

Problem-driven design methods for organizing collaborative learning: learning circles and change laboratories

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Abstract

Purpose – This study aims to examine how two Nordic co-design methods, namely, learning circles (LC) and change laboratory (CL), support collaborative learning and system-level redesign in educational settings. The authors identify learning and facilitation principles that guide the application or combination of these methods and clarify how they enable sustained, democratic and expansive organizational development and transformation.

Design/methodology/approach – The study draws from two co-design cases conducted in multi-stakeholder educational settings. Using qualitative data from recorded discussions, facilitation materials, artifacts and other process documentation, the authors analyze how LC and CL organize inquiry, surface systemic challenges and support collaborative learning and organizational redesign. The authors also discuss the epistemological foundations, learning dynamics, facilitation practices and outcomes of the LC and CL cases.

Findings – Both LC and CL initiate collaborative learning through problem-driven design and inquiry. They support iterative reframing, cross-boundary understanding and collective agency. LC strengthens dialogical reflection, relational capacity and the articulation of locally meaningful criteria for change. CL enables the

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identification of systemic contradictions and the modeling, testing and consolidation of redesigned work activities. They both support reflection, sustainable collaborative learning and organizational transformation.

Originality/value – The authors discuss LC and CL as research-assisted methods for co-design. Rather than being isolated design events, both aim at nurturing long-term engagement in continuous learning. This analysis reconceptualizes co-design as an ongoing infrastructuring and a theoretically grounded learning process that integrates democratic traditions with expansive learning.

Keywords Change laboratory, Co-design, Collaborative learning, Infrastructuring, Learning circles, Participatory design

Paper type Research paper

Introduction

Over the past two decades, the concept of *co-design* has proliferated into several research fields beyond the “traditional” field of design, e.g. public administration and policy studies (e.g. [Bason and Austin, 2022](#); [Blomkamp, 2018](#); [Kimbell and Bailey, 2017](#)), public healthcare research (e.g. [Vargas et al., 2022](#)), social innovation (e.g. [Bannon and Ehn, 2013](#); [Manzini, 2015](#)) and education (e.g. [Cobb et al., 2013](#); [Duvall et al., 2020](#); [Kosmas et al., 2025](#); [Kwon et al., 2014](#); [Piecham et al., 2025](#); [Severance et al., 2016](#)). While the concept has proliferated across disciplines, approaches to co-design nonetheless emphasize the coexistence, interaction and negotiation of multiple forms of knowledge in collective inquiry ([Warren et al., 2020](#)). This orientation positions all participants as potentially creative contributors ([Brandt et al., 2012](#)) and foregrounds questions of power, equity and accessibility in both facilitating and reporting on the co-design efforts ([Bang et al., 2015](#); [Benz et al., 2024](#)).

In the field of *educational research*, co-design has gained traction as a way to support teacher learning, innovation and school-level change (e.g. [Cobb et al., 2013](#); [Cumbo and Selwyn, 2022](#); [Duvall et al., 2020](#); [Kwon et al., 2014](#)). Recent work highlights the importance of teacher agency and shared ownership in curricular co-design, underscoring the need for structures that enable joint inquiry, collective problem diagnosis and sustainable professional learning ([Kajamaa and Hyrkkö, 2022](#); [Severance et al., 2016](#)). Focus has also been directed toward participatory approaches to design as methodology that integrates educational justice, learning and structural power dynamics ([Bang and Vossoughi, 2016](#); [Penuel, 2019](#)). These insights resonate with broader debates about how collaborative design processes can sustainably generate system-level learning rather than isolated innovations.

Despite growing interest in participatory approaches in education, research still offers only limited theoretical insight into the collaborative learning dynamics through which co-design efforts build capacity, sustain change and develop durable collaborative practices over time. As a result, the field tends to focus more on *what* is done, tools, workshops, facilitation formats, than on *how* co-design supports learning, fosters commitment and enables long-term transformation across organizations and settings. Collaborative learning thus remains an implicit or under-theorized dimension of co-design practice: connections between co-design methods and theories of collaborative learning require further articulation ([Wacnik et al., 2025](#)). Consequently, our understanding of how co-design activities can facilitate boundary-crossing collaboration or generate profound, yet sustainable organizational change is still partial ([Bang et al., 2015](#)). Design remains easier to describe procedurally than to explain in terms of the learning processes that make enduring transformation possible.

