems, and enhance adaptability within organizations (Maybin *et al.*, 2023; Spanos *et al.*, 2024).

In sum, the problem addressed in this thesis is that, despite widespread recognition of the need for healthcare systems to become learning organizations (Ali *et al.*, 2022; Helsedirektoratet, 2019; WHO, 2020) many still struggle to translate this ambition into sustained, practical action. The case of Olina highlights the need for improved coordination across organizational and professional boundaries and

for learning mechanisms that translate experience into sustainable change. Particularly in fragmented and complex environments (Fjeldstad *et al.*, 2020; Greenhalgh & Papoutsi, 2018), coordination, support for cross-boundary learning (Cresswell *et al.*, 2023; Lalani *et al.*, 2020), and the development of learning-oriented leadership (Wallo *et al.*, 2024; Spanos *et al.*, 2024) remain difficult to achieve and insufficiently understood.

1.2 Purpose

Building on this problem framing, the purpose of this thesis is to contribute new knowledge on strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems.

The scope is set at the meso level of fragmented healthcare systems, focusing on organizations, leadership, and cross-boundary collaboration. The meso level refers to the intermediate space between macro-level policy and micro-level care delivery, where structures, cultures, and relationships shape how learning is organized and sustained (Ferlie & Shortell, 2001; Greenhalgh & Papoutsi, 2018). A brief clarification of terms related to this purpose follows:

1. *Strategies*: Following Mintzberg's (1978) classical and long-standing definition of strategy as a "pattern in a stream of decisions" (p. 935), this thesis explores patterns in streams of decisions seeking to support organizational learning in healthcare.
2. *Learning actions*: In line with Engeström (2015, 2018), this thesis refers learning actions to deliberate and collective efforts by organizational actors to interrogate and transform existing practices in response to experienced tensions or contradictions in their work. Engeström and Kerosuo (2007) describe such actions as efforts "to analyze the inner contradictions of their activity, then to design and implement a new model for their activity that radically expands its object, opening up new possibilities for action and development" (p. 3). This builds on Engeström's (2015, 2018) theory of expansive learning, in which learning is conceptualized not as the acquisition of established knowledge, but as a process of reconceptualizing the object and motive of activity through cycles of questioning, analysis, modeling, implementation, and reflection. Learning actions are embedded in collective activity and often unfold through dialogical and iterative processes that mobilize practical knowledge, professional experience, and theoretical tools. They involve both cognitive and practical engagement with work practices and aim to bring about qualitative transformations in how work is organized and understood (Engeström, 2001; Engeström & Sannino, 2021). Learning actions also resonate with Argyris's (1977) notion of double-loop learning, where actors question the underlying assumptions of current practices rather than merely adjusting actions within existing frameworks.
3. *Leadership factors*: In line with Wallo *et al.* (2024), the term leadership factors in this thesis refers to contextual factors that influence learning-oriented leadership. Contextual factors are understood as conditions that surround and affect the leader's ability to act, such as "external pressure for change, new technologies, production systems, work organization, organizational culture, control span, resources, support from top management" (Wallo *et al.*, 2024, p. 247).
4. *Healthcare system*: In this thesis, a healthcare system is defined as an organized network of people, institutions, resources, and processes designed to deliver healthcare services. This aligns with the World Health Organization's description of a healthcare system to include all organizations, people and actions whose primary intent is to promote, restore or maintain health (WHO, 2000).
5. *Fragmented healthcare system*: In line with researchers like Cresswell *et al.* (2023), Fjeldstad *et al.* (2020), Greenhalgh and Papoutsi (2018), and Lalani *et al.* (2020), this thesis uses the term fragmented healthcare system to describe the structural separation, professional silos, and

organizational boundaries that challenge coordination and collaborative learning across healthcare settings. Fragmentation appears both horizontally between primary care and specialist services, and vertically between frontline practice and higher-level management. It is also reflected in misalignment of goals, processes, and information flows among actors, making sustained learning and system-level improvement particularly challenging.

1.2.1 Research gaps and research questions

Researchers emphasize that complex and adaptive systems like fragmented healthcare systems require infrastructures that can bridge competing agendas, improve patient pathways, and address the multifaceted needs and cultures of integrated healthcare (Cresswell *et al.*, 2023; Engeström & Sannino, 2021; Lalani *et al.*, 2020). In this literature, effective interventions are typically understood as those that move beyond isolated, top-down approaches by fostering co-production among diverse stakeholders (Fjeldstad *et al.*, 2020), enabling expansive learning and innovative problem-solving across organizational silos (Wiser *et al.*, 2019). Identifying strategies for building infrastructures to support organizational learning across borders and silos is crucial, particularly in integrated healthcare, where stakeholders from different organizations and disciplines must work together to provide cohesive patient care (Juvonen *et al.*, 2022; Miller *et al.*, 2023; Persson *et al.*, 2022). In line with the theory of expansive learning (Engeström, 2015, 2018) this thesis understands organizational learning in healthcare systems as collective processes through which actors from different organizational units, hierarchical levels, professional groups, or institutional sectors collaboratively generate, share, and apply knowledge to improve practices and address shared challenges. There is a need for deeper knowledge on how to integrate organizational learning across borders and silos within the structural realities of healthcare, offering actionable insights for building adaptive learning environments (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020; Masica *et al.*, 2022). In consequence, the first research question is:

RQ1: What strategies can support organizational learning across fragmented healthcare systems?

In this thesis, mechanisms are understood as the underlying processes, interactions, or conditions that can explain how and why organizational learning is enabled or constrained in healthcare. Rather than treating mechanisms as universal causal laws, they are regarded as context-dependent and situated. Research highlights the importance of both strategic structures (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020; Masica *et al.*, 2022), and local learning actions (Engeström & Sannino, 2021; Hibbert *et al.*, 2020). Strategic structures and local learning actions thus represent complementary yet analytically distinct mechanisms for supporting learning (Aldiss & Gibson, 2020; Buckmaster & Mouritsen, 2017; Engeström & Sannino, 2021; Haraldseid-Driftsland *et al.*, 2023; Hibbert *et al.*, 2020). Within this body of work, benchmarking is often highlighted as a concrete learning tool that, when designed for dialogue and adaptation, can help organizations compare practices and co-develop shared solutions (Buckmaster & Mouritsen, 2017). At the same time, scholars emphasize the need for greater understanding of how to design smarter benchmarks tailored to local settings (Buckmaster & Mouritsen, 2017), as well as for systematic identification and appraisal of learning tools in healthcare contexts (Haraldseid-Driftland *et al.*, 2023). Following from this, the second research question is:

RQ2: What learning actions can support organizational learning across fragmented healthcare systems?

Leadership is a central factor in fostering organizational learning, with learning-oriented leadership shown to be instrumental in establishing resilient, adaptive learning cultures (Wallo *et al.*, 2024). To

become learning healthcare organizations, leaders in healthcare must promote environments where employees feel encouraged to explore challenges, share knowledge, and continuously improve (Ali *et al.*, 2022; Lyman *et al.*, 2019; Singer *et al.*, 2015). However, there is a lack of research on the contextual factors that shape the effectiveness of learning-oriented leadership in practice (Lundqvist *et al.*, 2023; Wallo *et al.*, 2024), including within fragmented healthcare systems (Hillberg Jarl, 2024). Furthermore, existing studies often overlook the inherent challenges posed by complexity, resource limitations, workforce constraints, and the diverse learning needs across multidisciplinary teams in fragmented healthcare systems (Greenhalgh & Papoutsi, 2018; Singer *et al.*, 2015). In highly complex healthcare settings (Greenhalgh & Papoutsi, 2018), identifying contextual factors that influence learning-oriented leadership is essential for tailoring leadership development and designing systems that support sustainable improvement (Cardiff *et al.*, 2023; Spanos *et al.*, 2024). In consequence, the third research question is:

RQ3: What factors can influence learning-oriented leadership in fragmented healthcare systems?

Ali *et al.* (2022) argue there is a gap between the need for becoming learning organizations and the actions needed for this transformation. To tie the thesis together, the discussion will explore how the overall findings can inform a model for building learning-oriented healthcare systems that more effectively support service improvement. Existing frameworks also often fail to bridge theory and practice for fragmented healthcare systems (Greenhalgh & Papoutsi, 2018). In consequence, the fourth and final research question is:

RQ4: What are the key elements for supporting organizational learning in fragmented healthcare systems?

While the thesis is grounded in empirical investigation and describes existing practices and challenges, it also takes a prescriptive stance by considering how healthcare systems might be organized to better support organizational learning and improvement. The research questions are therefore both descriptive, mapping existing strategies and conditions, and prescriptive, identifying principles and actions that could guide more effective organizational learning across fragmented healthcare systems.

1.3 Relevance

This thesis speaks to an interdisciplinary research community concerned with organizational learning, leadership, and improvement in fragmented healthcare systems. From an academic perspective, this research addresses critical gaps in the understanding of organizational learning within complex healthcare settings. By contributing with new knowledge on strategies, learning actions, and leadership factors supporting organizational learning, this study contributes to a more comprehensive understanding of how learning processes can address healthcare's systemic challenges. Specifically, it expands knowledge on inter-organizational learning, a critical but under-researched area that enables collaboration, knowledge sharing, and innovation across organizational boundaries (Rupčić, 2021; Vaughn *et al.*, 2019). Furthermore, it examines how leaders can navigate the dynamic and non-linear nature of healthcare environments (Greenhalgh & Papoutsi, 2018) to foster adaptability and reflexive systems (Overton *et al.*, 2023; Spanos *et al.*, 2024). This research sheds light on the role of leadership in enabling organizational learning in fragmented healthcare systems, which is crucial for building resilience and adaptability (Maybin *et al.*, 2023; Spanos *et al.*, 2024). It provides insights into contextual factors that shape learning-oriented leadership in healthcare (Wallo *et al.*, 2024), addressing practical barriers such as fragmentation and limited resources.

From a practical perspective, this study responds to the pressing need for actionable strategies and actions that bridge the gap between the ambition to become learning healthcare organizations, and the practical steps required to achieve this transformation (Ali *et al.*, 2022). The thesis highlights strategies and learning actions that can strengthen collaboration across silos, promote open communication, and enable shared learning across diverse stakeholders. This is especially relevant for integrated healthcare, where effective organizational learning across borders and silos is essential to reduce risks, enhance coordination, and foster patient-centered care (Hughes *et al.*, 2022). These contributions are also relevant for policymakers, health system leaders, and improvement professionals working to foster resilient, patient-centered healthcare systems.

1.4 Delimitation

Providing patient-centered care is widely recognized as essential to high-quality healthcare (Bellio & Buccoliero, 2021). While this thesis acknowledges the importance of incorporating patient and next-of-kin perspectives when improving healthcare services, their involvement in the organizational learning processes is beyond the scope of this study.

The level of analysis is more systemic than individual and does not focus on single units or single organizations. Organizational learning is examined across multiple units, organizations, RQ4: What are the key elements for supporting organizational learning fragmented in healthcare systems and care levels, including both primary and specialized services, as well as institutional and home-based settings. Rather than treating actors as discrete units, the thesis conceptualizes them as interdependent elements of a broader healthcare system. Even when focusing on specific organizational parts like hospital-based specialized services, the analysis reflects their embeddedness in wider networks of collaboration.

This thesis also makes a key distinction between organizational learning processes and their outcomes. While outcomes reflect the emergence of new practices (Cong-Lem, 2022), this thesis focuses primarily on the learning process itself. This allows for a more detailed analysis of how organizational learning emerges and is sustained across organizational boundaries through those particular phases of the learning process.

Finally, this thesis delimits to empirical material from the Norwegian healthcare system. While many of the challenges and structural features examined may have relevance beyond this setting, differences in governance structures, organizational cultures, and contextual conditions across healthcare systems mean that the findings are not assumed to be directly transferable.

2. FRAME OF REFERENCE

Organizational learning in healthcare is shaped by formal structures, such as governance models and organizational structures (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020; Östman *et al.*, 2021) while simultaneously evolving through dynamic interactions, contextual adaptations, and shifting challenges (Engeström & Pyörälä, 2021; Greenhalgh & Papoutsi, 2018; Maybin *et al.*, 2023). To investigate strategies, learning actions, and leadership factors supporting organizational learning in fragmented healthcare systems, this thesis draws on four interconnected research areas: (1) organizational learning, (2) learning-oriented leadership, (3) organizational learning in healthcare systems, and (4) organizational network architectures. Before exploring organizational learning in more detail, this thesis first outlines its relationship to quality improvement. Clarifying this connection helps to understand why organizational learning is a useful lens for studying improvement of fragmented healthcare systems.

Quality improvement and organizational learning are closely connected but conceptually distinct domains (Ni & Sun, 2009). While quality improvement historically often has referred to structured, goal-directed efforts to improve specific processes or outcomes (Hoyer & Hoyer 2001), organizational learning has from early on often encompassed a broader, systems-level perspective on how organizations adapt, generate knowledge, and embed new practices over time (Ni & Sun, 2009).

Batalden and Davidoff's (2007) influential definition cited in the introduction part highlights quality improvement as a collective and continuous endeavor aimed at better health, care, and learning, emphasizing that improvement work both results from and contributes to professional development. At the same time, Lapré and Nembhard (2011) note that most definitions of organizational learning include improving actions and most often also implicitly incorporate a dimension of continuous improvement. In this sense, the two domains are tightly interwoven, with learning providing both the theoretical foundation and the adaptive capacity necessary for quality improvement efforts to take root and evolve (Ni & Sun, 2009).

Ni and Sun (2009) explore the relationship between these two domains empirically, drawing on survey data from over 500 manufacturing firms across 15 countries. Using structural equation modeling, they demonstrated that while continuous improvement directly contributed to performance outcomes, organizational learning did not have a direct effect. Instead, organizational learning enhanced performance indirectly by building the capabilities necessary for effective improvement. Their model highlights three key dynamics: (1) previously accumulated learning enhances the success of continuous improvement initiatives, (2) ongoing quality improvement efforts, in turn, foster current organizational learning, and (3) the relationship is evolutionary, developing incrementally over time in a mutually reinforcing manner. They write that "the learning process is like rolling a snowball," where accumulated experience makes subsequent learning and improvement efforts more effective (Ni & Sun, 2009, p. 1049). In this view, organizational learning functions both as a prerequisite for, and a long-term outcome of, quality improvement.

At the same time, Coles *et al.* (2020) argue that this classical view on quality improvement often fails in the face of real-world complexity, where improvement efforts are highly context-sensitive and rarely generalizable across settings. Martin *et al.* (2020) also call for a more dynamic and situated understanding of quality. They criticize the dominance of static, customer-oriented conceptions of quality and instead propose the concept of quality-in-use, which defines quality as an emergent and context-dependent construct, co-produced by stakeholders. "This framework is centered around the notion of quality-in-use, which offers a way to guide and enhance the actual practices of Quality

Management. It incorporates two dimensions for understanding quality: form, which covers the constructive or predefined dimension, and scope, which covers the single actor or multi-interested parties dimension" (Martin *et al.*, 2020, p. 186). Quality-in-use explicitly foregrounds negotiation, pluralism, and context as core dimensions of modern environments characterized by uncertainty, digital transformation, sustainability goals, and divergent stakeholder interests (Martin *et al.*, 2020).

Organizational learning has long been concerned with how systems navigate complexity, uncertainty, and contradiction (Argote, 2011; Argyris, 1977; Fiol & Lyles, 1985). Foundational contributions by Argyris (1977) framed learning as a process of detecting and correcting errors, including the questioning of underlying assumptions (double-loop learning). Fiol and Lyles (1985) emphasized learning as the improvement of actions through enhanced knowledge and understanding, while Argote (2011) conceptualized it as a process through which knowledge is created, retained, and transferred. Importantly, learning is not merely the outcome of planned interventions, but emerges through interaction, experimentation, and situated reflection (Engeström, 2001). Engeström (2001, 2015) further highlights how contradictions and tensions in activity systems can be leveraged to drive expansive learning through transformative cycles of questioning, modeling, and redesign.

Regarding the discussion of quality improvement in relation to organizational learning, it is worth mentioning the similarities and differences in between Deming's (1986) PDSA cycle and Engeström's (2015) expansive learning theory. The PDSA cycle explores the process of plan–do–study–act in quality improvement science (Deming, 1986). The model of PDSA and Engeström's expansive learning theory both emphasize iterative learning but differ somewhat in their scope and underlying assumptions. PDSA is designed for incremental quality improvement, following structured cycles of planning, doing, studying, and acting to optimize existing processes. PDSA operates more within predefined objectives, ensuring small-scale, controlled adaptations that enhance efficiency and reliability (Reed & Card, 2016). Expansive learning, by contrast, focuses on systemic transformation, emerging from contradictions within activity systems and generating new practices through cycles of questioning, analysis, modeling, and implementation (Engeström & Sannino, 2021). Rather than focusing on refining existing routines, the perspective broadens to how organizations can reconfigure work practices, knowledge structures, and relationships across silos (Engeström & Pyörälä, 2021). This thesis sees these approaches as complementary, with PDSA cycles contributing to the refinement of specific processes within broader transformative learning efforts driven by expansive learning principles.

In sum, quality improvement and organizational learning are perhaps best understood as mutually reinforcing systems, where learning enables meaningful improvement, and improvement work, in turn, feeds organizational learning (Ni & Sun, 2009). This thesis is titled *Organizational learning for improvement in fragmented healthcare systems* to reflect its primary theoretical focus. It emphasizes how organizations reflect, adapt, and build capabilities over time, rather than focusing primarily on specific outcomes achieved through structured improvement efforts. In particular, organizational learning provides valuable lenses for exploring how fragmented healthcare systems can develop the adaptive capacity (Engeström, 2018). Following Engeström (2018), this thesis approaches change processes as shaped by collective knowledge creation, situated reflection, and engagement with contradictions and tensions inherent in healthcare work. The next section elaborates the key theoretical perspectives on organizational learning that inform the thesis.

2.1 Organizational learning

Fiol and Lyles (1985) define organizational learning as "the process of improving actions through better knowledge and understanding" (p. 803). Argote (2011) sees organizational learning as "a

change in the organization's knowledge that occurs as a function of experience," (p. 440) where knowledge is reflected in changes to cognitions, routines, and behaviors. For Argyris (1977), organizational learning is "a process of detecting and correcting error" (p. 116). Lyman *et al.* (2019) consider organizational learning as the science of how organizations learn to achieve and sustain excellent performance. According to Lapré and Nembhard (2011), organizational learning definitions typically contain three elements: (1) a focus on the organizational level, (2) improved knowledge, and (3) improving actions. First, organizational learning occurs when learning processes extend beyond individuals, engaging the organizational level through interactions between individuals and structures. Second, organizational learning involves strengthening knowledge about the relationship between actions and outcomes. Third, organizations apply this knowledge to enhance performance through improvement actions. Many frameworks also include a fourth element: continuous improvement (Lapré & Nembhard, 2011). Taken together, these definitions emphasize organizational learning as a multilevel process that links knowledge development with adaptive action and continuous improvement. At the same time, the diversity of these definitions illustrates that organizational learning is a rich and varied concept, shaped by different theoretical assumptions, which can be further clarified by examining the four major paradigms outlined by Popova-Nowak and Cseh (2015).

Popova-Nowak and Cseh (2015) suggest four major paradigms to organize organizational learning research: functionalist, critical, constructivist, and post-modern. These paradigms represent different perspectives on organizational learning processes. In the functionalist paradigm, organizations are viewed as rational hierarchies with identifiable boundaries and attributes. Organizations focus on achieving measurable outcomes, such as product innovation or performance improvements. Organizational learning theories in this paradigm include behavioral, cognitive, and social action theories, which see learning as a structured process that can lead to specific performance results. Chris Argyris's theory (1977) of single- and double-loop learning exemplifies this approach, where learning is structured to improve routines by identifying and correcting errors in organizational practices (Popova-Nowak & Cseh, 2015).

The critical paradigm examines organizational learning from a perspective of power dynamics, exploring how power relations and inequalities within organizations influence organizational learning processes. Researchers in this tradition examine how conflicts between organizational interests and management's self-interests can limit learning and how organizational culture may reinforce dominant, unchallenged norms. Fenwick (2008) is a prominent figure in this area, which remains relatively small but offers valuable insights into the social and power-related barriers to organizational learning (Fenwick, 2008; Popova-Nowak & Cseh, 2015).

The constructivist paradigm centers on the social interactions that shape learning and understanding within organizations (Popova-Nowak & Cseh, 2015). Learning is seen as an emergent and context-dependent process, rather than one governed by pre-set objectives. This paradigm highlights the role of social context in shaping learning processes, viewing learning as a natural part of routine interactions and group activities. Engeström's theory of expansive learning (2001) is situated within this paradigm. It emphasizes learning within human activity systems and networks, where learning is driven by the need to address and transform shared challenges.

The post-modern paradigm is the smallest body of research (Popova-Nowak & Cseh, 2015). Organizational learning is understood through a lens that denies universal truths, focusing instead on complexity, ambiguity, and diversity within organizations. Post-modernists view organizations as complex, emergent systems shaped by tacit knowledge and multiple, often conflicting perspectives.

This paradigm investigates how knowledge, identities, and realities are constructed and sustained through micro-practices and shared interactions. Researchers like Deetz (1996) have explored this view, emphasizing the organization as a network of complex and dynamic relationships (Popova-Nowak & Cseh, 2015).

Among these paradigms, the constructivist perspective is particularly relevant for this thesis, as it provides the foundation for Engeström's theory of expansive learning (2015, 2018), which will be introduced in the following section.