This article contributes to that gap by introducing two Nordic, research-assisted, problem-driven methods, namely, learning circles (LC) and change laboratory (CL), that explicitly integrate co-design with collaborative learning theories. Importantly, we clarify that in both

cases the “design” in question operates at a general system level, not at the level of specific curricular materials, digital technologies or classroom tools. The co-designers in our cases are professional participants situated within educational organizations and networks, teachers, leaders and cross-sector stakeholders, working together to analyze systemic problems and redesign shared practices.

At the same time, our two cases differ in their organizational scope and the type of design work they organize. LC facilitates *dialogic, inquiry-driven design for practice development* across inter-organizational partnerships, such as groups of social work, healthcare or education professionals integrating research-based insights into practice and tools to enhance boundary-crossing practices. Rooted in the Scandinavian *folkbildning* tradition, LC structures collective inquiry around locally salient problems and builds reflective capacity, collaborative learning and legitimacy for change among participants (Aakjaer and Wegener, 2023; Larsson and Nordvall, 2010; Nilsen *et al.*, 2012).

On the other hand, CL uses *an interventionist, formative system-design methodology* within organizational activity systems defined by a shared object, such as a hospital operating room focused on improving multi-professional patient treatment. Grounded in cultural-historical activity theory and expansive learning, CL guides participants to analyze systemic contradictions, model new forms of activity and iteratively test redesigned practices aimed at organizational renewal (Engeström, 2015; Kajamaa and Hyrkkö, 2022; Virkkunen and Newnham, 2013). Both methods treat design as a structured collaborative learning process, illuminating distinct yet complementary pathways for understanding how co-design can produce learning and transformation at the system level.

Empirically, we draw from two multi-year research–practice collaborations conducted by university-led teams working with educators and leaders across vocational education and training (VET) and primary school contexts in Finland and Denmark. Our data include observations, audio and video recordings, design artifacts, memos and follow-up interviews from the LC and CL processes, which we have analyzed qualitatively using thematic coding and theory-driven content analysis. This involves multi-modal analyses of the collective inquiry processes, facilitated through research-based prompts and reflective artifacts, as well as using theoretically grounded analytical frameworks as starting points, such as contradiction analysis, activity-systems modeling and the cycle of expansive learning actions.

We address three research questions (RQs):

- RQ1. How do LC and CL contribute to joint inquiry and learning among participants engaged in educational change?
- RQ2. What types of knowledge, tools and practices emerge that support active participation and critical engagement across sites?
- RQ3. Which learning and facilitation principles guide the adaptation or combination of these co-design methods for different aims and contexts?

Our contribution is twofold. Theoretically, we deepen educational co-design research by analyzing two methods that place collaborative learning at the center of design processes and that articulate specific facilitation principles for organizing equitable, inquiry-driven and system-oriented participation. Practically, we offer concrete examples of problem-driven co-design efforts that enabled cross-boundary collaboration, creative problem (re)framing and sustainable innovation in educational settings. Together, these contributions illuminate how co-design methods can support participant agency, collaborative learning and enduring system-level change.

Key developments in participatory design and co-design research

The tradition of co-design research and practice is firmly rooted in the Scandinavian lineage of *participatory design* (PD), which emerged from struggles over workplace democracy and the politics of technology and cast participation as a matter of power redistribution, worker agency and collaborative decision-making. In PD, design is explicitly a political (Hoadley, 2017) and epistemic practice in which those affected by change possess situated knowledge and legitimate authority to shape it (e.g. Binder *et al.*, 2006; Björgvinsson *et al.*, 2012; Ehn, 1992).

PD epistemically builds on social constructivist thinking, with design knowledge viewed as co-created by the participants in a collaborative process, rather than something extracted from them through research (Simonsen and Robertson, 2013). The understanding of both knowledge and practices is thus bound to their social context, rather than neutrally or technically conceivable. This kind of situated, embodied or experiential knowledge, which is linked to collective, practical processes of knowing, may be difficult to verbalize and therefore requires participatory methods tailored to the specific context to surface. From this point of view, knowledge emerges “in action,” through action-embedded inquiry and experimentation with artefacts (Vygotsky, 1978).

Furthermore, Habermasian critical theory has significantly influenced the Scandinavian PD tradition, shaping its emergence as an emancipatory effort to democratize knowledge and knowledge-creation (Ehn, 1988; Simonsen and Robertson, 2013), to redistribute expertise and social power. Early Scandinavian PD efforts also built on Marx’s theorizing of social production and work, as well as the democratic ideals of participation and inclusion (Ehn, 1988), granting influence over design decisions to those affected by them. This emancipatory thinking has also become a central element in recent PD research especially in the USA, which emphasizes the decolonial aspects, consciousness of power and epistemic multiplicity of both design and research (Bang and Vossoughi, 2016; Bang *et al.*, 2015).

The PD tradition is also influenced by practice-theoretical (e.g. Schatzki, 2001) ideas of using design to engage directly with concrete, socially organized routines and lived practices. Equally influential have been dialectical theories developed within cultural-historical psychology (Cole, 1995) and activity theory (see Bødker, 1991), which, in Finland, later grew into the more rigorously defined developmental work research (DWR) methodology (e.g. Engeström, 2005; Virkkunen, 2004).

On these grounds, PD adopts the use of deliberate methods for organizing collaborative design and future-making (Schuler and Namioka, 1993), typically structured as workshops that may be facilitated according to a variety of models. These workshops often enact the Deweyan ideas of action-based inquiry, which involves the joint creation of prototypes as tools for collaborative learning (Binder *et al.*, 2011; Simonsen and Robertson, 2013). The development of PD methodology has paid attention to long-term commitment to the participating (work) communities and to fostering democratic decision-making processes within these. The PD tradition thus steers clear from treating design as mere technical and neutral problem-solving, but rather as a collective epistemic practice with multilevel political and social dimensions and implications (see also Bang and Vossoughi, 2016).

Evolving from its origins in the democratic PD tradition, contemporary *co-design* extends PD’s commitment to shared decision-making into a broader, practice-centered approach that emphasizes the creative empowerment of participants across services, communities and social innovations (Sanders and Stappers, 2008, 2014). As a design-based methodology, co-design draws from established traditions of PD, cooperative design and later user-centered design (Duvall *et al.*, 2020), reflecting their long-standing advocacy for centering every phase of the design process on participants’ experiences, knowledge and needs. This

expansion across fields has contributed to a growing elasticity, even ambiguity, in how co-design is defined and operationalized (Blomkamp, 2018; Vargas *et al.*, 2025).

Despite such variation, co-design approaches consistently foreground epistemic pluralism, emphasizing the co-existence and negotiation of multiple forms of situated knowledge, such as professional, experiential, technical and emotional (Haraway, 1988). This kind of epistemic heterogeneity and multiplicity can be conceptualized along the dimensions of horizontality – the acknowledgment of learning and development across activities and their boundaries and dialogicality – the emphasis of language and creative dialogue in collective meaning-making (Warren *et al.*, 2020). In this view, all stakeholders are treated as creative contributors whom the applied methods and tools should meaningfully serve (Brandt *et al.*, 2012). This, in turn, necessitates heightened attention to issues of power, accessibility and inclusivity within design processes (Benz *et al.*, 2024; Severance *et al.*, 2016), mirroring and renewing co-design's democratic origins in PD.