2.1.1 The theory of expansive learning

Engeström's theory of expansive learning offers a particularly relevant lens for addressing the challenges examined in this thesis, including the fragmentation of healthcare systems (Cresswell *et al.*, 2023; Engeström & Pyörälä, 2021; Lalani *et al.*, 2020; Östman *et al.*, 2021) and the shortcomings of traditional improvement approaches when confronted with persistent and emergent problems (Buckmaster & Mouritsen, 2017; Chassin & Loeb, 2013; Coles *et al.*, 2020). Expansive learning is defined as "a collective process of creating and acquiring something that is not yet there" (Engeström & Sannino, 2021, p. 9). The theory emphasizes how professionals, often operating within fragmented systems, can collaboratively develop new practices by responding to contradictions embedded in their work.

This learning process unfolds within what Engeström (2015) describes as human activity systems, defined as "multivoiced, historically developed, artifact-mediated systems of activity" (p. 65), composed of interconnected components such as subject, object, tools, rules, community, and division of labor. Crucially, contradictions, understood as historically accumulated tensions within or between these components, are seen not merely as obstacles, but as sources of disruption that can trigger reflection, experimentation, and ultimately transformation (Engeström, 2018). For instance, a misalignment between organizational rules like loyalty to budgets and professional norms related to e.g. how to achieve high quality medical treatment, may provoke a rethinking of roles or routines. Expansive learning proceeds through cycles of questioning, analysis, modeling, testing, and implementation (Skipper *et al.*, 2020), driven by efforts to resolve or reconfigure such contradictions.

In consequence, Engeström's theory of expansive learning (Engeström, 2015, 2018) is particularly suited in fragmented healthcare systems, where multiple actors, rules, and tools must be aligned across organizational boundaries and silos. By conceptualizing work as mediated activity systems and highlighting contradictions as drivers of change, the framework helps explain how learning can emerge through collective reflection and redesign in patient pathways that often involve substantial numbers of diverse healthcare providers. This aligns closely with real-world experiences in healthcare, where goals are contested, objects of work emerge and evolve dynamically, and solutions must be co-constructed across structural and cultural boundaries. By conceptualizing learning as a collective, iterative process driven by contradictions and emergent needs, the theory offers a generative lens for understanding and supporting transformation in fragmented healthcare systems (see Engeström, 2018). Methods like the Change Laboratory, an intervention approach from activity theory that uses facilitated workshops to analyze contradictions and design new models of practice, support cross-boundary collaboration by enabling actors to surface tensions and co-create new practices (Engeström & Sannino, 2021; Skipper *et al.*, 2020).

While expansive learning provides a valuable framework for analyzing collective transformation, several challenges have been noted in the literature that are particularly relevant for this thesis. Cong-

Lem (2022) points out that Engeström's version of activity theory is intentionally multidisciplinary and conceptually open, which makes its core constructs analytically rich but also difficult to operationalize consistently in complex organizational settings.

Similarly, Wiser *et al.* (2019), in a systematic review of activity theory's application in healthcare and related socio-technical fields, identify limitations that resonate with the challenges of studying fragmented healthcare systems. They emphasize that the framework often lacks clear design guidance, making it difficult to translate theoretical insights into actionable strategies for practice. Its abstractness and flexibility can also complicate empirical use, particularly in environments where time and resources are constrained. Moreover, the framework gives limited attention to organizational context, such as governance structures, hierarchies, and technological infrastructures, that are known to shape how learning unfolds across boundaries.

These challenges suggest that while expansive learning offers a strong foundation for analyzing organizational learning for improvement of fragmented healthcare systems, it may need to be complemented by perspectives that attend more explicitly to organizational structures, leadership roles, and system-level conditions. Such refinements are especially pertinent for the scope of this thesis, which focuses on organizational learning in fragmented healthcare systems where contextual constraints and cross-boundary collaboration seems to be decisive.

Consequently, this thesis uses expansive learning as a foundational, but not exclusive, lens to examine how contradiction-driven learning unfolds across fragmented healthcare systems, supplemented by insights from four interrelated research areas to address contextual and operational limitations.

2.2 Learning-oriented leadership

Leadership is widely recognized as crucial for organizational learning and improvement (Hillberg Jarl, 2024; Lyman & Thorum, 2022; Singer *et al.*, 2015). The second research area of interest in this frame of reference concerns the role of learning-oriented leadership for organizational learning in fragmented healthcare systems. Amid growing interest in the relationship between leadership styles and organizational learning (Lundqvist *et al.*, 2023; Wallo *et al.*, 2024), research struggle with finding answers to how leadership contributes to organizational learning (Lundqvist *et al.*, 2023). Lundqvist *et al.* (2023) highlight that research linking classical leadership styles, such as transformational or servant leadership, to workplace learning is extensive but fragmented, often relying on broad constructs that offer limited insight into how leadership supports learning in practice. They emphasize the need for more behaviorally grounded approaches, noting that "it would be premature to state with certainty that leadership causally influences learning at and through work because the empirical basis for such a claim is still lacking" (p. 217). In consequence, narrowing the theoretical scope from broader leadership styles to the learning-oriented leadership framework (Wallo *et al.*, 2024) allows this thesis to investigate leadership and learning within fragmented healthcare systems, while responding directly to gaps identified by Cong-Lem (2022), Wiser *et al.*, (2019), Wallo *et al.* (2024) and Lundqvist *et al.* (2023).

Wallo *et al.* (2024) define learning-oriented leadership as "leadership that promotes learning in the workplace through interaction between managers and employees and through the organization of work and the creation of supportive learning environments" (p. 234). According to them, the field of learning-oriented leadership remains conceptually underdeveloped, with limited agreement on core definitions and components. They emphasize the importance of shifting away from abstract leadership models toward frameworks that are empirically grounded and focused on concrete, observable

behaviors. They operationalize leadership through four direct behaviors: (1) Providing support, (2) Educating, (3) Making demands, and (4) Leading by example, and four indirect behaviors: (1) Building a climate for learning, (2) Influencing the work organization, (3) Freeing up resources, and (4) Facilitating knowledge dissemination. (Wallo *et al.*, 2024).

In consequence, Wallo *et al.*'s model (2024) has the potential to bridge the theoretical insights of expansive learning (Engeström & Sannino, 2021) with practical leadership approaches. Engeström's theory highlights the role of contradictions in driving collective problem-solving and transformative learning processes (Engeström, 2018; Skipper *et al.*, 2020). Wallo *et al.*'s (2024) framework operationalizes such principles by focusing on leader-facilitated learning actions and the creation of structures that support collective learning.

Another important characteristic is how Wallo *et al.* (2024) emphasize the importance of situating leadership in context, as "learning-oriented leadership is not a fixed set of behaviors, but rather a flexible repertoire that must be adapted to the situation and the needs of the employees and the organization" (p. 234). This thesis focuses on how leaders must navigate non-linear, dynamic activities and balance immediate operational challenges with the need for long-term systemic change (Maybin *et al.*, 2023; Overton *et al.*, 2023), in contexts of resource constraints, siloed structures, and fragmented governance (Baxter & Moralee, 2023; Fjeldstad *et al.*, 2020). By emphasizing the adaptation of leadership behaviors to fit specific contextual factors, the framework can provide even more actionable insights for addressing key barriers to organizational learning in fragmented healthcare systems.

2.3 Organizational learning in healthcare systems

Organizational learning is seen as essential for healthcare improvement, but as we have seen, often hindered by fragmentation, competing priorities, and structural barriers (Ali *et al.*, 2022; Fjeldstad *et al.*, 2020). This section examines three areas of such challenges: (1) benchmarking as a learning action for performance assessment and best practice sharing (Buckmaster & Mouritsen, 2017; Hibbert *et al.*, 2020), (2) barriers to organizational learning across borders and silos in integrated healthcare (Cresswell *et al.*, 2023; Lalani *et al.*, 2020), and (3) the role of stakeholder participation in fostering meaningful learning through engagement and dialogue (Coles *et al.*, 2020; Greenhalgh & Papoutsi, 2018).

2.3.1 Benchmarking as a learning action

Benchmarking is frequently promoted as a route to organizational learning in healthcare via transparency, comparability, and the sharing of practices (Bevan *et al.*, 2019; Hibbert *et al.*, 2020). Yet it often underperforms when implemented as a standardized, top-down control tool, where indicators fail to capture local complexity, lack sufficient context adjustment, and risk being perceived as mechanisms of managerial oversight rather than opportunities for improvement (Buckmaster & Mouritsen, 2017; Jordan & Messner, 2012; Lovaglio, 2012).

Evidence suggests that benchmarking is most effective for learning when it is deliberately designed for participation and dialogue. Buckmaster and Mouritsen (2017) argue that benchmarks most often become more learning-oriented when clinicians with localized knowledge are actively involved in interpreting and refining measures. Bevan *et al.* (2019) similarly emphasize the role of peer review and feedback loops in enabling sense-making and reducing gaming, that is, the use of performance indicators giving an appearance of improvement without necessarily enhancing the quality of care.

Practical examples reinforce this point: Hruska *et al.* (2018) show how involving emergency medicine experts in developing reporting templates improved both reporting quality and opportunities for shared learning.

Research on learning health systems further suggests that benchmarking gains traction when embedded in peer-to-peer or networked structures, where data comparison is coupled with collaborative problem-solving and collective reflection (Britto *et al.*, 2018; Seid *et al.*, 2021). In this way, benchmarking can function not merely as a performance scorecard but as a structured arena for organizational learning, provided it is co-designed with end-users, integrated with iterative dialogue, and sensitive to contextual differences in case mix, resources, and workflows.

2.3.2 Barriers to organizational learning across borders and silos

In response to the rising number of patients with complex health needs, healthcare systems worldwide are increasingly adopting integrated healthcare models that require collaboration across multiple entities (Hughes *et al.*, 2022; Raus *et al.*, 2020). Defined as "a care plan or a multilateral collaboration, which seeks to meet the goals …, through the coordination of people, information, and physical resources" (Berntsen *et al.*, 2019, p. 3), integrated healthcare demands heightened coordination across organizations and departments, which often increases structural and organizational complexity (Cresswell *et al.*, 2023; González-Ortiz, 2018; Hughes *et al.*, 2022). Despite its potential, integrated healthcare has produced mixed results, with patients not always experiencing improvements and care providers struggling to meet expectations (Hughes *et al.*, 2022).

Organizational learning across borders and silos in these settings faces unique challenges. Collaboration relies heavily on professionals who may lack familiarity with each other's work environments, practices, and organizational processes, producing cultural, relational, and structural barriers (Bångsbo *et al.*, 2022; Cresswell *et al.*, 2023; Lalani et al, 2020). Structural complexities and fragmented workflows further hinder learning when providers lack shared goals or face misaligned incentives and conflicting expectations (Cresswell *et al.*, 2023; Gustavsson & Halvarsson Lundkvist, 2023).

Research shows that a lack of infrastructures for inter-organizational learning is a recurrent barrier. Lalani *et al.* (2020), for example, found that services often miss mechanisms such as multi-disciplinary team meetings, joint training, reflective practice, and staff engagement events. These are critical for optimizing learning opportunities, supporting innovation, managing risks, and fostering collaboration. Without attention to such practical conditions, professionals report limited success in sustaining organizational learning and service innovation in integrated healthcare for complex patient populations (Lalani *et al.*, 2020).

2.3.3 Stakeholder participation and engagement

A third critical area concerns stakeholder participation. Chassin and Loeb (2013) and Coles *et al.* (2020) highlight that improvement initiatives often fail because they oversimplify causes of errors and neglect the nuanced, dynamic nature of healthcare contexts. Deep engagement of stakeholders can help mitigate these challenges by ensuring solutions are context-sensitive and actionable.

Participation has been consistently shown to be a key mechanism of organizational learning. Greenhalgh and Papoutsi (2018) emphasize the need for iterative stakeholder interactions to navigate complexity effectively. Fjeldstad *et al.* (2020) and Skipper *et al.* (2020) further argue that learning is

most effective when it spans multiple organizational levels and integrates perspectives from frontline staff, managers, patients, and external collaborators. This resonates with participatory design approaches that seek broad involvement to co-create solutions (Steen, 2013).

At the same time, differences in understanding among participants can present challenges. Jordan and Messner (2012) note that such differences often create contradictions. Yet, following Engeström and Sannino (2021) and Engeström and Pyörälä (2021), contradictions can also be productive, driving organizational learning by forcing stakeholders to re-examine assumptions and align goals.

In this thesis, stakeholder participation is treated as a foundational principle. It is not considered an optional add-on but a central mechanism for learning, sensemaking, and sustainable change in fragmented healthcare systems. Drawing on Greenhalgh and Papoutsi (2018), Steen (2013), and Fjeldstad *et al.* (2020), participation is conceptualized as a dynamic, multi-level process where diverse actors surface contradictions, co-create solutions, and iteratively refine practices. This aligns with participatory design (see Section 3.1) and expansive learning (Engeström & Sannino, 2021), framing stakeholder participation both as a normative principle of inclusion and as a practical strategy for fostering organizational learning across boundaries.

2.4 Organizational network architectures

In this thesis, inter-organizational learning refers to the processes through which knowledge and competencies are created and exchanged across organizational boundaries in networks of collaborating entities. It takes place particularly in fragmented structures where multiple actors are required to align their activities and resources toward shared objectives. Knight and Pye (2005) conceptualize inter-organizational learning as the development of shared or complementary understandings among groups of organizations that enhance their collective capacity to act, while Larsson *et al.* (1998) emphasize the joint creation and transfer of knowledge within alliances to achieve collective goals. More broadly, inter- organizational learning may be seen as an extension of organizational learning into the inter-organizational domain, where learning emerges relationally and is embedded in the interactions and practices that connect organizations (Popova-Nowak & Cseh, 2015).

This thesis addresses how organizational network architectures can support learning in fragmented healthcare systems (see for example Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Gremyr *et al.*, 2021; Lalani *et al.*, 2020; Masica *et al.*, 2022). Gustavsson and Halvarsson Lundkvist (2023) highlight the importance of collaborative platforms in overcoming barriers to organizational learning across borders and silos, suggesting that such platforms may take the form of organizational network architectures within fragmented healthcare systems. These architectures refer to formal and informal organizational configurations or infrastructures that enable organizations or units to coordinate activities, manage resources, and achieve shared objectives (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020). In complex healthcare systems, such network architectures are essential for aligning diverse stakeholders across silos through mechanisms of governance, communication, and joint decision-making.

In a systematic literature review, Gremyr *et al.* (2021) describe networks architectures for healthcare delivery as organizational configurations that bring together actors to integrate resources for the coordination and provision of care. They identify three main conceptualizations of such networks: those designed for efficiency-enhancing cooperation among healthcare providers, those focused on more formal efficiency-enhancing integration of health and social services, and those oriented toward involvement for co-creation, where patients and families play an active role. These forms vary in

purpose, composition, and degree of integration, reflecting the need to tailor network design to contextual demands and intended outcomes.

Fjeldstad *et al.* (2020) emphasize the value of collaborative network architectures in enabling flexible coordination and adaptive problem-solving in settings characterized by interdependence. They label such networks as learning health systems, which promote iterative interaction among clinicians, patients, researchers, and organizational units to continuously improve care. Such network architectures, as described by Fjeldstad *et al.* (2020), function as collaborative infrastructures that facilitate the production and exchange of resources needed for coordinated action. Seid *et al.* (2021) further conceptualize learning health systems as mechanisms for addressing coordination problems by engaging multiple stakeholders, including patients and families. Easterling *et al.* (2022) identify key organizational tasks within such systems, including organizational learning across borders and silos, evidence implementation, new knowledge development, data-informed improvement, and broad stakeholder engagement.

Britto *et al.* (2018) similarly define network architecture as the structural arrangement through which organizations manage interdependencies to meet shared objectives. These network architectures often involve three or more organizations working together on a common goal (Provan & Lemaire, 2012). In integrated healthcare, where collaborative delivery of services across boundaries is essential, such network architectures provide the foundation for sustained learning and improvement by aligning roles, governance, and processes.

In sum, the expanding literature on organizational network architectures for collaborative learning offers valuable insights into how formal, mandated infrastructures can enable multi-organizational solutions to complex healthcare challenges. This thesis explores how such organizational network architectures can be practically organized and governed to support learning and improvement in fragmented healthcare systems.

2.5 Frame of reference synthesized

The thesis draws on four interconnected theoretical perspectives, each contributing in distinct ways. However, these perspectives are not treated equally; they are positioned according to their analytical function within the study. Expansive learning theory serves as the primary lens for understanding how learning processes unfold across organizational boundaries in fragmented healthcare systems. The learning-oriented leadership framework (Wallo *et al.*, 2024) is applied to analyze leadership behaviors and variation across roles and contexts. In contrast, research on organizational learning (Engeström, 2015, 2018) in complex healthcare systems (Cresswell *et al.*, 2023; Engeström, 2018; Greenhalgh & Papoutsi, 2018; Lalani *et al.*, 2020) and organizational network architectures (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020; Gustavsson & Halvarsson Lundkvist, 2023) serve supporting roles by offering systemic insights that contextualize learning and leadership within dynamic, fragmented healthcare environments. This theoretical layering is illustrated in Figure 1.

Each perspective contributes distinct insights while also presenting limitations that can be addressed through empirical investigations and theoretical integration. Engeström's (2018) theory of expansive learning conceptualizes learning as a dynamic, systemic process driven by contradictions in activity systems, and emphasizes the collective transformation of practice over time. While this framework provides a robust lens for understanding learning in complex, multi-voiced environments, it too has limitations. As noted by Cong-Lem (2022), expansive learning often lacks specificity in addressing material constraints, organizational resistance, and the practical implementation of learning initiatives.

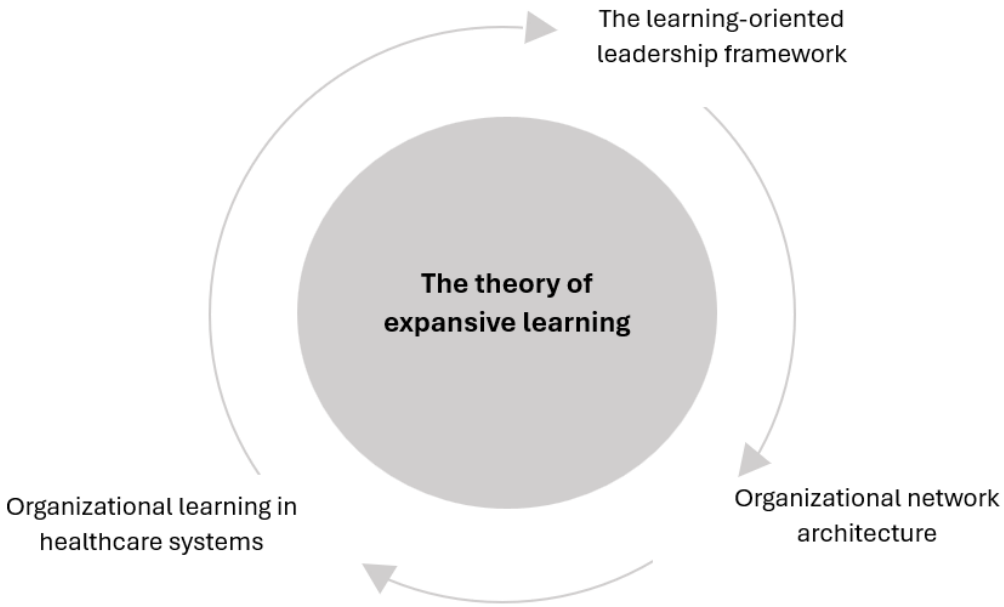

Figure 1. Visualization of the thesis' theoretical framing

Moreover, while it emphasizes collaboration across activity systems, it does not provide detailed guidance on how leadership or formal structures might actively support or enable such processes.

The framework of learning-oriented leadership (Wallo *et al.*, 2024) offers a complementary perspective. It is a behaviorally grounded alternative to traditional leadership style theories (Wallo *et al.*, 2024), emphasizing concrete leadership practices that may foster employee learning. However, as Wallo and his colleagues themselves acknowledge, the field remains relatively underdeveloped and there is a need "to move from abstract conceptualizations to empirically grounded, behavior-based leadership frameworks" (p. 236). They also point out that learning-oriented leadership is not a universal solution; rather, it must be adapted to specific organizational contexts and individual needs. This flexibility is presented as a strength, yet it also presents challenges, as it limits the prescriptive clarity of the framework and may complicate its application in fragmented healthcare systems.

Research on organizational network architectures offers further insight into how structural and governance arrangements can be designed to facilitate collaboration and learning across organizational boundaries. These studies focus on how formal networks and collaborative infrastructures can support adaptive coordination and resource integration (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020; Seid *et al.*, 2021). Combining research on infrastructures for learning with knowledge on learning-oriented leadership and other situated practices could enlighten how learning occurs within such networks.

Finally, literature on benchmarking, seen in this thesis as a learning action across organizational borders and silos, contributes practical perspectives on how performance data and peer dialogue can be used to foster reflection and improvement (Buckmaster & Mouritsen, 2017; Hibbert *et al.*, 2020).

Still, benchmarking efforts risk being perceived as managerial control tools unless they are context-sensitive and participatory (Coles *et al.*, 2020), raising questions about how learning-oriented leadership and expansive learning principles might be applied to enhance their legitimacy and impact.

Taken together, the four perspectives do not offer a unified model but can be considered mutually informative. In this thesis, their integration is believed to support a more comprehensive exploration of strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems. This theoretically pluralist approach is not without challenges. It risks superficial treatment of individual theories and potential conceptual confusion. However, by carefully grounding each perspective in the empirical material and clarifying their distinct contributions, the thesis aspires to preserve theoretical integrity while generating richer insights into the complex, multi-level dynamics of organizational learning and improvement in healthcare. This integrated perspective informs the analytical framework of the study and is reflected in the design and focus of the research questions. Figure 2 illustrates the relation between the four research questions and the key references applied.

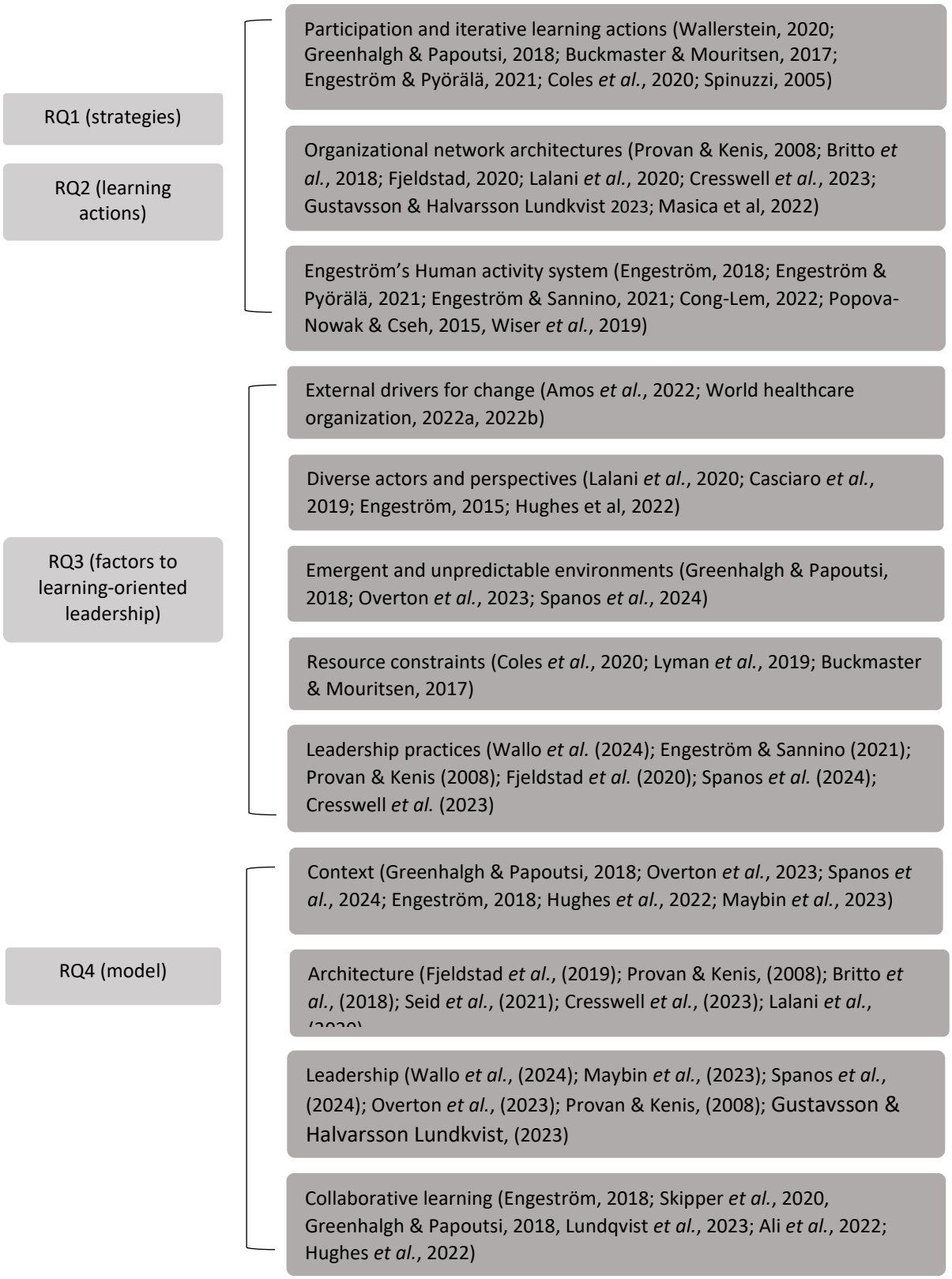

Figure 2. The relation between the research questions and the key references

3. METHODOLOGY

This thesis applies a participatory action research approach with a qualitative-dominant mixed-methods design. The studies integrate multiple case studies, qualitative analyses of data from interviews, focus groups, documents, and reflection notes, and statistical analysis of survey data.

Three studies were conducted, resulting in five papers. The relations between purpose, research questions, studies, and papers are illustrated in Figure 3.

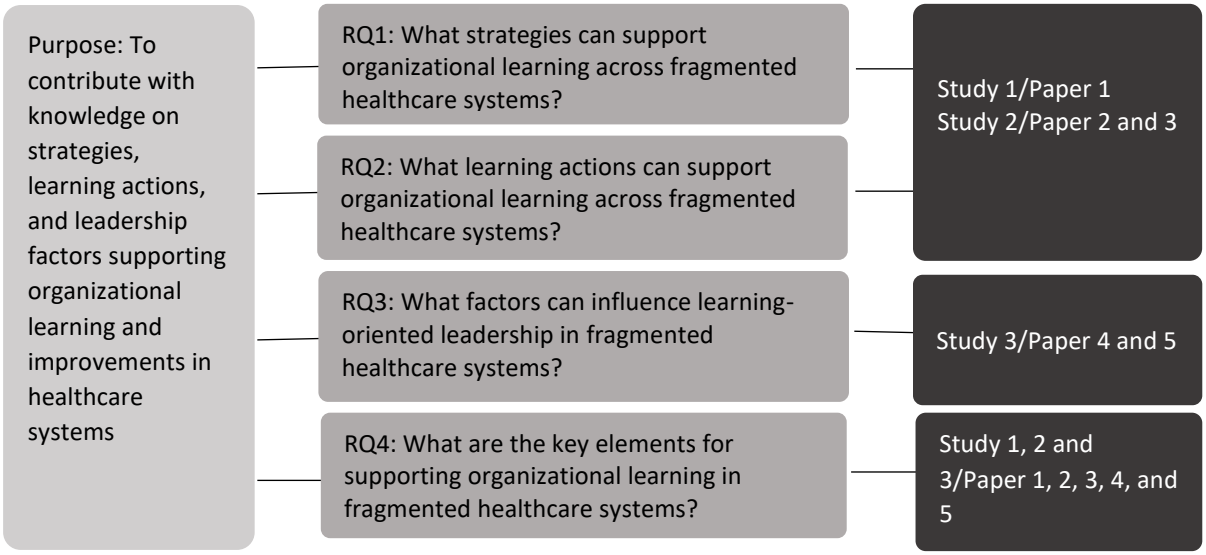

Figure 3. Relation between purpose, research questions, and papers.

3.1 Participatory action research approach

Participatory action research is a collaborative research approach in which researchers and stakeholders work together to identify problems, co-develop solutions, and implement changes through iterative cycles of planning, action, and reflection (Bradbury, 2015; Wallerstein *et al.*, 2020). It aims to produce both practical improvements and new knowledge, while emphasizing power sharing and democratic dialogue. Rooted in shared decision-making and iterative cycles of action and reflection (Wallerstein *et al.*, 2020), the participatory action research approach is well-suited to addressing healthcare's complexity (Overton *et al.*, 2023; Spanos *et al.*, 2024), service fragmentation (Engeström & Pyörälä, 2021), and diverse stakeholder needs (Bångsbo *et al.*, 2022; Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020).

In this thesis, stakeholders refer to individuals and groups directly involved in or affected by the healthcare services being studied, including patients, frontline professionals, clinical leaders, administrators, and system-level actors (Fjeldstad *et al.*, 2020; Spanos *et al.*, 2024). Their involvement ensures that diverse perspectives inform the learning processes. Collaboration means joint engagement in decision-making, problem-solving, and knowledge creation between researchers and stakeholders (Bradbury, 2015; Steen, 2013). It implies mutual respect, shared power, and active negotiation of meanings and priorities. Action refers to the collective implementation of practical changes or interventions developed through stakeholder engagement, while reflection denotes the critical examination of experiences, assumptions, and outcomes to generate deeper understanding and guide future steps (Bradbury, 2015; Dick, 2015).

Co-creation is defined here as the collaborative process through which researchers and stakeholders jointly frame problems, generate knowledge, and design solutions (Sanders & Stappers, 2008; Spinuzzi, 2005). By engaging stakeholders directly in co-creating knowledge and implementing solutions, participatory action research fosters systemic learning and practical improvements (Coghlan & Brannick, 2009; Rodriguez Espinosa & Verney, 2021). In this thesis, systemic learning refers to the collective development of insights and practices that lead to sustained improvements at the organizational or system level, beyond individual or team-based learning (Engeström & Sannino, 2021; Lalani *et al.*, 2020). It involves recognizing interdependencies, addressing contradictions, and integrating learning into structures, routines, and governance.

Unlike traditional research, which treats participants as subjects, participatory action research involves them as equal contributors, ensuring that research questions, methods, and findings reflect their lived experiences (Vaughn & Jacquez, 2020; Wallerstein *et al.*, 2020). Lived experience refers to the personal, first-hand knowledge that stakeholders bring from their roles and interactions within the healthcare system. In participatory action research, this experiential knowledge is valued on par with formal expertise, shaping the formulation of research questions and interpretation of findings (Finlay, 2002; Vaughn & Jacquez, 2020). Healthcare leaders and practitioners engage in cyclical processes of reflection, action, and evaluation, keeping findings grounded in real-world contexts and challenges (Dick, 2015).

This participatory design approach resonates with Engeström's (2018) view of medical expertise as grounded in fluid collaboration among professionals with diverse backgrounds, enabling collective responses to emergent problems. The approach also aligns with perspectives from Smith *et al.* (2017), Bradbury (2015), and Steen (2013), who emphasize the importance of stakeholders' contributions in co-creating insights and solutions within complex systems.

Participation levels in participatory action research vary (Balazs & Morello-Frosch, 2013). This thesis includes three studies with differing stakeholder involvement (Figure 4). Study 2 featured high stakeholder participation, with professionals and managers engaged in funding, research design, data ownership, and dissemination. Studies 1 and 3 involved moderate participation, where healthcare managers contributed to research design and funding but did not engage in post-data collection activities. Patients and next of kin were not included, highlighting a distinction from full-scale community-based participatory research (Balazs & Morello-Frosch, 2013). Patients and next of kin did not participate in the research processes, a feature important to full scale community-based participatory research (Balazs and Morello-Frosch, 2013).

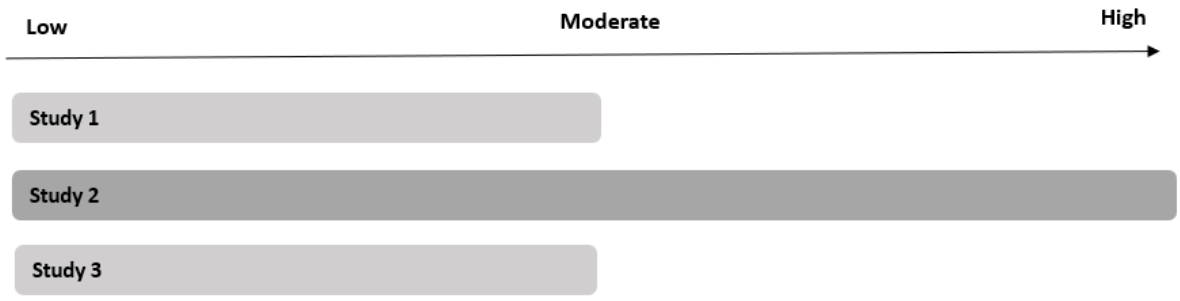

Figure 4. Participation level (Balazs *& Morello-Frosch, 2013) of the three studies*

3.2 Qualitative dominant mixed methods design

Given the complexity of healthcare, qualitative research methods are well-suited for examining social relations and contextual factors (Flick, 2014). These methods provide in-depth insights into the processes and conditions under which organizational learning across borders and silos occurs, making them an appropriate choice for exploring the intricate realities of healthcare systems (Flick, 2014). This thesis combines inductive, deductive and abductive reasoning (Timmermans & Tavory, 2012, Flick 2014) to capture the complexity of organizational learning and leadership in healthcare. Inductive reasoning allowed themes and categories to emerge directly from empirical data, offering rich contextual insights. Deductive analysis provided theoretical grounding by applying the established framework of Engeström's activity system (2015, 2018). Abductive reasoning enabled the integration of unexpected findings into revised theoretical models like the theory of expansive learning (Engeström, 2015, 2018), the learning-oriented leadership framework (Wallo *et al.*, 2024), healthcare's complexity (Overton *et al.*, 2023; Spanos *et al.*, 2024), service fragmentation (Engeström & Pyörälä, 2021), or organizational network architectures (Fjeldstad *et al.*, 2020; Cresswell *et al.*, 2023; Lalani *et al.*, 2020; Bångsbo *et al.*, 2022). See Section 3.5 Data Analysis for a more detailed presentation of the interplay of inductive, deductive, and abductive reasoning applied in this thesis.

However, the complexity of the research purpose also calls for a broader methodological perspective. A mixed methods design accommodates the complexity of the research purpose by enriching the understanding of both processes and relationships (Creswell *et al.*, 2011; Fetters *et al.*, 2013). By using surveys and quantitative analysis, the thesis enhances its ability to identify patterns and statistically significant relationships, complementing the depth provided by qualitative methods (Creswell *et al.*, 2011; Fetters *et al.*, 2013). The integration of qualitative and quantitative methods in a mixed-methods design leverages the strengths of both approaches, allowing for a comprehensive exploration of the research questions. Ultimately, the mixed-methods approach strengthens the thesis's possibility to capture the multifaceted nature of organizational learning, providing both contextual depth and broader insights that are critical for addressing the challenges of improving healthcare systems. In alignment with Johnson *et al.*'s (2007) definitions of different types of mixed methods, this thesis applies a qualitative dominant mixed methods design: "Qualitative dominant mixed methods research is the type of mixed research in which one relies on a qualitative, constructivist-poststructuralist-critical view of the research process, while concurrently recognizing that the addition of quantitative data and approaches are likely to benefit most research projects." (p. 124).

An overview of the relationship between research questions, studies and analytical approaches is given in Table 1.

3.3 Researcher position and underlying cognitive interest

This thesis is grounded in an emancipatory cognitive interest, as articulated by Habermas (1971), which aims to uncover and transform the social, organizational, or structural conditions that constrain human potential. Emancipatory research seeks not only to understand or apply knowledge, but to enable reflection, challenge dominant assumptions, and support collective transformation through dialogue and participation. This orientation aligns with the thesis' use of participatory action research (Bradbury, 2015; Wallerstein *et al.*, 2020), combination of inductive, deductive, and abductive reasoning (Timmermans & Tavory, 2012), and a deep engagement with real-world healthcare improvement processes. The goal is not just to study learning and leadership in fragmented healthcare systems, but to co-create practical and systemic conditions that support more equitable, adaptive, and collaborative forms of healthcare improvement.

RQ	STUDY	PAPERS	SETTING	SAMPLE	ANALYSIS	APPLICATION
1/2	1	1	13 Norwegian ERs	Documents, emails (n=204), protocols (n=2), calls (n=8), observations	Inductive constant comparative analysis (Boeije, 2002) and participatory design analysis (Spinuzzi, 2005)	Identified patterns in inter-organizational learning by comparing activities and procedural steps in a benchmarking initiative and visualizing the work procedure, capturing the phases of learning and collaboration among emergency rooms.
	2	2	One hospital, 13 municipalities (RCIH-led).	Documents (192 pp), protocols (n=14), reflection circles (n=2, 13 participants), interviews (n=6)	Deductive concept-driven content analysis (Mayring, 2014)	Applied Engeström's human activity system model to analyze inter-organizational learning in an integrated healthcare setting.
		3			Inductive thematic analysis (Braun & Clarke, 2006, 2022)	Identified strategies and learning-actions for organizational learning in an integrated healthcare setting.
3	3 (2)	4	A large Norwegian hospital.	Focus groups (n=5, 33 leaders), interviews (n=2)	Abductive thematic analysis (Braun & Clarke, 2006, 2022)	Identified contextual factors to learning-oriented leadership in a hospital.
		5		Survey (n=133/55,9% responses)	Scale development (Boateng et al., 2018), multiple linear regression analysis (Tabachnick & Fidell, 2019), inductive thematic analysis (Braun & Clarke, 2006, 2022), and abductive reasoning (Timmerman & Tavory, 2012).	Explores relationships between learning-oriented leadership behaviors, healthcare improvement in and across units, and leadership factors to learning-oriented leadership in a hospital.
		2	One hospital, 13 municipalities (RCIH-led).	Documents (192 pp), protocols (n=14), reflection circles (n=2, 13 participants), interviews (n=6)	Deductive concept-driven content analysis (Mayring, 2014)	Applied Engeström's human activity system model to analyze inter-organizational learning in an integrated healthcare setting.
		3			Inductive thematic analysis (Braun & Clarke, 2006, 2022)	Identified strategies and learning-actions for organizational learning in an integrated healthcare setting.
4	1-3	1 - 5	Five case studies of organizational learning in Norwegian healthcare systems	The five papers of this thesis	Abductive meta-synthesis and theory development (Walsh and Downe, 2005)	Integrate findings from the five appended papers and develop a multi-level conceptual model for supporting organizational learning in healthcare.

Table 1. An overview of the analytical approaches used in each research question, study and paper

While emancipatory interest forms the core orientation, the research also reflects aspects of the two other cognitive interests described by Habermas (1971). The technical (or instrumental) interest is concerned with usefulness in the sense of producing knowledge that can be applied to improve practice. This is reflected in the design of actionable models and improvement strategies across the papers. The hermeneutic interest refers to the goal of making sense of meaningful social practices, which is present in the efforts to reach deeper understandings on strategies, learning actions, and factors to learning-oriented leadership.

These three interests together shape the thesis' methodological and epistemological stance. The use of abductive logic supports iterative movement between theory and data to generate plausible, grounded insights. Participatory action research emphasizes co-construction of knowledge with practitioners, and reflexivity is embedded throughout the process to ensure that the findings are both critically informed and contextually relevant. In this way, the thesis contributes not only to academic understanding, but to the development of more reflexive, inclusive, and learning-oriented healthcare systems. This orientation justified the use of abductive analysis and iterative engagement to deepen contextual understanding and support actionable system change.

3.4 Empirical settings

The studies were conducted in the Norwegian healthcare system, recognized as a top performer in the Commonwealth Fund's 2021 comparison of eleven high-income countries (Schneider *et al.*, 2021). Norwegian healthcare is grounded in the principles of universal health coverage, with patients generally free to choose among different service providers. It is primarily funded through taxation, supplemented by some minor payroll contributions from employers and employees. However, like many Western healthcare systems, it faces challenges such as an aging population, increasing numbers of elderly and fragile patients, growing staff shortages, and rising expectations for treatment and care from both policymakers and the public (Helsepersonellkommisjonen, 2023).

To address these challenges, national healthcare plans have over several years emphasized the importance of quality improvement and innovation, as reflected in policy directives from the Ministry of Health (Norwegian Ministry of Health and Care Services, 2015). Additionally, Norway has established regional Committees for Interaction in Healthcare, which bring together municipalities and health trusts as equal partners in planning and developing services tailored to local needs (Norwegian Ministry of Health and Care Services, 2020). These committees exemplify Norway's collaborative approach to tackling the complexities of modern healthcare, providing an important context for studying organizational learning across borders and silos within this thesis.

The healthcare systems studied in this thesis operate on (a) a regional level including both primary and specialized care, or (b) in a learning initiative across thirteen hospitals. As an insider researcher I was employed as an organizational psychologist in the Continuous improvement department of one of the hospitals studied. The last 1.5 years, I changed position into Head of Continuous improvement department in the same hospital. In my dual role, I was simultaneously responsible for leading quality improvement efforts across the organization in close collaboration with a wide range of stakeholders, coaching leaders and running leadership programs, and conducting insider research on organizational learning in healthcare systems. Although not part of the hospital's top management team, I reported directly to the Deputy CEO and participated in cross-clinic collaboration forums and system-wide improvement initiatives. This positioning provided access to rich, real-time data on improvement work across multiple levels of the organization. Figure 5 illustrates my role in relation to empirical settings and data collection. In the following, I will address both the specifics of the dual role in relation to each study, and how I went forward to managing this dual role in relation to scientific standards.