In this study, we build on Sanders and Stappers' (2008) conceptualization of co-design, which stresses co-creation across the entire design process, collaboration across different levels of expertise and tool use as main facilitation principles. We also follow PD's assumption that needs and problems, on which the co-design process is based, are not given but jointly articulated (e.g. Ehn, 1992; Halse, 2008). In this markedly practical view, facilitation is most of all concerned with maintaining the co-design process and remaining sensitive to emerging co-creative and *ad hoc* ideas. The proliferation of co-design reframes design issues to broader systemic issues, in which complexity is high and affected communities are not limited to single professions or organizations. Addressing complex problems and co-designing new solutions typically involves the creation of situated artifacts and concepts to mediate the practical changes required. Their employment as mediators of sustainable change necessitates not only individual learning but also systemic, institutional development.

Learning circles and the change laboratory as co-design methods

Next, we will present two distinct yet complementary Nordic research-assisted, problem-driven co-design methods, namely, LC and CL. Each offers a pathway for supporting collaborative learning.

Learning circles

LC was originally developed within Swedish popular movements during the late 19th and early 20th centuries as they struggled for democracy, sobriety, religious freedom and workers' rights (Larsson and Nordvall, 2010). The "study circles," as they were called, helped members learn democracy on a small scale so they could later participate in politics and public administration. Study circles have become a cornerstone of liberal adult education, emphasizing dialogue, non-hierarchical learning and the recognition of everyday knowledge. From the origin of the study circle, terminology such as "circle members" or "participants" (not students), "circle leaders" (not teachers) and "meetings" (not classes) are maintained (Bjerkaker, 2014). The central principles of LC reflect PD's original commitment to democratic ideals and work-orientation, aiming to give priorities to learning needs before learning schemes (*voice* and *power*), valuing heterogeneity (*equality* and *diversity*) and building on high engagement and commitment of participants. Furthermore, the migration of LC from popular movements to workplaces and academic contexts was originally assisted by labor unions as a form of worker co-determination (Lahdenperä, 2014; Larsson and Nordvall, 2010).

An LC process follows iterations in cycles of experience and reflection that take off in concrete challenges, or disturbances, experienced by the participants at work. This builds strongly on pragmatist philosophy and experiential learning theory (Brandt and Elkjaer, 2024), particularly on the work of Dewey (1986) and on, e.g. Lave (1993) work on situated learning and the inseparability of activity, action, thought, feeling and value. Central to this line of theorizing is viewing disturbances as the basic trigger of learning and knowing. Therefore, concrete challenges serve as the basis for collective exploration, drawing on participants' specialized knowledge of workflows and everyday practice to develop forward-looking solutions (Aakjaer and Wegener, 2023). Here, we point to how LC can be framed as infrastructures for joint inquiry across organizational, personal or community differences (Dewey, 1986; Hillgren *et al.*, 2011; Bannon and Ehn, 2013).

Facilitating LC involves distributing responsibility for learning, inclusion and the formation of a "shared problem space" (Akkerman and Bakker, 2011) among the participants. The facilitator scaffolds the process by encouraging participants to inquire into concrete work challenges, create, collect and share data-material in collective problem exploration, supporting continuity and reflective depth and supporting the process of co-creating and experimenting with new proposals, concepts or models (Nilsen *et al.*, 2012). This points to the positionality of the facilitator-researcher, whose role is not external to the process but situated within the ongoing work of supporting participation, collective inquiry into concrete work challenges and sensitivity to potential tensions (Lotz *et al.*, 2026). This mirrors what Brandt *et al.* (2012) describe as co-design practices of participation in iterative cycles of making, telling and enacting.

The Deweyan perspective highlights the need for infrastructures, in which heterogeneous, sometimes temporary coalitions (e.g. participants from elderly care practice, VET-education and employment service) can form around contested problems (Bannon and Ehn, 2013; Hillgren *et al.*, 2011). The case using LC, presented in this article, maintains this democratic ethos and strives to use LC as a method for integrating research-based insights and structured reflection to support collaborative learning and organizational change (Aakjaer and Wegener, 2023; Nilsen *et al.*, 2012).