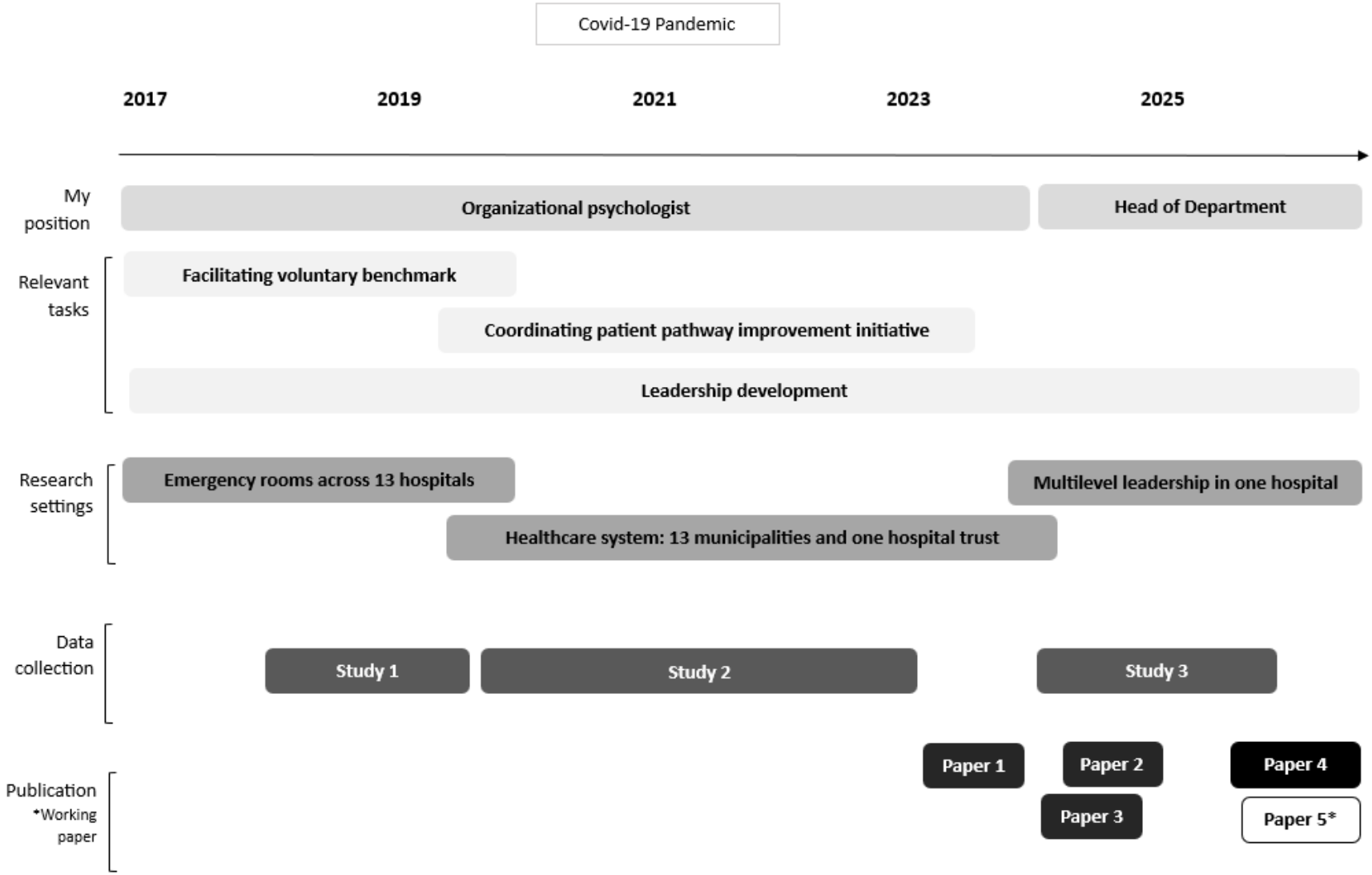

Figure 5. Timeline for the period of my doctoral studies, including my organizational role, research setting, and data collection for the included studies.

In the following, empirical settings, data collection, data analysis and quality criteria for the studies will be presented followed by discussions of my dual role wherever relevant.

3.4.1 Empirical setting Study 1

The first study, addressing the first and third research questions, contributed to the first paper in this thesis. The study involved inviting all Norwegian emergency rooms serving populations exceeding 80,000 residents to participate in a voluntary benchmarking initiative aimed at fostering nationwide learning and improvement in emergency rooms services. As the insider researcher, I was responsible for facilitating the learning-oriented benchmark process from start until end.

As part of the collaborative effort in Study 1, stakeholders co-developed a uniform template to standardize data collection and enable learning-oriented benchmarking across emergency rooms. The template aimed to ensure comparability while respecting contextual differences, and includes indicators grouped into five main categories:

1. Emergency room structure: Captures the physical and functional organization of each emergency room, including the number of treatment spaces, emergency room-controlled beds, patient groups received (e.g., pediatric, psychiatric, surgical), use of fast-track pathways, team-based staffing, and coordination of inter-hospital logistics.
2. Hospital and healthcare system context: Includes broader organizational and staffing variables such as total population served, number of somatic beds, and detailed breakdowns of clinical staffing (e.g., nurses, senior physicians, interns, bioengineers, other healthcare professionals). It also specifies physician availability and emergency room autonomy over staff.
3. Emergency room outcomes: Focuses on output indicators, such as the proportion of patients not admitted to inpatient care and rates of re-attendance within 72 hours resulting in admission.
4. Emergency room population: Describes the characteristics of patients treated in the ER, including visit volume, triage system in use, and age and urgency distribution across triage categories.
5. Emergency room process times: Measures key time-based indicators such as time to triage, time to treatment for specific conditions (e.g., stroke), and various dimensions of length of stay (e.g., by specialty, inpatient vs. daycare). It also includes time from treatment decision to admission.

Each indicator in the template was accompanied by a clear definition, guidance on how to report the data, and a specified measurement period, supporting consistent and meaningful data collection across diverse hospital contexts. Unfortunately, due to shifting priorities during the early stages of the COVID-19 pandemic, the planned national conference to bring together all participating emergency rooms for shared learning was not implemented.

3.4.2 Empirical setting Study 2

The second study, also addressing the first and third research questions, forms the basis for paper two and three in this thesis. The empirical setting was an integrated healthcare service involving collaboration between specialized care (one hospital) and primary care (13 municipalities) within a region serving approximately 300,000 inhabitants. The process of organizational learning across borders and silos focused on improving the patient pathway for elderly and fragile patients receiving integrated healthcare, initiated by the Regional Committee of Interaction in Healthcare. The studied

strategies and learning activities included designing the learning journey, coordinating all stakeholders, developing a prototype, conducting paper-based testing, implementing real-life testing, and evaluating the outcomes. As part of the collaborative effort in Study 2, stakeholders co-developed a new way of discharging patients from specialized to primary care, centered on reinforced patient discharge supported by enhanced dialogue through modern technologies, aimed to facilitate improved care coordination. Explained in more detail, the outcome of the organizational learning process was «a structured five-steps method for patient transfer from specialized to primary care. The steps were as follows:

1. Upon discharging the patient, the physician provides recommendations on (a) key parameters to monitor, (b) threshold values that indicate when to intervene, and (c) possible interventions to consider if the patient's condition worsens.
2. These recommendations are communicated via a digital application used by home care services.
3. Primary care staff monitor the specified parameters and intervene if signs of deterioration are detected.
4. The patient, hospital personnel and primary care personnel meet digitally to facilitate dialogue, learning and support.
5. Primary care personnel can use a chat function in the digital application for communication between specialized and primary care staff.

Currently, the participating organizations are in need of developing new technologies to further support and sustain the enhanced way of working established during the organizational learning initiative.

As the insider researcher, I was responsible for coordinating the inter-organizational learning process on behalf of the Regional Committee of Interaction in Healthcare.

3.4.3 Empirical setting Study 3

The third study was conducted in a specialized care hospital serving approximately 300,000 people. The hospital operates within a complex and resource-constrained environment, facing challenges such as increasing patient pressure, workforce shortages, and high demands for efficiency and quality improvement. Most of the leaders in the hospital are parts of patient pathways involving multiple teams, units and/or healthcare organizations in both primary and specialized healthcare.

In contrast to the first two studies, the third study did not include an improvement initiative where stakeholders co-developed an outcome through a learning process. This study explores how leadership practices interact with contextual factors to shape organizational learning, highlighting the hospital's role as a key actor in a broader healthcare network. The hospital structure includes multiple leadership levels, each responsible for balancing operational demands with long-term development and innovation. As part of Norway's specialized healthcare system, the hospital functions within a regulatory and policy framework that emphasizes quality improvement, collaboration across units, and adaptation to evolving healthcare needs.

Due to my dual role as both Head of the Department for Continuous Improvement at the hospital and as an insider researcher, I occupied a position of proximity to many of the study participants. Several respondents had prior or ongoing professional relationships with me through leadership development programs, improvement initiatives I had facilitated, or coaching and advisory roles I had held.

3.5 Data collection

This thesis draws on diverse data collected across the three studies. Studies one and two employed data triangulation to ensure depth and consistency (Flick, 2014), integrating multiple sources such as written documents (emails, reports, protocols), systematically recorded participant observations, semi-structured interviews, reflection circles, rapid circles of co-creation, and researcher reflection notes. Interviews, reflection circles, and co-creation meetings were videotaped and transcribed. Purposive sampling (Sharma, 2017) helped select key participants, documents, and interactions, minimizing bias and capturing perspectives across professions and organizations (Flick, 2014).

Study three used a distinct methodology to examine factors to learning-oriented leadership, employing focus group and individual interviews, followed by a survey. This methodological distinction allows the thesis to combine qualitative depth with quantitative insights (Creswell *et al.*, 2011; Fetters *et al.*, 2013), addressing key knowledge gaps in organizational learning and leadership in healthcare. Table 2 gives an overview of the data collection methods applied in each study. See the appended papers for more details.

Table 2. The data collection methods applied in each study

Study	Data collection methods
1	Emails (n =204), observational notes (meetings and phone calls), meeting protocols (n =2), telephone conversations (n =8), researcher reflection notes.
2	Documents (tender-related materials), meeting protocols (n =14), focus groups (n =2), qualitative interviews (n =6), rapid circles of co-creation (n =12), evaluation report (survey n =26, focus group n =15, interviews n =2).
3	Focus group interviews (n =5, 33 participants), individual interviews (n =2), survey (n =133). Cross-sectional survey (n =133).

3.5.1 Data collection Study 1

Over 1.5 years, data were collected from multiple sources, including 204 emails (2018–2019) exchanged among managers and professionals from involved emergency rooms, observational notes from a stakeholder meeting (2019), and two online meeting protocols (2019) involving researchers and an expert group. Additional data included observational notes from eight telephone conversations (2019) with emergency room managers and professionals, along with researcher reflections documented throughout the study (2018–2019). Using multiple sources in this way is consistent with recommendations for triangulation to strengthen trustworthiness and reduce bias in qualitative research (Flick, 2014; Johnson *et al.*, 2020; Stahl & King, 2020). All participants provided written consent for the use of their communications and involvement in the study.

As an insider researcher, I facilitated much of the communication and coordination in the benchmarking initiative. This included participating in stakeholder meetings, phone calls, and email exchanges, many of which I also documented and analyzed.

3.5.2 Data collection Study 2

The study utilized multiple qualitative data sources across different phases. Documents included tender-related materials (2019) outlining service agreements in specialized care. Meeting protocols

(2020–2022) captured discussions among coordinators, quality advisors, and key personnel from specialized and primary care. Two focus group interviews, conducted in the form of reflection circles (2020–2021), involved 12 professionals and researchers engaging in structured dialogues to assess and refine ongoing processes. Reflection circles are a recognized method in participatory action research for surfacing collective learning and guiding action (Coghlan & Brannick, 2009), and as a type of focus group, they stimulate interaction, co-construction of ideas, and the identification of consensus or disagreement (Krueger & Casey, 2015). Six qualitative interviews (2022) provided insights from managers, physicians, and a service designer, a method suited for capturing perspectives in organizational contexts (Flick, 2014). Rapid circles of co-creation (2023) facilitated inter-organizational learning through 12 short collaborative meetings. These were structured as a series of time-efficient, iterative sessions where stakeholders quickly exchanged feedback, tested ideas, and adjusted practices, consistent with participatory design traditions emphasizing prototyping and iteration (Spinuzzi, 2005). Finally, an evaluation report (2023) synthesized descriptive survey responses (n =26), a focus group (15 participants), and two physician interviews. The combination of surveys, focus groups, and interviews exemplifies triangulation to strengthen validity and reduce bias in applied research (Johnson *et al.*, 2020). Together, these methods integrated qualitative and quantitative insights in line with recommendations for mixed-method evaluation of improvement initiatives (Levitt *et al.*, 2018). All audio material was transcribed and all participants signed written consents.

As an insider researcher and coordinator of the inter-organizational learning process, I led meetings, documented meeting protocols, contributed to the development of tender-related materials, and was responsible for the final evaluation report.

3.5.3 Data collection Study 3

To capture diverse leadership perspectives on learning and improvement, 33 leaders from three organizational levels were recruited in spring 2024. To align with the hospital's formal hierarchy, "upper middle" refers to directors (level 2), "lower middle" to department heads (level 3), and "frontline" to unit leaders or ward managers (level 4). Five focus group interviews were conducted and transcribed verbatim, followed by two individual interviews with upper middle managers to further explore leadership-level tensions. Focus groups are well established for stimulating interaction, surfacing shared experiences, and highlighting areas of consensus and disagreement, while individual interviews allow for deeper exploration of sensitive issues (Krueger & Casey, 2015; Flick, 2014). The aim was to understand how contextual factors influence learning-oriented leadership, particularly in relation to cross-silo collaboration and non-linear challenges in healthcare. The participants signed written consents before the interviews.

In spring 2025, a complementary survey was distributed to all 238 formal leaders at the same hospital, yielding 133 responses (55.9%). The study followed Boateng *et al.*'s (2018) three-phase, nine-step procedure for scale development, adapted to an exploratory stage. Based on Wallo *et al.*'s (2024) framework, direct and indirect learning-oriented leadership behaviors were specified, items were generated, and content validity was confirmed through expert review by the researcher and four senior improvement leaders. The survey also included six background variables (age, experience, span of control, leadership level, clinical vs. staff role, and organizational level), two items on perceived improvement success within and across units, and an open-text item for general comments. Face validity was strengthened through two pilot rounds with 19 leaders. After the distribution of the survey, items were reduced using corrected item–total correlations (≥ .30) and conceptual coherence, resulting in eight subscales. Missing data were managed using multiple imputation (m = 20), and internal consistency was assessed with Cronbach's alpha. Given the exploratory aim, dimensionality

testing was deferred, and criterion-related evidence was examined through associations between subscales and perceived improvement success.

As Head of the Continuous improvement department reporting to the deputy CEO, I may have been perceived as representing top management. This position likely influenced how some participants acted and responded, a challenge discussed in more detail under 3.7.3 Quality criteria study 3.

3.6 Data analysis

In qualitative research, data analysis involves interpreting and categorizing textual or visual material to uncover both explicit and implicit dimensions of meaning-making (Flick, 2014). This process enables researchers to compare individuals, groups, or systems, identify patterns and divergences, and contribute to theory-building. In this thesis, various qualitative and quantitative methods were systematically applied across the studies to ensure methodological fit with each research question. Table 2 provides an overview of the analytical approaches used. See also the appended papers for more details.

Throughout the thesis, inductive, deductive, and abductive logics were employed in interplay, depending on each study's aim, material, and theoretical anchoring. Studies 1 and parts of Study 2 primarily relied on inductive analysis, such as constant comparative methods (Boeije, 2002) and thematic analysis (Braun & Clarke, 2006), to identify patterns and themes grounded in empirical material. However, as Braun and Clarke (2022) emphasize, analysis is rarely purely inductive; researchers inevitably bring theoretical and experiential preconceptions to the process. In this thesis, even the inductive work was somehow informed by theory, particularly expansive learning theory (Engeström, 2015, 2018) and participatory action research principles (Bradbury, 2015; Wallerstein *et al.*, 2020). This aligns with Rinehart's (2021) understanding of abductive analysis, which involves iteratively navigating between data and theory to generate new insights. Thus, abductive logic, though not always explicitly named, has underpinned much of the interpretive work across studies. Paper 4 and 5 in Study 3 has explicitly applied abductive reasoning (see the appended paper for more details).

Deductive reasoning was also employed. In Study 2, Engeström's human activity system guided a concept-driven content analysis (Mayring, 2014), enabling a focused examination of contradictions and learning processes in integrated care. In Study 3, the survey was developed from Wallo *et al.*'s (2024) framework and used to test theoretical assumptions through multinomial logistic regression.

To address research question 4, a theory-informed abductive meta-synthesis was conducted across the five appended papers. This approach builds on traditions of meta-ethnography (Noblit & Hare, 1988), thematic synthesis (Thomas & Harden, 2008), and meta-synthesis for theory development (Walsh & Downe, 2005). Rather than aggregating results, the goal was to translate and reinterpret findings across studies, generating higher-order insights. Guided by abductive reasoning (Timmermans & Tavory, 2012), this analysis moved iteratively between empirical patterns and theoretical frameworks, primarily expansive learning theory (Engeström, 2015, 2018), learning-oriented leadership (Wallo *et al.*, 2024), and research on organizational learning in fragmented healthcare systems (Overton *et al.*, 2023; Greenhalgh & Papoutsi, 2018). The resulting conceptual model integrates contextual conditions, organizational network architectures, collaborative learning, and leadership practices. This process reflects Doyle's (2003) call for meta-syntheses that support both theoretical refinement and practical application. First, relevant studies were selected: all five papers were included based on their empirical focus on organizational learning in healthcare systems. Key findings and concepts from those five papers were then extracted, drawing on both original themes

and theoretically sensitized categories. Through iterative analysis, core themes were identified across the studies. This phase involved an abductive process of moving back and forth between empirical findings, theoretical frameworks like expansive learning theory (Engeström, 2015, 2018), learning-oriented leadership (Wallo *et al.*, 2024), research on fragmented healthcare settings (Overton *et al.*, 2023; Greenhalgh & Papoutsi, 2018), and emerging interpretations. This abductive process involved iterative movement between empirical findings and theoretical frameworks, allowing emerging patterns in the data to challenge, refine, or extend existing concepts. Rather than merely confirming pre-established theories, the analysis sought the most plausible explanations for observed phenomena by juxtaposing unexpected findings with theoretical insights. Through this back-and-forth reasoning, the research uncovered novel linkages and contributed to the theoretical refinement of key elements of a model for supporting organizational learning in healthcare systems.

The themes were then translated across contexts and study designs, allowing reinterpretation of findings in light of each other and in dialogue with theory. This process supported the development of a higher-order synthesis, where individual findings were integrated into broader conceptual patterns. Finally, this synthesis was expressed as a conceptual model that links contextual conditions, organizational network architectures, collaborative learning, and leadership practices, offering a theoretically grounded and practically relevant contribution.

Section 3.7, Quality criteria elaborates the strategies used to ensure trustworthiness in analysis while acknowledging the productive role of theoretical sensitivity in abductive inquiry.

3.6.1 Data analysis Study 1

Inductive constant comparative analysis (Boeije, 2002) was employed to uncover patterns of activities among the involved actors during the inter-organizational learning process, focusing on the design and execution of measurements in the voluntary benchmarking initiative for learning and improvement. The primary aim was to identify and analyze the procedural steps and significant instances of inter-organizational learning occurring throughout the process.

The analysis followed five iterative steps. Initially, the data were read and re-read to develop a comprehensive understanding of the work process and the inter-organizational learning activities in action. Next, the data were reviewed to create typologies and to visualize the work procedure using Spinuzzi's three-step participatory design method (Spinuzzi, 2005). During this step, patterns emerged, such as identifying specific actions associated with different phases of the process. For instance, the discovery phase was characterized by creative design activities, including feedback on the first version of the uniform template for measuring emergency room performance.

Subsequently, the data were re-read and cross-referenced with the visualized model to refine the understanding of iterations among the actors. This iterative process allowed for continuous adjustments to both the visualized work procedure and the identification of when and how inter-organizational learning occurred. The final step involved a comprehensive comparison of all analysis stages to revise (a) the procedural steps and (b) the timing and mechanisms of inter-organizational learning during each phase of the process, culminating in an enhanced depiction of actor involvement and learning activities at each phase and step of the inter-organizational learning process.

This analytical approach facilitated a detailed understanding of the roles, activities, and learning dynamics within the inter-organizational learning process. Visualizing the learning process (see paper 1) proved to be a critical tool in organizing and interpreting the data. However, the process was time-intensive, complex, and susceptible to subjectivity and bias. To mitigate these risks, the analysis was

conducted with a strong emphasis on maintaining objectivity when identifying patterns related to stakeholder activities and interactions.

3.6.2 Data analysis Study 2

The analysis of study two was conducted through two complementary approaches, each designed to address distinct aspects of the research questions while collectively offering a comprehensive understanding of organizational learning across borders and silos in the context of integrated healthcare. Together, these analyses provide nuanced insights into the processes, structures, and strategies that support organizational learning across borders and silos in the complex environment of healthcare.

The first phase employed a deductive concept-driven content analysis (Mayring, 2014) grounded in Engeström's human activity system model. This approach aimed to examine the integrated healthcare system as a single human activity system, encompassing specialized and primary care units within the integrated care service. Recognizing the significance of selecting the unit of analysis, as highlighted by Graneheim and Lundman (2004), this study treated the integrated system as a cohesive entity, offering novel perspectives on dynamics of organizational learning across borders and silos within integrated healthcare. The analysis followed Mayring's (2014) structured seven-step procedure for deductive category formation, which involved formulating research questions, defining theoretical categories, and developing coding guidelines. Data from five sources were systematically reviewed, labeled, and coded according to the elements of Engeström's model, such as subject, tools, object, rules, community, and division of labor. To address the potential limitations of deductive approaches, additional "left-over" data - material not fitting the original theoretical framework - were examined and integrated, leading to a discussion of if the model of the human activity system could be developed to account for shared leadership as a novel element of organizational learning in the context of integrated healthcare. The dynamic, iterative analysis involved continuous refinement of categories and triangulation of data across sources to ensure accuracy and depth, resulting in a visualization of the revised activity system model.

The second phase utilized inductive thematic analysis (Braun and Clarke, 2006, 2022) to explore themes, categories, and subcategories emerging from the data, with a particular focus on identifying strategies and learning actions that support organizational learning across borders and silos within the integrated healthcare setting. Following Braun and Clarke's (2006, 2022) methodology, this approach systematically organized and described the data while allowing patterns to emerge directly from the material. Initial familiarization with the data was followed by systematic coding, clustering, and the generation of potential themes and categories. These themes were reviewed and refined in relation to the coded extracts and the broader dataset, resulting in clear definitions and thematic maps. This analysis highlighted the importance of organizational network architectures in facilitating organizational learning across borders and silos in integrated healthcare, identifying key barriers and enablers rooted in the complexity of healthcare systems. The findings informed the selection of relevant theoretical frameworks, including Engeström's expansive learning theory (Engeström & Pyörälä, 2021; Engeström & Sannino, 2021), research on barriers to organizational learning across borders and silos in integrated healthcare (Buch *et al.*, 2018; Gustavsson & Halvarsson Lundkvist, 2023; Cresswell *et al.*, 2023; Lalani *et al.*, 2020), and organizational network architectures (Fjeldstad *et al.*, 2020; Easterling *et al.*, 2022; Seid *et al.*, 2021).

Study 2 exemplifies the previously mentioned abductive process, particularly in how surprising empirical patterns led to interesting insights regarding theory or how labels from research previously

known by the researchers arose naturally when coding data. Section 3.7.2 Quality criteria study 2 addresses actions taken to reduce the influence of researcher's assumptions on the analytical process.

3.6.3 Data analysis Study 3

Study 3 draws on two complementary datasets: qualitative interviews and a cross-sectional survey of hospital leaders. The qualitative data from the interviews were analyzed through thematic analysis following Braun and Clarke (2006, 2022) to identify and interpret patterns in qualitative data, enabling a nuanced understanding of how leaders navigate contextual challenges in healthcare. The process involved inductive coding, theme development, and iterative refinement, supported by co-coding, peer discussions, and member checks to ensure analytical rigor. Four main themes were identified, and their dynamic interrelations were visualized in a thematic map. While the coding began inductively, the analysis evolved abductively (Rinehart, 2021; Timmermans & Tavory 2012), integrating theoretical frameworks to develop plausible explanations and refine understandings of learning-oriented leadership as contextually embedded practice.

The data from the cross-sectional survey of hospital leaders were analyzed using descriptive statistics that summarized respondent characteristics and subscale distributions (Field, 2018). Multiple linear regressions (Tabachnick & Fidell, 2019) examined associations between the eight learning-oriented leadership subscales and leaders' perceived improvement success within their own unit and across organizational boundaries. A MANCOVA tested whether the three overarching leadership behaviors related differently to improvement within and across units. To contextualize the quantitative results of the survey, open-text responses (n = 23) were analyzed inductively using thematic analysis (Braun & Clarke, 2006, 2019). Meaning units were coded without predefined categories and refined into five overarching themes describing systemic conditions shaping learning-oriented leadership. Qualitative insights were used to enrich interpretation of the statistical findings (Creswell & Plano Clark, 2018). Abductive reasoning logic (Timmermans & Tavory, 2012), allowed the study to move iteratively between empirical findings and theoretical perspectives.

The combination of thematic analysis and exploratory regression allowed for a more nuanced understanding of learning-oriented leadership in hospitals. While the qualitative data provided rich, contextual insights, the quantitative analysis offered a broader perspective on how structural variables may relate to leadership practices. This mixed-methods approach reflected a pragmatic research logic (Venkatesh *et al.*, 2013), and allowed different forms of evidence to inform the study's understanding of leadership and learning in complex healthcare systems.

3.7 Quality criteria

The participatory and insider nature of this research enhances its relevance, access, and practical impact, while also requiring particular attention to rigor, reflexivity, and transparency (Coghlan and Shani, 2014). As an industrial PhD candidate and Head of the Department of Quality Improvement at one of the studied hospitals, I held a dual role that provided privileged access to data, stakeholders, and ongoing improvement processes across organizational levels and care sectors. This position enabled a deep contextual understanding and facilitated trust-building, which was essential for participatory engagement and for capturing the complexity of organizational learning across borders and silos and leadership practices. At the same time, the insider position required continuous critical reflection to reduce bias and strengthen the degree of findings grounded in data rather than influenced by organizational loyalties or managerial perspectives.

To strengthen rigor and trustworthiness, the study applies established quality frameworks. It integrates the stepwise approach to rigor in qualitative research developed by Johnson *et al.* (2020) with four key trustworthiness criteria outlined by Stahl and King (2020): credibility, transferability, dependability, and confirmability (Table 3). Credibility was strengthened by aligning research questions with real-world observations and refining them through theoretical exploration. Transferability was supported by detailed contextual descriptions and by clearly outlining challenges relevant to healthcare organizations. Dependability was addressed through regular dialogue with supervisors and co-authors, and through triangulation of data sources comparing patterns and themes across different sources during analysis (see Sections 3.7.1 and 3.7.2 for more details). This allowed for the

Table 3. Steps taken to ensure rigor and trustworthiness - overall level

Criteria	**Identifying topic**	**Qualitative study design**	**Data analysis**	**Drawing valid conclusions**
Credibility ***(How congruent are the findings with reality?)***	Purpose and research questions (RQs) were shaped by real-life observations (e.g., benchmarking, inter-organizational learning). Refined through theoretical exploration.	A robust conceptual framework (Engeström's expansive learning) aligned with a constructivist paradigm. Best practices ensured rigor.	Systematic data collection from diverse sources. Rigorous analysis (coding, categorization, triangulation) ensured validity.	Results were compared to existing theories. Practical recommendations and a revised activity system model were developed.
Transferability ***(How applicable are the results to other contexts?)***	Purpose, RQs, and barriers were clearly defined to aid applicability.	Thick descriptions provide context for assessing relevance.	Transparent analysis enables readers to judge transferability.	Clear links between data, conclusions, and existing research support adaptation to other contexts.
Dependability ***(How did the researcher apply practices that produce trust during the research process?)***	Purpose, RQs, and framework discussed with peers, co-authors, and supervisors.	Study design reviewed and refined through discussions with supervisors.	Analysis refined through supervisor input and peer review.	Participatory approach ensured collaborative validation of conclusions. Stakeholder reflection circles ensured iterative learning.
Confirmability ***(How close does the objective reality get to the research?)***	Researchers reflected on biases. An external researcher provided alternative perspectives.	Reflexivity and participant involvement minimized bias.	Strict adherence to methods, avoiding preconceptions. External researcher challenged data classification.	Reflexivity, participant involvement, and external validation minimized bias. External researcher challenged interpretations to ensure data-driven conclusions.

identification of converging and diverging perspectives, enhancing the robustness of the findings. Confirmability was upheld by practicing reflexivity throughout the research process and by involving an external researcher to review and challenge classifications, interpretations, and conclusions.

Furthermore, the "Three Rs" framework for participatory research (Balazs & Morello-Frosch, 2013), relevance, rigor, and reach, served as a guiding lens. The research was initiated in response to identified needs from top hospital leadership and regional healthcare actors. My position allowed for close alignment of research objectives with ongoing improvement efforts, supporting practical relevance. Rigor was strengthened through diverse data sources, systematic analysis methods, and methodological transparency. Reach was demonstrated through dissemination at academic conferences and stakeholder engagement, with practical uptake by managers and facilitators.

The implications of the insider position are reflected and addressed in each of the three study-specific sections below.

3.7.1 Quality criteria study 1

The relevance of Study 1 was strengthened through its grounding in a real-world challenge identified by the senior hospital leaders, who initiated the voluntary, learning-oriented benchmarking process to improve emergency care. The research purpose and questions were developed in response to these practical concerns and further refined in dialogue with frontline stakeholders and co-authors/supervisors, ensuring alignment with both organizational priorities and scholarly aims.

As the facilitator of the benchmarking initiative and insider researcher, I coordinated communication and process development from beginning to end. My active role granted privileged access to informal interactions, many of which were documented and later used as data. This contributed to the study's credibility by ensuring close alignment to real-world challenges in benchmarking of emergency care services, like contextual differences in patients' needs and cooperating services. However, this dual role also introduced risks such as role confusion, over-identification with managerial perspectives, and reduced critical distance. These were mitigated through systematic triangulation of data, e.g. 204 emails, meeting notes, phone call summaries, personal reflections, and by refining research questions iteratively with co-authors and theory. Patterns were validated with stakeholders and resulted in a visualized benchmarking model, enhancing both empirical grounding and practical relevance.

Transferability was supported by detailed contextual descriptions of the benchmarking process and emergency room collaboration, allowing others to assess relevance to similar initiatives. Dependability was strengthened through careful documentation of the research process, including rationale for design choices and methods. Confirmability was addressed by ongoing reflexive writing and external review by co-authors who challenged my interpretations and supported conclusions were grounded in data, more than influenced by my position.

3.7.2 Quality criteria Study 2

The relevance of Study 2 was grounded in real-world challenges identified by the Regional committee for interaction in healthcare, composed of senior leaders and key personnel from all 14 participating organizations. As insider researcher and coordinator of the process of organizational learning across borders and silos, I was closely involved in addressing these challenges, enabling the research to stay tightly aligned with practical needs. The study's purpose and questions were co-developed with co-

authors, two insiders and one external researcher, and stakeholders based on shared experiences, ensuring strong relevance to ongoing improvement efforts in integrated care.

My role as an insider enabled access to real-time organizational processes, which informed the development of a five-step discharge prototype for the discharge of fragile, elderly patients from specialized to primary care. The credibility of the study was reinforced through a theory-informed design grounded in Engeström's expansive learning. Triangulation of diverse data types, including reflection circles, interviews, and rapid co-creation meetings, ensured a broad empirical base. Analytic rigor was supported through the integration of deductive content analysis and inductive thematic analysis, resulting in empirically based identification and strategies and actions for organizational learning across borders and silos in integrated healthcare services.

Transferability was supported by thick descriptions of the integrated care setting and detailed documentation of the discharge prototype and learning actions, helping readers judge applicability. Dependability was enhanced by sustained collaboration with co-researchers and stakeholders through iterative feedback loops and reflection rounds, strengthening the trustworthiness of the analysis. Confirmability was strengthened by explicit reflexivity and validation from an external researcher/supervisor who critically reviewed data classification and interpretation, helping to balance the dual role of practitioner and researcher.

3.7.3 Quality criteria Study 3

Unlike the first two studies, Study 3 was not tied to a specific improvement initiative but explored leadership practices within a large, complex hospital system. As Head of the Department of Quality Improvement, I held a central position and had pre-existing relationships with several participants. This insider role enabled rich contextual understanding of factors influencing learning-oriented leadership but also introduced risks to credibility, such as social desirability bias and perceived power asymmetries during interviews.

These risks were addressed through explicit reflexivity, anonymous survey design, and a structured, collaborative interview process. Research questions were co-developed with co-authors, stakeholders from the hospital, and a senior-level colleague with deep knowledge of hospital leadership, and refined in dialogue with theory to focus on contextual influences. Both the insider researcher and the colleague conducted interviews and independently analyzed transcripts, allowing for comparison and validation of interpretations. While not intervention-based, the study was grounded in system-wide leadership realities and offers transferable insights for leadership development. Dependability was supported through iterative piloting of the survey instrument, peer debriefing, and regular supervisor input. Confirmability was reinforced through transparent methods and critical review by external collaborators, ensuring analytical distance.

3.8 Integration of studies, research questions, theoretical framing, and methods

The theoretical and methodological framing of this thesis developed in close interplay with the practical challenges encountered in the fragmented healthcare systems studied. While the studies draw on multiple theoretical perspectives, these were not preselected to guide the research design or site selection. Rather, the initial studies were driven first and foremost by the needs of the healthcare organization under study, and the opportunity to explore ongoing improvement efforts in real-world contexts. In this sense, the research was practice-initiated, not theory-led.

Studies 1 and 2 were designed in response to specific needs within the healthcare system, with settings and questions shaped through collaboration with stakeholders. During these studies, it became clear that improvement efforts across organizational boundaries relied heavily on collaborative leadership and collaborative learning processes. These insights laid the groundwork for Study 3, which was developed with input from stakeholders and aimed to explore the leadership dimensions of learning more systematically.

As the research evolved, theoretical perspectives were brought in to deepen understanding and support synthesis, rather than to impose a priori analytical structure. Research on the complexity of fragmented healthcare systems (e.g. Greenhalgh & Papoutsi, 2018) and organizational network architectures (e.g. Fjeldstad *et al.*, 2020) were introduced early in the kappa (the cover essay/synthesis) to support a systemic interpretation of the settings and to provide conceptual grounding for understanding fragmentation, interdependencies, and coordination challenges. These frameworks justified the choice of participatory action research and qualitative-dominant mixed-methods, which aligned well with the adaptive, collaborative nature of the empirical fieldwork.

Expansive learning theory (Engeström, 2015; Engeström & Sannino, 2021) was used as the primary analytical lens to conceptualize learning in fragmented healthcare systems. It informed how contradictions, historical trajectories, and transformative potential were analyzed, particularly in Studies 1 and 2. Its relevance became more pronounced as the research progressed and the need to conceptualize learning across levels and organizations became clear.

The learning-oriented leadership framework (Wallo *et al.*, 2024), in contrast, was introduced abductively in response to findings from the earlier studies. As leadership emerged as a key factor influencing the success of learning initiatives, particularly in cross-boundary contexts, the third study focused more explicitly on this dimension. Here, leadership theory provided a vocabulary and framework for analyzing how contextual factors affected learning-oriented leadership in fragmented healthcare systems.

In sum, the theoretical frameworks and methodological choices in this thesis evolved through mutual reinforcement rather than linear design. Theories were used differently, some to guide analysis, others to support synthesis, and still others to refine emerging insights. This abductive, context-sensitive approach allowed the thesis to remain grounded in the lived complexity of healthcare improvement while contributing theoretical insights at the system level.

3.9 Ethical considerations

In accordance with Flick's (2014) checklist for addressing ethical considerations in qualitative research, potential ethical dilemmas related to participant rights and the prevention of harm were carefully reviewed in consultation with the Research department at the hospital where the research took place. Based on this review, the Research department decided that approval from an ethical committee was not required for any of the studies. All participants that were part of interviews and recordings provided written consent for their involvement and the processing of their data, with personal information handled and stored in compliance with relevant laws and regulations. While not mandated by regulatory requirements, information about the research project was also shared verbally during meetings and through personal discussions between researchers and stakeholders from the various healthcare organizations involved in the improvement initiatives. Additionally, the research projects were presented to and discussed with a selection of stakeholders to ensure transparency and inclusiveness.

In addition, the respondents were invited to fill in the anonymous survey and were informed of how data was going to be collected and saved in accordance with relevant laws and regulations.

As the researcher held an insider role within the organization, particular attention was given to transparency and the management of potential role-related biases. Reflections on the implications of this dual role are already addressed in Sections 3.4 (Empirical Setting), 3.5 (Data Collection), and 3.7 (Quality Criteria).

4. SUMMARY OF APPENDED PAPERS

As presented in Figure 3, the three studies resulted in five papers. The first paper examines benchmarking as a tool for inter-organizational learning, while the second and third papers investigate shared leadership and key practices supporting organizational learning across borders and silos in integrated healthcare. The fourth and fifth papers examine leadership factors. Together, these studies offer an understanding of how healthcare organizations can foster collaboration, adaptability, and continuous improvement across silos. Table 4 gives a short summary of the five papers. In the following, more details on each paper are presented.

Table 4. A short summary of the five papers

No	Purpose	Setting	Sample and Analysis	Findings
1	Examining conditions for inter-organizational learning through benchmarking.	13 Norwegian ERs	Documents, emails (n =204), protocols (n =2), calls (n =8), observations/Constant comparative analysis.	Stakeholder participation, dialogue, and facilitation enabled learning. A benchmarking work procedure was developed.
2	Understanding organizational learning processes across borders and silos in integrated healthcare.	One hospital, 13 municipalities (RCIH-led).	Documents (192 pp), protocols (n =14), reflection circles (n =2, 13 participants), interviews (n =6)/ Deductive content-driven concept analysis.	Validated Engeström's model of the human activity system and proposed collaborative leadership as a key element for organizational learning in integrated healthcare.
3	Identifying strategies and learning actions that support organizational learning across borders and silos in integrated healthcare.	Same as Paper 2.	Documents, protocols, reflection circles (n =2, 13 participants), interviews (n =8), co-creation meetings (n =12, 24 participants), survey (n =26), focus group (n =15)/Inductive thematic analysis.	Identified five key characteristics of network architecture and five learning actions supporting organizational learning in integrated healthcare.
4	Examining contextual factors on learning-oriented leadership.	A large Norwegian hospital.	Focus groups (n =5, 33 leaders), interviews (n =2)/Inductive thematic analysis.	Identified key contextual factors to learning-oriented leadership.
5	Learning-oriented leadership in fragmented healthcare systems: an exploratory study	Same as Paper 4.	Survey (n =133/55.9% responses)/Scale development, multiple linear regression analysis, descriptive statistics inductive thematic analysis, and abductive reasoning.	Identified relationships between leadership behaviors and healthcare improvement in and across organizational silos, and proposed areas for contextualization of the leadership framework.

4.1 Paper 1: Promoting organizational learning facing the complexity of public healthcare: How to design a voluntary, learning-oriented benchmarking

This paper explores how a voluntary benchmarking initiative can promote collective organizational learning across fragmented emergency services. Drawing on a participatory design approach, the study examines the development of a shared measurement framework co-created by emergency room leaders, expert advisors, and a facilitator. Through analysis of documents, emails, and observational material, the study finds that stakeholder involvement, contextual relevance, and iterative refinement were central to fostering learning. The process of developing and negotiating indicators contributed to a deeper understanding of contextual differences, alignment of practices, and shared problem framing. The findings show that benchmarks are not simply tools for performance comparison but can become mechanisms for cross-boundary dialogue and learning when collaboratively developed. By demonstrating how benchmarking can be reimagined as a participatory and adaptive learning process, this paper contributes to the thesis by identifying a set of interconnected learning actions that supported organizational learning across 13 hospitals.

4.2 Paper 2: Breaking silos and crossing borders: A Norwegian case of inter-organizational learning for improvement of healthcare

This paper investigates how inter-organizational learning can be supported in integrated care initiatives, using a case study of collaboration between one hospital and thirteen municipalities aimed at improving care pathways for elderly patients. The study draws on extensive documentation, interviews, and reflection circles to analyze how actors worked across traditional sector boundaries, analyzed by deductive content-driven concept analysis. The findings demonstrate how Engeström's model of the human activity system can be usefully applied to interpret collaborative learning in the specific context of integrated healthcare, but also propose a contextual extension: shared leadership, enacted through a stable organizational network architectures, was critical to binding the participating institutions together. The paper shows how this leadership structure enabled participants to confront contradictions in care transitions and jointly develop more effective pathways. By highlighting the role of shared leadership in facilitating organizational learning across borders and silos in fragmented healthcare systems, this paper contributes to the thesis by refining theoretical models of learning in fragmented healthcare systems and illustrating how structural conditions can be actively shaped to support improvement across sectors.

4.3 Paper 3: Inter-organizational learning and innovation in healthcare: Strategies and practices supporting improvement of integrated healthcare

This paper builds on the case introduced in Paper 2 and investigates how strategies and learning actions enabled organizational learning across borders and silos in the regional effort to improve healthcare integration. Through inductive thematic analysis of interviews, reflection sessions, co-creation workshops, and other materials, the study identifies core characteristics of the network architecture and concrete learning practices. These include fostering equality among partners, coordinating decision-making, and recognizing each actor's unique expertise, alongside iterative practices such as problem exploration, contradiction analysis, and prototyping. The findings suggest that successful organizational learning across borders and silos in fragmented healthcare systems requires both structural arrangements and deliberate, participatory learning actions. By offering empirically grounded design principles for building organizational networks binding all involved actors together, the paper contributes to the thesis by deepening the understanding of how integrated healthcare improvement can be practically and collaboratively enacted in complex, multi-actor environments.

4.4 Paper 4: Contextual factors affecting leadership for learning and improvement in healthcare

This paper examines factors to learning-oriented leadership in a large hospital setting, with a focus on the challenges posed by complexity. Based on focus groups and interviews with hospital leaders, the study identifies four core contextual factors: multiple external drivers for change, diverse stakeholders, unpredictability in daily operations, and limited organizational resources. These findings highlight the tension leaders face between immediate demands and long-term improvement goals, and show how leadership for learning in fragmented healthcare systems is deeply intertwined with the structural and cultural environment. The study underscores the importance of adaptive, trust-building leadership that supports cross-silo collaboration and iterative learning processes. By analyzing how contextual factors shape leadership behavior, the paper contributes to the thesis by providing a more grounded and situational understanding of what learning-oriented leadership entails in complex healthcare systems.

4.5 Paper 5: Learning-oriented leadership in fragmented healthcare systems: an exploratory study

This paper explores how hospital leaders enact learning-oriented leadership and how such behaviors relate to healthcare improvement within and across organizational units in fragmented healthcare systems. Using a quantitative-dominant mixed-methods design, data were collected through a cross-sectional survey of 133 leaders at a large Norwegian hospital, including an open-text item for qualitative comments. In relation to scale development, the results show acceptable internal consistency across eight leadership subscales (α = .53–.74). Regression analyses explained 20–24% of the variance in perceived healthcare improvement and identified three key leadership behaviors: providing support, building a climate for learning, and facilitating knowledge dissemination. While interpersonal behaviors were frequently practiced, systemic and cross-boundary behaviors were more strongly associated with collaborative improvement. Qualitative findings revealed that wide spans of control, limited autonomy, silos, and resource constraints hinder learning-oriented leadership. The study proposes contextualizing the learning-oriented leadership framework by emphasizing leadership behaviors that manage span of control, build infrastructures connecting silos, and promote shared learning across boundaries.

5. RESULTS

This chapter presents the main findings related to the first three research questions. While the first two studies generated concrete outcomes in the form of a template for benchmarking of emergency rooms and a five-step procedure for transferring frail, elderly patients from specialized to primary care (see Sections 3.4.1 Empirical setting Study 1, and 3.4.2 Empirical setting Study 2), the focus here is not on the outcomes of the organizational learning processes, but on the learning processes that enabled them. In line with the analytical scope of the thesis (see Section 1.4 Delimitation), emphasis is placed on the dynamics, actions, and patterns of the organizational learning process that ultimately led to the outcome.