The change laboratory

CL is a structured, research-based intervention method developed within Finnish application of cultural-historical activity theory (Engeström, 2005; Virkkunen and Newnham, 2013). It aims to foster profound changes in organizational activities by engaging participants in a collective learning process (Engeström, 2015). The CL method was originally developed at the University of Helsinki as part of the DWR methodology (Engeström, 2005). It builds on the developmental concept of expansive learning, which conceptualizes collective work practices as dynamic, interconnected activity systems (see Engeström, 2015). Persistent systemic contradictions, underlying the historically formed local activity systems, and collaborative attempts to resolve them are seen as the key drivers behind learning and the development of activities (Hyrkkö and Kajamaa, 2025; Severance *et al.*, 2016).

The development of the CL method during the 1990s took place in parallel with a fundamental change in how organizational development was perceived: moving from stable, one-directional cause-and-effect processes and monologic information transfer to multifaceted and multilevel interactions and dialogic information exchange. Sustainable practice renewal, which stems from identifying and addressing systemic contradictions, necessitates sensitivity to the clash between the top-down developmental demands and the practitioner-initiated co-design of practical concepts to reframe the problems and reorganize practices (see Bang *et al.*, 2015). Such concepts, as well as participant-created new activity

models stemming from them, often significantly reinforce the sustainability of the renewed practices, as they are based on historical and practical bottom-up understanding of the potentials and realistic limitations of the activity.

Facilitating a CL to enable co-design involves providing participants with research-based tools for identifying, analyzing and tentatively resolving the contradictions and reconceptualizing the object of activity via dialogue and co-innovation (Kajamaa and Hyrkkö, 2022; Virkkunen and Newnham, 2013). To enhance the sustainability and wide diffusion of outcomes, participants should ideally represent different organizational levels and a variety of roles and positions. Furthermore, each participant's voice, knowledge and expertise should be harnessed for collective development, necessitating equal participation and multivoicedness. Participant agency is therefore a key driver of learning in a CL (Hyrkkö and Kajamaa, 2025).

Being a "formative" intervention method (Sannino *et al.*, 2016), CL represents an emergent and open-ended approach to joint development. Agency is therefore thought of as a transformative, non-teleological quality, which cannot be deliberately organized or planned (Hyrkkö and Kajamaa, 2025). Rather, it may emerge in favorable conditions and may appear in forms that are not necessarily solution-oriented, such as resisting the entire project. It is therefore the responsibility of the researcher-interventionists to create a safe and constructive learning space, in which questioning and criticizing current practices is encouraged but which also provides psychological security to openly engage in processes of co-creation, expressing new ideas and building on others' ideas (Hyrkkö and Kajamaa, 2021). In this, CL continues PD's commitment to context-sensitive and democratic research-practice collaboration.

The CL has since been applied globally, across all continents and numerous sectors, such as education, healthcare, postal services and public administration (see Hyrkkö and Kajamaa, 2025), gaining recognition for its capacity to address deep-seated systemic challenges through collective inquiry and transformation.

Learning circles and change laboratory as problem-driven co-design methods for collaborative learning

We view LC and CL as problem-driven design approaches based on how both methods position the problem and ongoing problem-framing as central drivers for learning, development and change, especially in interprofessional and interorganizational settings (Avby *et al.*, 2025). The problems facing contemporary organizations, including those in the field of education, are often complex, volatile and must be addressed and navigated across organizational divides, which calls for co-design in interdisciplinary participant constellations. The problem and its evolving definition are pivotal to what drives the collaborative learning process. Moreover, it is the problem that defines the interdisciplinary constellations or boundaries that need to be included and addressed in a co-design process.

Echoing Sanders and Stappers (2008), we view co-design as a multi-actor, interdisciplinary, inclusive practice that is context-laden and can also span contexts while retaining a commitment to generative collaboration (*ibid*). Our contribution builds on these insights by showing how LC and CL anchor co-design into processes of collaborative learning and organizational change. Both LC and CL share PD's foundational democratic idea that new practices should be developed in close interaction with people from relevant communities (Binder *et al.*, 2006). LC and CL also align with co-design's core commitments of creativity, collaboration, shared authorship, generative methods and innovation, positioning participants as active and creative partners in the creation of knowledge, new services and products (Sanders and Stappers, 2014; Brandt *et al.*, 2012).