Research question 4, which concerns the development of a conceptual model for supporting organizational learning in healthcare, is addressed in the discussion chapter. This is because research question 4 is not answered by a single study, but through a synthesis of insights from all five papers. Placing these findings in the discussion allows for a more integrated, theory-informed interpretation based on abductive reasoning and cross-study analysis (see Section 3.6 Data analysis).

5.1 RQ1: What strategies can support organizational learning across fragmented healthcare systems?

The findings from Papers 1 through 3 identify a set of interrelated strategies that support organizational learning across fragmented healthcare systems. These strategies are not isolated actions, but unfold as patterns in decision-making, interaction, and collaboration over time, in line with what Mintzberg (1978) describes as a "pattern in a stream of decisions" (p. 935). Across the three studies, four core elements consistently underpin strategies that can support organizational learning across fragmented healthcare systems: (1) the deliberate design of organizational network architectures that create space for shared reflection, coordination, and co-creation, (2) the exercise of collaborative leadership that enables inclusive participation, (3) participation from frontline professionals, and (4) the iterative refinement of ideas and prototypes through dialogical exchange and mutual responsiveness, akin to a reciprocal process rather than a linear transfer of tasks.

Together, these strategies seem to respond to the challenges of fragmentation not by imposing centralized control, but by building relational and structural conditions for collective sensemaking and adaptive learning. The following sections present these findings in greater detail, beginning with the role of network architectures in supporting organizational learning across borders and silos, followed by the leadership practices that made these structures function effectively in practice.

5.1.1 Organizational network architectures

Papers 1 through 3 highlight how organizational network architectures played a critical role in supporting organizational learning across borders and silos in fragmented healthcare systems. These architectures, whether temporary initiatives or formalized governance structures, created arenas for cross-boundary dialogue, collaborative problem-solving, and collective organizational learning.

In Paper 1, the benchmarking initiative was developed to improve quality in emergency room services. The participatory process relied on three main forms of involvement: (1) Management involvement through directors from 13 emergency rooms, who contributed local perspectives and data; (2) Expert advisors, a group of senior professionals who synthesized input and shaped indicator development;

and (3) Facilitator competence, provided by a designated facilitator who coordinated the overall process and structured the learning phases. The initiative progressed through iterative co-design cycles structured in three phases: exploration, discovery, and prototyping. These structures enabled collective sensemaking by creating deliberate arenas for reflection, negotiation, and shared analysis. Through regular dialogue between emergency room directors, the expert group, and the facilitator, participants could surface and reconcile different understandings of quality, contextual priorities, and structural constraints. The participatory setup ensured that communication was not only top-down or data-driven, but dialogical, allowing actors from different emergency rooms to compare practices, question assumptions, and jointly construct meaning. This iterative exchange fostered a shared language around benchmarking and built agreement on which indicators were meaningful, feasible, and actionable across diverse local settings. As the facilitator, I played a key role in moderating these processes, synthesizing input, and guiding the group through phases of exploration, discovery, and prototyping. In this way, the structural design did not just coordinate activities, but also actively enabled a learning process that was inclusive, context-sensitive, and oriented toward collective ownership of the benchmarking model.

Paper 2 focuses on the Regional committee for interaction in healthcare, the formalized organizational network architecture composed of higher-ranked leaders from both hospitals and municipalities. The network held a clear regional mandate, given by the health authorities, to improve fragmented healthcare systems in the region. It served as the primary coordination body for the organizational learning initiative across borders and silos. Within the network, a subcommittee of multidisciplinary advisers and healthcare professionals representing the involved parties was established to oversee the development of the new and better way of working designed to improve hospital discharge processes (see Section 3.4.2 Empirical setting Study 2). The network structured its work through joint planning, resource coordination, and shared ownership of the learning process. Its structure also included scheduled workshops and co-creation sessions for involved frontline personnel from all involved parties, during which stakeholders from the involved services collaboratively designed and tested interventions aimed at resolving common challenges such as poor discharge documentation and fragmented follow-up.

Building on this, Paper 3 further analyzes the committee's organizational design and identifies key characteristics of its network architecture. The committee was composed of higher-ranked leaders from multiple sectors who engaged not only in planning and coordination but also in facilitating learning processes. Its design was grounded in principles of equality, mutual goals, and recognition of diverse expertise, which contributed to building trust and reinforcing interdependence. The committee emphasized collective decision-making, and leadership was exercised as a shared responsibility across actors. Learning and improvement activities were carried out in rapid co-creation cycles, which allowed the committee to test, adapt, and refine strategies in response to emerging needs.

The committee also employed external service designers, whose involvement expanded the competence base and supported co-creation through participatory design methodologies. Visual storytelling tools and narratives were used to ensure that both participants and those not directly involved remained informed and engaged. This attention to inclusive communication contributed to sustaining engagement and aligning perspectives across organizational boundaries.

Across all three papers, I held facilitative roles that supported these network architectures. In Paper 1, I acted as the benchmarking facilitator, organizing the process and guiding participatory development. In Papers 2 and 3, I served as advisor and coordinator for the committee and its subcommittee. These

roles were instrumental in managing communication, ensuring continuity, and maintaining a structure that enabled collaborative learning.

Taken together, the empirical material demonstrates that well-designed organizational network architectures, featuring collaborative leadership, formalized coordination, participatory processes, and facilitation, were central to enabling organizational learning across borders and silos in this complex healthcare setting. These structures supported not only technical coordination but also the development of trust, alignment of goals, and collective capability for change, all of which were necessary for sustaining learning and improvement across professional and organizational boundaries.

Moreover, the establishment of such networked structures can be interpreted as a strategic response to fragmentation in the healthcare system. Rather than attempting to resolve complexity through centralized control, the initiatives examined in Papers 1 through 3 illustrate how distributed, participatory architectures can provide the relational and infrastructural conditions necessary for sustained organizational learning across borders and silos in fragmented healthcare systems. In this sense, organizational network architectures can be not only mechanisms for coordination but also intentional designs for learning, enabling actors to work collaboratively across institutional divides, make sense of shared challenges, and iteratively develop new practices and solutions.

5.1.2 Collaborative leadership across stakeholders

The relationship between organizational network architectures and collaborative leadership in the findings was one of mutual reinforcement. Collaborative leadership emerged through and was enabled by the structural conditions created by the network architectures, while at the same time, these architectures depended on collaborative leadership practices to function effectively and sustain learning across organizational boundaries. In the following, the empirical findings from Papers 1–3 are synthesized to illustrate how collaborative leadership was exercised within these settings.

The term collaborative leadership is adopted in this thesis to capture a pattern of leadership practices observed consistently across Paper 1–3: leadership practices that fostered shared ownership, mutual accountability, and collective learning across professional, organizational, and hierarchical boundaries. While the individual papers use varying terminology such as networked leadership, facilitative roles, or shared decision-making, comparison of the papers reveals this recurring set of leadership behaviors that transcend formal authority and instead emphasize co-creation, boundary-spanning, and collective responsibility for learning and improvement.

In Paper 1, collaborative leadership was expressed through the facilitation of the learning-oriented benchmarking process. Although the facilitator role was prominent, the process also depended on shared ownership among participants and a commitment to refining tools and practices through dialogue and reflection. Leadership here was not located in a single actor but emerged through a distributed interplay of facilitation, professional expertise, and joint problem-solving.

In Papers 2 and 3, these patterns were even more explicit. The committee's members jointly built shared goals, provided and organized resources, designed participatory and collaborative learning processes, and made shared decisions when called for. Through iterative co-creation cycles, stakeholder workshops, and reflective spaces, leadership was exercised relationally, enabling cross-sector learning under complex and unpredictable conditions. The responsibility for enabling learning and improvement was shared, not concentrated in individuals or roles, reflecting the very essence of collaborative leadership as defined above.

The results from the three papers support the decision to consolidate these patterns under the term collaborative leadership. It reflects a relational and systemic orientation to leadership observed empirically, rather than imposing a priori concepts. Collaborative leadership is therefore used throughout the thesis to denote leadership as a practice of enabling collective learning across organizational, professional, and hierarchical boundaries in fragmented healthcare systems.

Paper 2 suggests that these findings motivate am expansion of Engeström's model of the human activity system (Engeström, 2015, 2018) to explicitly integrate leadership across stakeholders as a critical element in expansive learning in integrated care (Figure 6). These results indicate that collaborative leadership is a critical mechanism for enabling systemic learning in fragmented healthcare systems. Rather than defining leadership solely by position or authority, the thesis emphasizes the capacity to mobilize others toward shared goals through inclusive, reflective, and adaptive practices. See appended papers for a more detailed discussion of the proposal to expand the human activity system model for use in integrated care contexts.

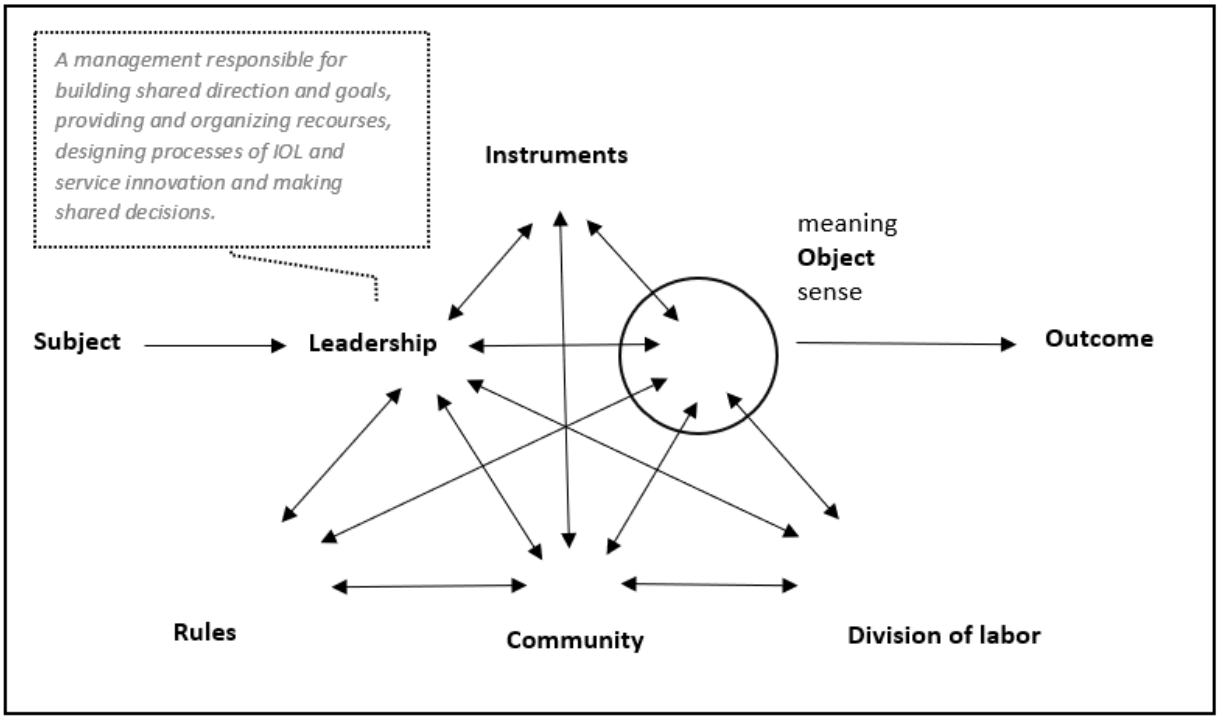

Figure 6. The activity system for formal processes of inter-organizational learning and service innovation in integrated healthcare (from Lørum et al., 2023, appended paper)

In sum, the findings indicate that strategies capable of supporting learning across fragmented healthcare systems are those that deliberately cultivate relational infrastructures and shared practices. Rather than relying solely on top-down directives or isolated initiatives, the studies suggest that it is the combination of collaborative leadership and well-designed network architectures that creates the conditions for participatory and iterative organizational learning in fragmented healthcare systems. These strategies work by enabling inclusive participation, fostering mutual accountability, and facilitating iterative development across institutional boundaries. As such, they represent not just structural or procedural tools, but dynamic approaches to organizing learning in ways that align with the complexity and interdependence of modern healthcare systems.

5.2 RQ2: What learning actions can support organizational learning across fragmented healthcare systems?

In alignment with Engeström and Kerosuo's (2007) view of learning actions as deliberate efforts by human activity systems to interrogate contradictions, redesign models, and expand possibilities for action, this thesis identifies a set of structured, participatory learning actions enacted across diverse healthcare settings. These actions created arenas for professionals to reflect, interact, and collectively develop new practices in response to the systemic fragmentation and complexity that characterize healthcare systems.

In Paper 1, the benchmarking initiative involving 13 emergency rooms was structured as a participatory, iterative process across three distinct phases: exploration, discovery, and prototyping. In the exploration phase, a series of expert dialogues were initiated between the facilitator and senior clinicians from participating sites. These dialogues surfaced variations in patient populations, staffing models, treatment practices, and documentation routines. Through document analysis and professional exchange, an expert group co-developed a preliminary benchmarking template designed to reflect both shared goals and local realities.

During the discovery phase, all emergency rooms reviewed the draft indicators and contributed contextual feedback. This cross-site feedback integration was more than a technical revision. It involved active negotiation over indicator definitions, such as how to operationalize "length of stay" or what constituted a "treated in emergency room only" case. Disagreements and ambiguities were discussed in joint sessions, revealing contradictions between standardized measurement logic and local work practices. The result was the inclusion of more granular team-level indicators (e.g., medical vs. surgical units) and structural dimensions (e.g., senior physician availability), reflecting a collective sensemaking process.

In the prototyping phase, as sites began testing the template by benchmarking the involved emergency rooms against each other, variations in interpretation became visible. One-on-one feedback sessions were used to examine these differences, uncover practical ambiguities, and ensure indicators were applied consistently. For instance, some sites interpreted "discharged to home" differently, leading to tailored clarifications. In parallel, a broader stakeholder group including union representatives and clinical leaders reviewed the initial reports. Their feedback triggered a reflective revision of the benchmarking indicators to better represent constraints such as space limitations and staff shortages. Through these actions, learning was embedded not only in content refinement but in the dialogical processes that allowed contextualization, negotiation, and local adaptation.

In Papers 2 and 3, the learning actions were situated in a broader inter-organizational setting, coordinated by the Regional committee for interaction in healthcare, involving one hospital and 13 municipalities. This initiative aimed to improve patient transitions across levels of care, particularly for elderly patients with complex conditions. Learning began with a joint review of patient records by physicians from both primary and specialized care. This record review illuminated how existing routines produced fragmentation, miscommunication, and clinical risk. These insights were complemented by document reviews, interviews, and observations, which helped reconstruct the patient's journey and identify systemic barriers such as conflicting documentation practices or ambiguous medical responsibility at discharge.

A pivotal learning action was the use of facilitated workshops and reflection circles, where professionals openly discussed tensions between their roles and expectations. For instance, some hospital physicians felt compelled to discharge early due to bed pressures, while municipal doctors felt unprepared to take over responsibility without sufficient documentation or support. Rather than treating such contradictions as breakdowns, the process framed them as generative tensions - opportunities to surface assumptions, explore different logics, and co-develop new approaches. Visual storytelling and emotionally resonant patient narratives were learning actions introduced to mobilize affective engagement. Illustrations and anonymized case stories made the consequences of fragmented care tangible, helping professionals reconnect with the patient perspective and articulate a shared moral imperative for improvement. The initiative then progressed to a series of rapid co-creation workshops where professionals from hospitals and municipalities jointly prototyped new workflows. One such prototype, titled “Inside or Outside?”, defined procedures for deciding whether a patient should receive care in the municipality or return to the hospital. This included clearly defined roles, inclusion criteria, and decision points, all developed iteratively through testing and feedback. Finally, the model was implemented in real-time, supported by weekly coordination meetings. These joint review sessions allowed frontline staff and coordinators to evaluate each patient pathway, identify challenges (e.g., bottlenecks in documentation, role confusion), and adjust the model accordingly. This reflective, adaptive practice reinforced learning-in-action and ensured that the model evolved with lived experience.

Across both settings, the learning actions were aligned with different phases of expansive learning, beginning with questioning and analysis of contradictions, progressing through modeling and refinement of new solutions, and culminating in real-world implementation and iterative adjustment. These actions were not isolated techniques but interdependent elements in a systemic learning process that spanned organizational, professional, and hierarchical boundaries. Table 5 summarizes the learning actions identified across Papers 1 to 3, including their purposes, contexts, relation to expansive learning phases, and underlying mechanisms.

Across the three papers, several conditions emerged as critical for the success of the participatory learning actions. First, the presence of a neutral and persistent facilitator, whether in the form of a benchmarking coordinator (Paper 1) or the Regional committee for interaction in healthcare (Papers 2 and 3), provided necessary continuity, legitimacy, and coordination across professional and organizational boundaries. Second, stakeholder diversity and horizontal participation were key. Involving both frontline staff and leaders from multiple sectors ensured that differing perspectives were surfaced and integrated, enabling more robust and context-sensitive learning. Third, the learning actions were embedded in structured arenas such as expert groups, reflection circles, and weekly coordination meetings. They created spaces for sensemaking and cross-site exchange. Fourth, the use of emotionally resonant tools like patient narratives and visual storytelling (Paper 3) helped foster shared purpose and engagement beyond technical compliance. Fifth, the iterative nature of the processes allowed for continuous real-time feedback and continuous refinement, supporting the adaptation of tools and practices to local conditions. Finally, success depended on an explicit effort to surface and work through contradictions between professional roles, logics, and system constraints rather than avoiding or minimizing them. Together, these criteria illustrate how participatory learning actions, when thoughtfully designed and supported, can enable expansive learning and foster system-level changes in fragmented healthcare systems.

Table 5. Learning actions identified in studies 1 and 2

Learning Action	Description	Purpose	Context	Expansive Learning Phase	Underlying Mechanism	Paper
Expert dialogue	Structured discussions among professionals to surface variation, share expertise, and co-develop shared tools (e.g., benchmarking templates)	Surface variation and co-develop benchmarking template	Emergency room / RCIH initiative	Questioning & Analysis	Collective analysis of diversity in work practices and tools; co-construction of shared understanding	1, 3
Cross-site feedback integration	Iterative refinement of models or indicators through input and negotiation across multiple organizational contexts	Align and refine benchmarking indicators across diverse contexts	Emergency room / RCIH initiative	Modeling the new solution	Horizontal exchange and negotiation of standards across organizational contexts	1, 3
Reflective dialogue and one-on-one feedback	Targeted conversations to explore local contradictions and adapt shared solutions to specific organizational conditions.	Clarify contradictions and support local adaptation	Emergency room/RCIH initiative	Examining the new model	Local sensemaking and customization to organizational conditions	3
Joint patient record review	Collaborative analysis of real patient journeys across care levels to understand gaps, overlaps, and opportunities for improvement.	Generate insight into real patient journeys across care levels	RCIH initiative	Questioning & Analysis	Reconstruction of work object through shared investigation of lived practice	2, 3
Facilitated workshops and reflection circles	Group-based sessions that uncover conflicting perspectives and logics across stakeholders.	Surface contradictions between logics, roles, and expectations	RCIH initiative	Questioning & Analysis	Explication of tacit assumptions; generative use of tensions	2, 3

Learning Action	Description	Purpose	Context	Expansive Learning Phase	Underlying Mechanism	Paper
Visual storytelling and patient narratives	Use of emotionally resonant stories and visuals to build shared understanding and generate motivation for change	Motivate change through emotionally resonant narratives	RCIH initiative	Questioning	Mobilizing affect and empathy to create shared purpose	3
Rapid co-creation workshops	Fast-paced, iterative sessions where stakeholders collaboratively prototype and refine new solutions.	Prototype and refine shared care models	RCIH initiative	Modeling the new solution	Collaborative design through iteration; immediate testing and feedback loops	3
Weekly test coordination with joint review	Frequent check-ins and adjustment meetings during implementation to reflect, learn, and refine interventions in real time.	Support real-time adaptation during implementation	RCIH initiative	Implementing / Reflecting	Continuous feedback and iterative adjustment based on frontline experience	3

5.3 RQ3: What factors can influence learning-oriented leadership in fragmented healthcare systems?

The findings from the fourth and fifth papers emphasize the multifaceted role of leadership in fragmented healthcare systems addressing external pressures, limited individual leadership autonomy, stakeholder diversity, unpredictability, and resource constraints inherent in healthcare systems. The respondents were hospital leaders, a population most often collaborating across siloed structures often involving large control spans and multiple actors from specialized and primary care. These insights contribute to understanding how leaders in hospitals can foster organizational learning by providing support, building climate, and facilitating knowledge dissemination.

5.3.1 The why, who and how of leadership factors

The first question addressed by the results of Paper 4 is why learning-oriented leadership seems highly complex in this empirical setting. The results demonstrate how the hospital leaders operated in fragmented healthcare systems defined by constant external demands, including evolving laws, regulations, financial constraints, demographic shifts, and increasing patient expectations. Such drivers of change often created competing priorities that required leaders to balance strategic goals with operational realities. For instance, insufficient municipal capacity for post-hospital care emerged as a systemic challenge that hindered the ability of organizations to implement meaningful improvements.

Leaders must continuously adapt to these external pressures while maintaining focus on long-term learning and improvement processes.

The learning-oriented managers supported multiple learners in their processes of organizational learning. The next issue concerns who the intended learners were. In this study, learning involved not only individual staff members but also diverse groups and stakeholders across the healthcare system. Managing these heterogeneous actors added complexity to hospital leaders' roles, as they had to navigate conflicting interests, power dynamics, and resistance to change among professional groups, unions, policymakers, and the media. This complexity shaped how leaders worked, requiring them to create shared goals and foster a collective understanding of how individual efforts contributed to broader outcomes. The findings emphasized that aligning priorities across silos was particularly challenging in systems where healthcare professionals showed varied levels of engagement, were embedded in distinct subcultures, and held conflicting interpretations of value and outcomes.

A third issue concerns how the dynamic and often unpredictable context of hospital settings shaped the way learning processes were managed and led in practice. Healthcare systems are inherently dynamic and unpredictable, requiring learning-oriented leaders to respond flexibly to unforeseen challenges while maintaining strategic focus. The respondents described the difficulty of implementing long-term plans in the face of constant adjustments, such as responding to errors, emergent public health crises, or shifting policy priorities. The interconnected nature of healthcare operations often resulted in unanticipated consequences, further complicating efforts to sustain improvement initiatives. Effective hospital leaders demonstrated adaptability by balancing the urgency of immediate tasks with the need for strategic planning.

The fourth theme identified in the fourth paper was resource limitations, including time, funding, and management capacity, which further constrained the ability of leaders to support learning and improvement. Heavy workloads, high spans of control, and inadequate coordination across departments exacerbated these challenges, leaving less room for engagement in iterative and collaborative learning processes. The findings suggest that traditional project-based approaches are often too rigid for healthcare systems and advocate for more agile and tailored methods that align with the dynamic nature of healthcare operations.

Findings from the fifth paper further underscore that learning-oriented leadership is not enacted uniformly but is shaped by contextual conditions within fragmented healthcare systems. The thematic analysis of open-text comments revealed five interrelated contextual factors that influenced how leaders enacted and prioritized learning-oriented leadership behaviors. Limited resources, including time, staffing, and funding, constrained opportunities for learning and improvement, as operational demands often overshadowed developmental activities. Restricted autonomy limited leaders' ability to make independent decisions, particularly concerning budgets and organizational changes. In this thesis, limited individual leadership autonomy refers to the restricted discretion leaders have to make independent decisions, allocate resources, or enact change within the boundaries of their formal role, due to structural, procedural, or institutional constraints. Wide spans of control reduced opportunities for close follow-up, coaching, and reflection with staff. Siloed organizational structures hindered collaboration across departments and between hospital and primary care, creating barriers to collaborative learning. At the same time, despite these constraints, many leaders reported strong commitment to collaborative learning and improvement, expressing a sense of collective responsibility for enhancing healthcare quality and equity.

Within these contextual constraints, leaders reported frequent engagement in both direct and indirect learning-oriented leadership behaviors. Direct behaviors comprised interpersonal actions that supported day-to-day learning, including (1) Providing support (building trustful relationships, listening, coaching, and giving feedback), (2) Educating (asking questions, broadening perspectives, and stimulating reflection), (3) Making demands (setting limits and addressing resistance), and (4) Leading by example (demonstrating that learning is valued and encouraged). Indirect behaviors involved shaping the organizational conditions that enable learning through (1) Building a climate for learning (encouraging dialogue, allowing employees to make mistakes, and modeling a lifelong desire to learn), (2) Structuring work for learning (redesigning work processes and counteracting silo-thinking to strengthen collaboration and reflection in everyday practice), (3) Freeing up resources for learning (allocating time, budgets, and staff for development activities and ensuring opportunities for guidance and supervision), and (4) Facilitating knowledge dissemination (documenting best practices and processes, establishing expert networks, using technology for knowledge sharing, and involving senior management to institutionalize learning).

Regression analyses indicated that healthcare improvement, particularly when collaboration across units or organizations was required, was most strongly associated with a specific combination of direct and indirect practices: providing support, building a climate for learning, and facilitating knowledge dissemination. These findings suggest that leadership for healthcare improvement in fragmented systems depends on the ability to integrate relational support with systemic and cross-boundary practices.

Together, the findings portray learning-oriented leadership as a contextually adaptive and systemic practice, one that evolves through continuous negotiation between interpersonal relationships and the constraints and affordances of fragmented healthcare systems.

5.3.2 Accounting for context, structure, and agency in learning-oriented leadership

Taken together, the results from Papers 4 and 5 indicate that learning-oriented leadership in hospitals is shaped by the systemic and structural context in which leadership is enacted. Respondents described working within highly fragmented and interdependent healthcare systems characterized by continuous external demands, shifting institutional logics, limited coordination capacity, and constrained resources. These conditions seem to shape both the feasibility and the form of learning-oriented leadership, influencing whether leaders could act relationally, structurally, or cross-organizationally. Structural barriers such as siloed responsibilities, lack of municipal capacity, and diffuse authority were not merely external constraints but part of the environment that continually defined what leadership was possible in practice. Context thus appeared not just as a static backdrop, but as a dynamic and constitutive element of leadership itself.

While Wallo *et al.*'s (2024) framework provides a robust foundation for understanding how leaders support learning through direct and indirect behaviors, the findings of Papers 4 and 5 suggest that the framework could be contextualized to better capture the interaction between structure and agency in fragmented healthcare systems. The results suggest that contextual factors such as span of control, organizational role, and resource availability, moderate leaders' capacity to engage in certain leadership behaviors and shape their room for maneuver. Broader spans of control, for instance, reduced opportunities for relational and coaching-oriented behaviors, while also prompting more reactive or boundary-focused strategies. Such patterns underscore that learning-oriented leadership in healthcare could be understood as situated agency, or leadership enacted within and against structural limitations.

Paper 5 proposes to integrate new behaviors aimed at contextualizing the framework for fragmented healthcare systems by integrating behaviors aimed at: (1) managing and mitigating higher spans of control and a lower degree of individual leadership autonomy, (2) building collaborative infrastructures and routines that connect professional and organizational silos, and (3) establishing mechanisms for learning feedback and reflection across boundaries.

6. DISCUSSION

To support the reader and provide a clear transition into the discussion, Table 6, p. 57, presents an overview of the key results, central discussion points, and main contributions related to the first three research questions. This structured summary is intended to enhance clarity and make the core insights and their relevance more accessible before moving into the detailed analysis that follows.

6.1 Discussing the strategies and learning actions found to support organizational learning in healthcare systems

While strategies and learning actions are analytically distinct in this thesis, they appear to be closely connected. Strategies refer to broader patterns in decision-making (Mintzberg, 1978), while learning actions denote deliberate, collective efforts to interrogate and transform practice (Engeström & Kerosuo, 2007). The analysis showed that these often appear as two sides of the same developmental process. Strategies such as participatory governance or networked leadership established the structural and relational conditions under which learning actions could unfold, while learning actions gave concrete expression to those strategies by enacting change through cycles of analysis, modeling, and reflection. In consequence, and rather than existing in isolation, this thesis sees strategies and learning actions as operating along a continuum, from abstract intent and structural orientation to situated, transformative practice. By discussing them jointly, this section highlights how structural intent and situated practice can co-evolve in support of organizational learning in complex healthcare systems.

Papers 1, 2, and 3 collectively emphasize participatory methods as a strategy for fostering organizational learning in complex healthcare systems. These findings align with prior research that underscores the need for organizational learning processes to address contextual interdependencies and evolving challenges (Coles *et al.*, 2020; Greenhalgh & Papoutsi, 2018). By employing a participatory action research approach (Wallerstein *et al.*, 2020), this thesis integrates shared decision-making, iterative reflection, and stakeholder involvement, ensuring adaptability in complex and fragmented healthcare systems (Engeström & Pyörälä, 2021; Overton *et al.*, 2023; Spanos *et al.*, 2024).

Within this strategic approach, specific learning actions emerged as important. Paper 1 highlights benchmarking founded in stakeholder participation as a learning action, where emergency rooms collaboratively developed a uniform measurement framework. Unlike standardized benchmarking approaches (Aldiss & Gibson, 2020; Lovaglio, 2012), this initiative emphasized iterative refinement through continuous dialogue and stakeholder input, ensuring contextual relevance and applicability (Hibbert *et al.*, 2020). This aligns with Greenhalgh and Papoutsi's (2018) findings on the necessity of iterative stakeholder interactions to navigate the complexity of healthcare systems.

Papers 2 and 3 identify rapid co-creation cycles and participatory reflection circles as learning actions within integrated healthcare. The five-step patient transfer method, developed through iterative prototyping, demonstrates how professionals tested and refined workflows in real time, ensuring solutions remained grounded in frontline realities. These iterative cycles align with Engeström's (2018) concept of expansive learning, where knowledge is built collectively to address emerging challenges.

Organizational learning across borders and silos in healthcare is often hindered by fragmentation, misaligned goals, and structural silos (Cresswell *et al.*, 2023; Lalani *et al.*, 2020). Research highlights how hierarchical and siloed structures can obstruct learning and collaboration in complex healthcare systems (Coles *et al.*, 2020; Greenhalgh & Papoutsi, 2018). Papers 2 and 3 reinforce these findings by

emphasizing networked leadership as a key strategy to bridge organizational borders and facilitate organizational learning in integrated healthcare settings. Networked leadership, characterized by distributed decision-making, shared accountability, and cross-sector collaboration, aligns with governance models as the ones proposed by Provan and Kenis (2008) and Fjeldstad *et al.* (2020).

The Regional committee for interaction in healthcare, studied in Papers 2 and 3, exemplifies this strategy in action. It provided a formalized governance structure to coordinate efforts between municipalities and hospitals, ensuring alignment across levels of care. Through this organizational network architecture, healthcare organizations co-developed the five-step patient transfer method, addressing systemic issues such as incomplete discharge plans and inter-sector misalignment. These findings are in line with research showing that networked approaches can improve patient outcomes by enhancing care transitions and reducing fragmentation (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020). However, other studies indicate that network governance structures can fail if power asymmetries, conflicting interests, or resource constraints remain unaddressed (Cresswell *et al.*, 2023; Lalani *et al.*, 2020), underscoring the importance of collaborative leadership across all involved stakeholders and facilitation mechanisms to ensure sustainability.

Within the networked governance strategy, several learning actions, such as reflection circles, co-design workshops, and cross-sector prototyping, played a critical role in facilitating knowledge exchange and collaborative problem-solving, as identified in Papers 2 and 3. These practices align with research emphasizing that interactive learning environments deepen engagement and foster sustained professional learning (Linderman *et al.*, 2004; Wallerstein *et al.*, 2020). Leaders within the governance network acted as boundary spanners, aligning diverse perspectives, coordinating efforts, and managing power dynamics (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020). These leadership roles reflect the conditions required for psychological safety, where trust, open dialogue, and iterative learning are essential for collaboration across professional and organizational boundaries (Edmondson & Bransby, 2023). As recent research shows, psychologically safe environments enable team learning, voice, and innovation, particularly in complex, interdependent settings (Edmondson & Bransby, 2023) like healthcare and integrated services.

While Engeström's human activity system framework is valuable for understanding learning within activity systems (Engeström & Sannino, 2021), findings from Papers 2 and 3 suggest that explicitly integrating networks for collaborative leadership across stakeholders as a distinct component could enhance its applicability to organizational learning across borders and silos in fragmented healthcare systems. The current framework focuses on rules, community, and division of labor, but does not directly address leadership's role in managing learning across organizational boundaries in integrated healthcare services. Expanding Engeström's model to explicitly include networked leadership could strengthen its applicability to integrated healthcare by incorporating governance mechanisms, addressing power dynamics, and bridging theory with practice. This refinement responds to critiques by Cong-Lem (2022) and Wiser *et al.* (2019), contributing to a more context-sensitive and actionable framework for organizational learning across borders and silos in healthcare.

Papers 2 and 3 demonstrate that in integrated healthcare, leadership operates across multiple organizations, ensuring coordination, goal alignment, and sustained learning. The Regional committee for interaction in healthcare illustrates how networked leadership can facilitate organizational learning across borders and silos through structured governance, shared accountability, and participatory decision-making. This supports research highlighting the role of leadership networks in sustaining collaboration (Britto *et al.*, 2018; Provan & Kenis, 2008). The refinement of Engeström's model to include networked, collaborative leadership also aligns with Wallo *et al.*'s (2024) concept of indirect

leadership behaviors, which emphasize structuring the environment to facilitate learning rather than relying solely on direct influence. Wallo *et al.* (2024) argue that leaders foster organizational learning by shaping climate, structuring work organization, freeing up resources, and facilitating knowledge dissemination - all of which are found in the papers to be important in fragmented healthcare settings where direct leadership authority is often limited.

The proposal also somehow contrasts with perspectives advocating for more non-hierarchical leadership in organizational learning across borders and silos in healthcare settings (Engeström, 2018). Findings indicate that formalized network governance structures can be essential to provide stability and continuity, aligning with research on networked governance in healthcare (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020).

In sum, the findings of this thesis align with and extend prior research on organizational learning in complex healthcare environments. The identified strategies, such as designing organizational network architectures (Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020), fostering collaborative leadership in network architectures (Britto *et al.*, 2018; Fjeldstad *et al.*, 2020), and promoting stakeholder participation and iterative refinement (Engeström & Sannino, 2021; Fjeldstad *et al.*, 2020; Greenhalgh & Papoutsi, 2018; Provan & Kenis, 2008), are consistent with established literature emphasizing the need for coordinated, multi-actor approaches in fragmented healthcare systems. These strategies are operationalized through learning actions including participatory benchmarking (Buckmaster & Mouritsen, 2017; Hibbert *et al.*, 2020), rapid cycles of co-creation (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020), stakeholder reflection (Coghlan & Brannick, 2009; Wallerstein *et al.*, 2020), and cross-sector prototyping (Engeström & Pyörälä, 2021), which serve as practical mechanisms for enabling knowledge exchange and adaptive improvement.

While these findings reinforce core ideas within expansive learning theory (Engeström, 2015, 2018; Engeström & Sannino, 2021), they also point to potential refinements, particularly the value of foregrounding leadership as a distinct and integrative element in Engeström's activity system model. In this way, the thesis seeks to address identified gaps in the literature concerning the development of more context-sensitive design recommendations for expansive learning in fragmented healthcare systems (Cong-Lem, 2022; Wiser *et al.*, 2019). The proposed refinement suggests that collaborative leadership may play a critical role in enabling the coordination, facilitation, and sustainment of learning across organizational and professional boundaries, supported by research like Britto *et al.*, 2018, Cresswell *et al.*, 2023, Provan & Kenis, 2008, or Masica *et al.*, 2022. Moreover, by empirically illustrating how strategies and learning actions may co-evolve in complex healthcare contexts, this thesis contributes to ongoing discussions about how participatory, iterative approaches can support organizational learning under conditions of systemic complexity and structural fragmentation.

6.2 Discussing the factors found to influence learning-oriented leadership in healthcare systems

Papers 4 and 5 suggest that Wallo *et al.*'s (2024) framework offers a valuable conceptual foundation for understanding learning-oriented leadership in fragmented healthcare systems, but it may underrepresent the structural and systemic complexities that shape how such leadership is enacted in this context. While Wallo *et al.* (2024) acknowledge that the organizational context can support or constrain leadership for learning, their framework does not systematically theorize these conditions. The findings from this thesis indicate that learning-oriented leadership in healthcare is not only about what leaders do, but also where they are positioned, how they relate across boundaries, and what structural conditions enable or restrict them. Context thus emerges not only as a backdrop but also as

a constitutive dimension of leadership practice, an interpretation supported by research on complexity and situational leadership in fragmented healthcare systems (Baxter & Moralee, 2023; Greenhalgh & Papoutsi, 2018; Overton *et al.*, 2023).

Across the two papers, several contextual factors were identified as affecting the feasibility and form of learning-oriented leadership, like multiple external drivers for change, siloed structures, limited individual leadership autonomy, diverse stakeholders, unpredictability, and limited resources. These conditions required leaders to balance strategic and operational demands, navigate contradictions between policy and practice, and foster collaboration across organizational silos. Such findings reinforce existing theory that portrays healthcare systems as adaptive, politically layered, and structurally fragmented (Britto *et al.*, 2018; Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020; Lalani *et al.*, 2020). In this environment, leadership for learning appeared deeply relational and boundary-spanning rather than mostly confined to intra-team support. Frontline leaders often acted as facilitators of inter-organizational dialogue and co-creators of new practices, reflecting a mode of engagement consistent with Engeström's (2018) concept of expansive learning and Fjeldstad *et al.*'s (2020) networked organizational design.

In sum, the empirical material supports the behavioral core of Wallo *et al.*'s (2024) framework while highlighting the need to extend it to reflect the contextual realities of fragmented healthcare systems. Statistical analyses from Paper 5 showed that healthcare improvement was most closely associated with three complementary leadership practices: providing support (direct), building a climate for learning (indirect), and facilitating knowledge dissemination (indirect). These findings suggest that relational and systemic behaviors are interrelated. Building on these insights, the thesis proposes three contextual extensions of the framework:

1. Strengthening collaborative and boundary-spanning leadership behaviors: Leaders frequently worked across organizational and professional silos, where decision authority was fragmented, and autonomy constrained by interdependence. Learning-oriented leadership could therefore incorporate collaborative and boundary-spanning behaviors that emphasize negotiation, joint sense-making, and facilitation of learning across boundaries. This aligns with research on networked healthcare and actor-oriented architectures that enable collaborative value creation (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020). Actionable behaviors include building cross-organizational reflection arenas and using participatory methods such as Change Laboratories to co-create solutions in distributed decision contexts (Skipper *et al.*, 2020).
2. Embedding contradiction management as a salient leadership behavior: Leaders often confronted tensions between policy expectations, professional logics, and operational realities. Such contradictions can stall improvement if unaddressed but can also serve as catalysts for expansive learning (Engeström, 2015, 2018). This thesis proposes contradiction management to be even more emphasized in the framework, as a deliberate leadership practice that transforms systemic tensions into developmental drivers through methods such as contradiction mapping, structured reflection circles, and cross-professional learning sessions.
3. Integrating behaviors for managing wide spans of control and capacity constraints: Some leaders managed extensive staff groups and functions with limited authority over time and resources, reducing their ability to support reflection and coaching. To maintain learning-oriented practices under such conditions, the framework could integrate strategies for balancing leadership load and preserving learning capacity. Approaches include distributed and shared leadership models (Edmondson & Bransby, 2023; Spanos *et al.*, 2024), strengthening middle-leader networks (Lalani *et al.*, 2020), and using digital or organizational

infrastructures to enable dialogue and knowledge exchange across wide control spans (Cresswell *et al.*, 2023; Fjeldstad *et al.*, 2020).

Together, these extensions position learning-oriented leadership in fragmented healthcare systems as a situated, system-shaping practice emerging through the interplay between leaders' capacity to act, the organizational architectures they navigate, and the institutional conditions under which they operate. This contextualized understanding complements and expands Wallo *et al.*'s (2024) framework, aligning it more closely with theories of expansive learning (Engeström, 2018), complexity in healthcare (Greenhalgh & Papoutsi, 2018), and actor-oriented organizational design (Fjeldstad *et al.*, 2020).

Table 6. Key results, key discussion points and key contributions on research questions 1-3

RQ	Theme	Key results	Key discussion points	Key contributions
1	Strategies	Organizational learning was supported by four strategies: network architecture, collaborative leadership, frontline participation, and iterative refinement. These strategies supported cross-boundary dialogue, shared ownership, and adaptive learning.	Organizational network architectures foster learning but requires facilitation and collaborative leadership.	Concrete strategies for organizational learning in fragmented healthcare systems. Proposal to contextualize Engeström's human activity system model (2015, 2018) by integrating collaborative leadership.
2	Learning actions	Organizational learning happened through learning actions like expert dialogues, collaborative record reviews, reflection circles, co-creation workshops, and iterative testing.	Learning actions should ensure contextual relevance and iterative refinement, and support cross-boundary collaboration.	Concrete learning actions for organizational learning in fragmented healthcare systems.
3	Contextual factors	Learning-oriented leadership in fragmented healthcare systems was affected by contextual factors such as external pressures, multiple stakeholders, uncertainty, resource scarcity, restricted autonomy, and siloed organizational structures. Improvement across units was likely to be linked to the leadership behaviors providing support (direct), building a climate for learning (indirect), and facilitating knowledge dissemination (indirect).	Leadership appears as situated agency, enacted within and against systemic constraints through behaviors that bridge silos and enable collaborative learning.	Concrete contextual factors to learning-oriented leadership in fragmented healthcare systems. Proposal to contextualize Wallo *et al.*'s (2024) framework by integrating behaviors for addressing high control spans, building collaborative infrastructure, and mechanisms for learning and feedback across siloed structures.

6.3 Discussing possible key elements for supporting organizational learning in healthcare systems

As we have seen in the previous chapters, research questions 1-3 explored strategies, learning actions, and contextual factors as relatively distinct dimensions. These chapters revealed new knowledge within each area. Building on these findings, research question 4 synthesizes insights across the three themes into an integrative model for supporting organizational learning in fragmented healthcare systems (Figure 7). Developed through abductive meta-synthesis and theory-

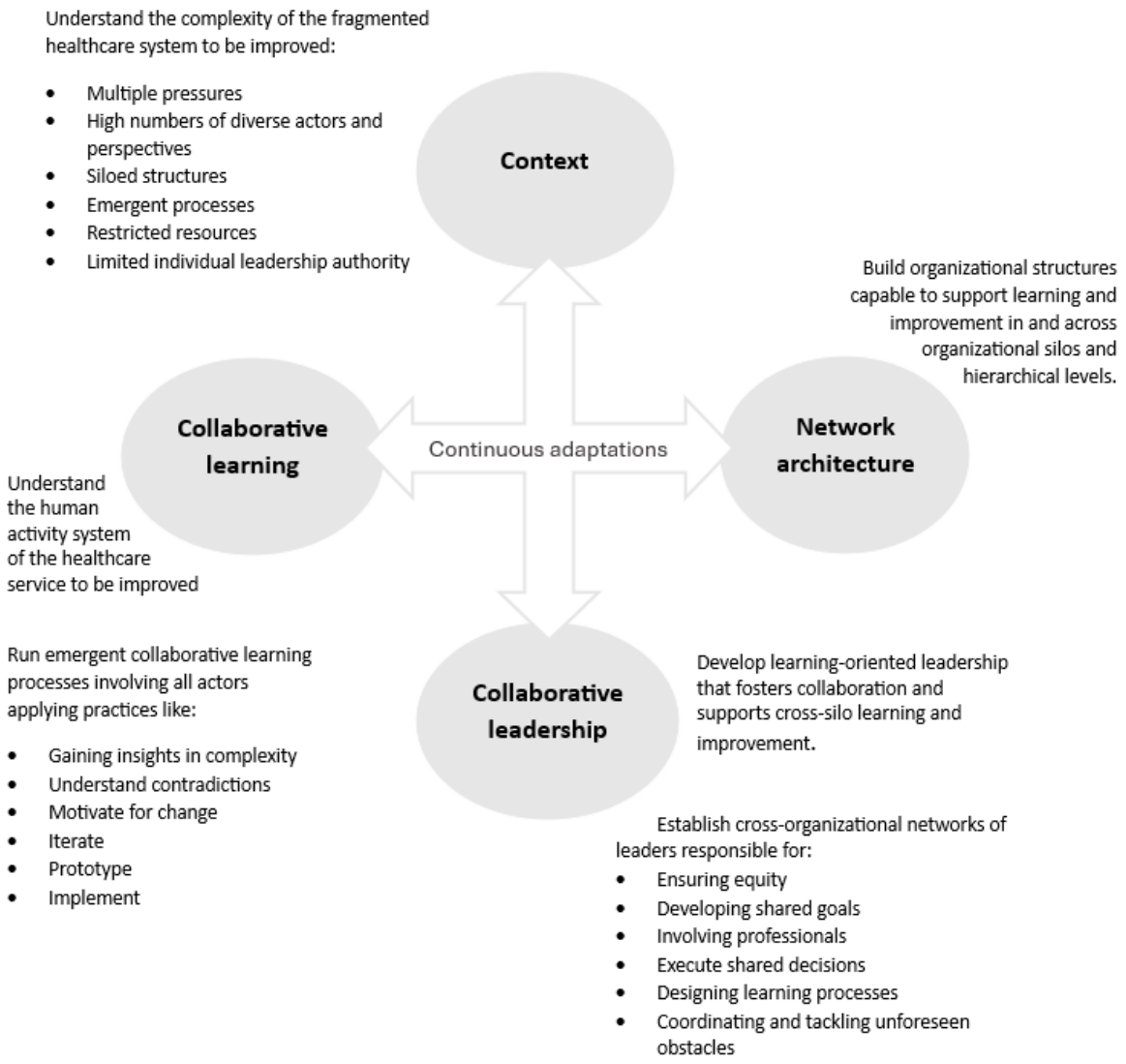

Figure 7. A model visualizing key elements for supporting organizational learning fragmented in healthcare systems

building (Walsh & Downe, 2005; Timmermans & Tavory, 2012; Rinehart, 2021), the model proposes that organizational learning most probably does not result from any single intervention, structure, or leadership behavior, but rather from the interaction between four interdependent elements: context, network architecture, collaborative leadership, and collaborative learning. In line with the overall purpose of this thesis, to contribute new knowledge on strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems, the model brings together findings from Papers 1 to 5, showing how the interconnection and mutual influence of these elements can generate additional insight into how organizational learning can be supported systemically.

As discussed in Papers 1 to 5, context is not seen merely as a static background but a dynamic and often contradictory environment that both constrains and enables learning. We previously saw how multiple external drivers for change, a broad range of diverse actors, siloed structures, environments of emergent and unpredictable change, restricted availability of organizational resources and restricted individual leadership autonomy create tensions that leaders navigate (Paper 4). These findings align with expansive learning theory (Engeström, 2015, 2018), which emphasizes contradictions as drivers of transformation, and with complexity-informed research framing healthcare systems as politically layered and structurally fragmented (Greenhalgh & Papoutsi, 2018; Cresswell *et al.*, 2023). However, the model offers a possible refinement by suggesting that such contradictions may serve as triggers for organizational learning in fragmented healthcare systems, particularly when they are actively surfaced through leadership practices that mediate contradictions, enable cross-boundary collaboration, and support collective learning.

As previously discussed, organizational network architectures, such as the Regional committee for interaction in healthcare, can serve as stable platforms for collaborative learning across organizational silos and borders. This echoes research on boundary infrastructures (Lalani *et al.*, 2020; Overton *et al.*, 2023), which highlights the value of collaborative arenas and tools in building trust and promoting knowledge exchange. What the model contributes, however, is the proposition that such architectures are not merely technical scaffolds, but deeply interdependent with leadership practices that foster shared purpose, mutual recognition, distributed coordination, and joint decision-making in support of dynamic learning processes (Paper 3).

Collaborative learning, as described in Papers 1 to 3, refers to the situated and emergent learning practices through which diverse actors engage with contradictions, explore problems, and co-produce new and better ways of working. Earlier we saw examples of learning actions such as cross-site feedback integration, visual storytelling and patient narratives, learning actions rooted in expansive learning theory (Engeström & Sannino, 2021). Yet these learning actions, as the results suggested, rarely function in isolation. The model adds new conceptual clarity by indicating that their success depends on alignment with contextual conditions, support from enabling architecture, and legitimacy conferred through collaborative leadership.

Leadership, discussed in Papers 2 to 5, was shown to be enacted through facilitation, dialogue, and convening across boundaries, rather than solely through formal authority. As previously described, leaders operated in emergent and unpredictable contexts, but played a key role in aligning perspectives, sustaining engagement, and legitimizing learning processes. This thesis extends Wallo *et al.*'s (2024) framework by highlighting how indirect leadership behaviors such as supporting infrastructures, enabling stakeholder participation, and navigating systemic tensions are particularly vital in fragmented healthcare systems. It also builds on Fjeldstad *et al.* (2020) and Provan and Kenis

(2008), who conceptualize leadership as distributed and embedded in networked governance structures. The model integrates such insights by positioning collaborative leadership as a connective tissue that animates the other three elements. Collaborative leadership for learning can enable actors to respond to context, leverage architecture, and engage in collaborative learning processes.

Taken together, the model introduces a relational and adaptive architecture, not a fixed sequence of actions. Context provides tensions that initiate inquiry; network architecture embeds roles and routines that stabilize collaborative efforts; collaborative learning offers mechanisms for exploration and adaptation; and leadership binds these processes together by aligning actors and legitimizing their efforts. Rather than any single element, this dynamic interplay seems to be what enables learning to become systemic rather than incidental.

In relation to the literature, the model consolidates and extends existing theoretical frameworks. It contextualizes Engeström's theory of expansive learning by integrating leadership as a structural and facilitative element for expansive learning in fragmented healthcare systems. It expands Wallo *et al.*'s (2024) framework by foregrounding the importance of indirect leadership behaviors for supporting organizational learning in complex contexts. It operationalizes the systems-thinking of Greenhalgh and Papoutsi (2018) and echoes Spanos *et al.*'s (2024) argument that effective leadership in complex healthcare systems should be understood not merely as a predefined set of roles and competencies, but as dynamic, goal-oriented practices. Finally, the model emphasizes that in fragmented healthcare systems most often characterized by structural separation, professional silos, and misaligned processes, the mechanisms of organizational learning are often shaped by the presence or absence of collaborative leadership and enabling architecture, in line with insights from Wong *et al.* (2013) and Dalkin *et al.* (2015).

While grounded in prior theory and empirical research, the model contributes a novel synthesis by making visible the interdependence of context, network architecture, collaborative leadership, and collaborative learning. To the best of my knowledge, these four fields of research have not previously been combined in a single analytical framework for understanding strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems. Rather than offering a universal solution, the model is intended as a flexible conceptual tool for analyzing, designing, and supporting learning systems that are responsive to the complexity and fragmentation of contemporary healthcare environments.

6.4 Practical implications

This thesis provides actionable strategies and learning actions for healthcare leaders, policymakers, and practitioners aiming to enhance organizational learning in fragmented healthcare systems. Healthcare leaders can apply networked governance structures to facilitate collaboration, ensuring that learning is embedded in daily operations rather than treated as isolated initiatives.

The research also underscores how learning actions such as benchmarking, cross-site feedback integration, and visual storytelling can be transformed from static tools into dynamic mechanisms for learning and adaptation. This has direct implications for quality improvement efforts, as it enables organizations to co-develop meaningful outcomes that are contextually relevant and support shared understanding across stakeholders. The findings further emphasize the importance of co-creation and participatory design, ensuring that frontline staff are engaged in identifying contradictions and developing practical solutions.

Additionally, the study highlights the leadership competencies required for organizational learning across borders and silos in healthcare, including the ability to manage power dynamics, foster trust, and facilitate participatory decision-making. Given the challenges of complex and resource-constrained healthcare environments, the insight from this thesis calls for more context-specific leadership programs training healthcare leaders in behaviors supporting organizational learning in fragmented healthcare systems.

Finally, the model proposed in this thesis offers a structured yet adaptable framework that integrates context, architecture, collaborative leadership, and collaborative learning processes. By moving beyond fragmented approaches to learning, healthcare organizations can develop resilient learning systems that continuously evolve in response to emerging challenges.

6.5 Theoretical implications

The novelty of this thesis lies in its synthesis of theoretical traditions that, to my knowledge, have largely evolved in parallel. Based on empirical data and theory, the thesis has proposed an integrative model for understanding and supporting organizational learning in fragmented healthcare systems. By linking different perspectives, the thesis extends existing theory beyond its original focus to encompass multi-level, cross-boundary learning processes shaped by contextual complexity and interdependence. The model aspires to contribute a dynamic and relational understanding of how organizational learning in fragmented healthcare systems can become more systemic: context generates tensions that trigger inquiry; network architectures provide the scaffolding for collaboration; leadership aligns actors and legitimizes learning; and collaborative learning processes enable exploration, reflection, and adaptation. In doing so, the thesis proposes a theoretically grounded and empirically informed framework that advances the conceptualization of organizational learning for improvement in fragmented healthcare systems.

7. CONCLUSION

The purpose of this thesis is to contribute new knowledge on strategies, learning actions, and leadership factors that support organizational learning in fragmented healthcare systems. Through three studies resulting in five papers, the thesis explores how organizational learning unfolds and can be supported in such systems, applying a participatory action research approach and a qualitative-dominant mixed-methods design.

Taken together, the findings from research questions 1, “What strategies can support organizational learning across fragmented healthcare systems?”, and 2, “What learning actions can support organizational learning across fragmented healthcare systems?”, indicate that organizational learning in these settings can be supported through the interplay of distinct strategies and learning actions. The studies show that strategies such as the development of organizational network architectures, the exercise of collaborative leadership, the active involvement of frontline professionals, and the iterative refinement of ideas and prototypes across involved actors were found to support organizational learning. These strategies did not function in isolation but co-evolved with deliberate learning actions such as cross-site feedback integration, joint patient record reviews, group sessions, and rapid co-creation cycles. Such actions helped surface contradictions, reveal differing perspectives and assumptions across stakeholders, support the co-design of new ways of working, and enable real-time adaptation of practices.

The interdependence of strategies and actions suggests that organizational learning in fragmented healthcare systems is not merely the product of individual interventions but emerges through the alignment of network architectures, collaborative leadership, and collaborative learning. The findings extend existing theories by showing how expansive learning can be operationalized through concrete actions embedded in networked governance arrangements. Building on Engeström's theory of expansive learning (2015, 2018), the thesis contextualizes the human activity system by introducing collaborative leadership as an additional and integrative element that enables learning across organizational boundaries. Enabling learning in fragmented healthcare systems appears to require not only structural coordination but also dialogical spaces where diverse actors can negotiate meaning, surface tensions, and co-create new solutions across institutional and professional boundaries.

Findings related to the third research question, "What factors can influence learning-oriented leadership in fragmented healthcare systems?", highlight that leadership for learning is shaped by contextual factors such as multiple external drivers for change, a broad range of diverse actors, siloed structures, environments of emergent and unpredictable change, the availability of organizational resources, and restricted individual leadership autonomy. Despite these constraints, leaders sustained learning through behaviors such as providing support (direct learning-oriented leadership behavior), building climates for learning (indirect learning-oriented leadership behavior), and facilitating knowledge dissemination (indirect learning-oriented leadership behavior). Effective leadership was enacted not primarily through formal authority but rather through facilitation, negotiation, and the creation of cross-boundary learning arenas. Based on data and complementary theory, this thesis proposes context-sensitive refinements to Wallo et al.'s (2024) learning-oriented leadership framework to account for contextual factors, thereby strengthening its explanatory power in fragmented healthcare systems.

Together, the purpose, research questions, and results directly address the problem outlined in the introduction: the gap between the ambition to build learning healthcare systems and the operational realities that constrain such efforts (Ali et al., 2020). In response to the fourth research question, "What are the key elements for supporting organizational learning in fragmented healthcare systems?", the thesis proposes a model integrating four interdependent elements: context, organizational architecture, learning-oriented leadership, and collaborative learning. The model highlights that it does not seem to be the individual elements in isolation, but their alignment and mutual reinforcement, that enable organizational learning across borders and silos. By integrating and refining theoretical frameworks and grounding them in empirical studies of real-world improvement work, the thesis offers a system-level contribution to both the conceptualization and the practical design of organizational learning in fragmented healthcare systems.

In sum, this thesis contributes novel insights by identifying concrete, participatory learning actions embedded in networked strategies, by proposing refinements to Engeström's (2015, 2018) and Wallo et al.'s (2024) frameworks for fragmented healthcare systems, and by presenting a system-level model that can guide both practitioners seeking to support organizational learning in fragmented healthcare systems and future research.

7.1 Limitations

Qualitative research faces challenges related to generalizability, researcher bias, and participant availability, which can limit the depth and scope of collected data (Coghlan & Brannick, 2009; Flick,

2014; Johnson *et al.*, 2007, 2020; Bradbury, 2015). While integrating theoretical models of context, network architecture, leadership, and collaborative learning into a single model can strengthen knowledge on organizational learning in fragmented healthcare systems, it also presents challenges. Engeström's expansive learning theory emphasizes emergent, bottom-up learning processes but offers less guidance on structured governance and leadership, which can limit its applicability for designing interventions in contextually complex settings such as integrated healthcare (Cong-Lem, 2022; Engeström & Pyörälä, 2021; Engeström & Sannino, 2021). This raises concerns about whether leadership and network architectures can effectively sustain organizational learning across silos without conflicting with expansive learning's core principle of contradictions as drivers of innovation. Similarly, networked governance structures, while essential for collaboration across borders and silos, require stable relationships, shared goals, and voluntary engagement - conditions that may not always be present in fragmented healthcare systems (Provan & Kenis, 2008; Britto *et al.*, 2018) and therefore can make it challenging to implement such architectures in other local contexts. Power asymmetries, misaligned incentives, and institutional fragmentation can weaken these structures, potentially leading to ineffective collaboration and stagnation rather than continuous learning (Lalani *et al.*, 2020; Cresswell *et al.*, 2023). In addition, the learning-oriented leadership framework (Wallo *et al.*, 2024), that seems to focus more on intra-organizational settings, does not fully address leadership in networked environments where facilitation across borders, rather than direct authority, might be the key. This raises concerns about how learning-oriented leadership can be institutionalized in fragmented systems across independent organizations, recognized for weak formal hierarchical control. Additionally, structured learning initiatives, such as benchmarking and quality improvement, may be perceived as external control mechanisms rather than opportunities for genuine learning, leading to skepticism and resistance among healthcare professionals (Coles *et al.*, 2020; Buckmaster & Mouritsen, 2017). Ensuring that such initiatives remain participatory, rather than compliance-driven, can remain a challenge in applying structured learning within traditional healthcare systems.

Methodologically, participatory action research is resource-intensive and time-demanding, requiring strong stakeholder commitment (Rodriguez Espinosa & Verney, 2021). The voluntary nature of benchmarking and inter-organizational learning processes complicates consistency, as engagement levels vary across stakeholders. External disruptions, such as the COVID-19 pandemic, hindered planned national learning events and in-person collaboration, reducing opportunities for shared reflection and cross-boundary knowledge exchange during large periods of the studies.

While the findings offer insights into organizational learning in fragmented healthcare systems, the studies are limited to the Norwegian context. Norway's publicly funded healthcare system, characterized by universal coverage, relatively small population size, and specific governance structures, differs from many other international settings. These contextual conditions shaped both the opportunities for collaboration and the constraints faced by leaders and professionals in the studies. As a result, the transferability of findings to contexts with different healthcare financing models, governance arrangements, or cultural expectations must be considered with caution.

Additionally, as in most participatory action research, the researcher's dual role as facilitator and investigator may have influenced data interpretation, although systematic reflexivity and iterative validation helped mitigate such bias. The cross-sectional nature of the survey data limits inferences about causal relationships or leadership development over time, and the sample was drawn from a single institution, which constrains statistical generalization. Finally, the thesis focuses on organizational and leadership processes rather than direct patient or system-level outcomes, which may warrant future investigation.

To address these limitations, this thesis has presented the application of a stepwise research design to strengthen credibility, transferability, dependability, and confirmability (Johnsen *et al.*, 2020). Triangulation of data sources, including documents, interviews, observations, and surveys, ensured validity, while theoretical and purposive sampling enhanced the diversity of stakeholder perspectives (Sharma, 2017). The iterative validation of findings through participant engagement and expert reviews improved robustness, and the combination of qualitative and quantitative methods balanced depth with generalizability. Drawing on the three R's framework (Balazs & Morello-Frosch, 2013), the study ensured relevance by aligning research objectives with real-world healthcare challenges, maintained rigor through robust analytical frameworks and participatory design principles, and prioritized practitioner engagement to enhance the impact of findings. The qualitative dominant mixed methods design strengthened the study's explanatory power and practical relevance but also demanded high methodological reflexivity to maintain coherence across different analytical logics. While resource-intensive, this multi-reasoning approach enhanced both the depth and applicability of the findings in complex healthcare settings. Despite these measures, challenges remain in ensuring that learning processes can be implemented and sustained in other highly complex, fragmented healthcare environments.

7.2 Future research

Further research is needed to ensure validity and reliability of results, refine the results practical application, explore their adaptability across different healthcare contexts, and develop strategies that effectively integrate structured governance without constraining the emergent, adaptive nature of learning in complex systems.

While an integrated model combining context, networked structures, leadership, and collaborative learning can offer significant advantages, its feasibility depends on how well it accounts for the limitations identified. The model can present an approach to building learning healthcare systems that are both adaptive and structured, but its effectiveness will require careful attention to governance mechanisms, leadership roles, and the contextual conditions shaping learning processes. Further research is needed to investigate if there are other key elements that are even more important for organizational learning in fragmented healthcare systems. The model also points out the importance of continuous adaptations in between the four elements, but future research should further explore how these elements interact in practice and how potential barriers to integration can be addressed.

Investigating the model's scalability and adaptability across healthcare settings could also refine its practical application. In addition, there is also a need to develop digital infrastructures for knowledge exchange regarding such networks and collaborative learning processes, and leadership strategies for fostering sustainable, system-wide learning. Further studies could also aspire to evaluate the model's indirect impact on healthcare outcomes, ensuring its relevance to improving patient care while advancing theoretical understanding of organizational learning. By bridging theory and practice, this research could guide the development of more resilient, adaptive healthcare systems. Future research should furthermore investigate how the four elements - context, organizational architecture, collaborative leadership, and collaborative learning - interact over time, and how their alignment or misalignment influences the development of learning healthcare systems.

Paper 1 highlights the need for optimizing voluntary, learning-oriented benchmarks. Future studies could explore how structured learning activities, such as focused discussions to uncover dilemmas, enhance benchmarking outcomes or investigate ways to make voluntary benchmarking processes

more time- and resource-efficient. Engaging patients as stakeholders, could also significantly refine the development of meaningful benchmarks.

Paper 2 emphasizes incorporating leadership as an explicit element in Engeström's human activity system model. Leadership, as a stable management structure facilitating shared goals and collaborative decision-making, is recognized to be essential within organizational network architectures. Future research could investigate such networked leadership structures further to refine Engeström's model to offer more actionable recommendations for practitioners aiming to building leadership for learning and improvement in integrated healthcare.

Paper 3 calls for further validation of the proposed design recommendations to support organizational learning across borders and silos in integrated healthcare. Research could focus on testing and implementing these recommendations in various phases to understand how processes of organizational learning across borders and silos can be maintained over time and in diverse settings.

Paper 4 identifies gaps in actionable guidance for fostering learning-oriented leadership in fragmented healthcare settings. Studies could investigate leadership behaviors and strategies that address systemic challenges such as stakeholder diversity, resource constraints, and the complexity of healthcare systems. Developing tools to equip leaders with system-thinking capabilities and strategies for driving collaborative learning would be particularly valuable.

Paper 5 highlights how future research should extend the exploratory findings of this study by refining and validating the instrument for measuring learning-oriented leadership in fragmented healthcare systems. Longitudinal, multi-rater, and comparative studies across organizations could clarify causal relationships and illuminate how structural conditions shape leadership for learning. Conceptually, further work is also needed to adapt Wallo et al.'s (2024) framework by incorporating behavioral dimensions related to factors to learning-oriented leadership in fragmented healthcare systems.

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