From a problem-based perspective, collective creativity (Sanders and Stappers, 2008; Schoug *et al.*, 2025), or distributed creativity (Hyrkkö and Kajamaa, 2021), is ultimately driven by the human needs that emerge from historically formed problems and tensions experienced in our activities (Miettinen, 2013). In other words, a problem-based, bottom-up approach necessitates a combination of historically critical reflexivity (see Bang *et al.*, 2015) and future-oriented co-creativity (Halse *et al.*, 2010), emphasizing the generative aspects of the interactional, culturally embedded and mediated design processes. Co-designed models and solutions can in fact be seen as collectively negotiated projections of future actions that potentially transcend currently experienced problems, aiming to generate something unexpected, yet grounded in the real-life practices and their preconditions regarding what is currently possible (Halse *et al.*, 2010; Hyrkkö and Kajamaa, 2021; Vygotsky, 1978). We essentially view co-design as a joint effort to redesign the future of the activity and its place in society – a quality that unites LC and CL.

For this, LC and CL are particularly relevant approaches to enhancing collaborative learning in the light of systemic and complex challenges. They both work from a principle of high engagement and responsibility of participants in defining and framing both the focus of inquiry, the relevant input and what count as meaningful experiments (e.g. testing new tools, practices and routines, but also testing new ways to conceptualize or frame the problems). Therefore, in our view, the two approaches treat co-design as *infrastructuring* (Aakjær and Pallesen, 2022; Bannon and Ehn, 2013), defined as the ongoing cultivation of relationships, routines, tools and roles that make sustained collaboration possible and equitable across sites and over time. Rather than viewing participatory events as discrete interventions, infrastructuring invites designers and researchers to “design with and for what is already there” while building networks that can undertake the difficult work of transforming practice in durable ways (Aakjær and Pallesen, 2022; Cumbo and Selwyn, 2022; Kali, 2024). This perspective helps account for how co-design approaches contribute not only to immediate learning events but also to the longer-term infrastructures that sustain collaborative inquiry and practice transformation over time.

In this article, we use infrastructuring as an analytic perspective to describe how LC and CL support durable collaborative learning. In LC, infrastructuring refers to the ongoing process of establishing social, material and epistemic re-arrangements that support inquiry and mutual learning. This includes developing recurring routines and artifacts for inquiry, such as facilitated circle meetings, reflective prompts and shared documentation practices, that help sustain learning across time and shifts in participant constellations. CL addresses infrastructuring through the collective articulation of systemic contradictions, the modeling of alternative activity configurations and the experimentation and consolidation of new work activities and forms. Seen in this light, the two approaches operate in different but complementary ways within problem-driven collaborative learning. LC primarily strengthens the relational and epistemic infrastructure that enables sustained problem framing and re-framing through joint inquiry and collaboration, while CL advances the system-level reconfiguration of work through collective analysis, redesign and stabilization of new practices. Next, we look at two case examples, LC and CL, through which we answer our RQs.

Putting co-design into practice: two Nordic case examples

We will next illustrate how system-level co-design can be enacted in real educational settings by examining two Nordic cases that differ in context, scope and purpose. Both examples demonstrate how collaborative, research-assisted learning processes can help participants surface systemic challenges, reframe persistent problems and jointly redesign practices. The

first case draws on the LC approach to support cross-sector innovation in Danish VET and elderly-care education. The second case uses a CL intervention to help a Finnish primary school navigate curriculum reform by developing shared models of instructional leadership. Together, the cases show how co-design can function as a powerful mechanism for collaborative learning and organizational renewal.

Case 1: a learning circle for co-designing in elderly care education

The first case stems from a multi-sector co-design initiative in Danish VET-education using LC to promote educational innovation in cross-sector collaboration. In a rural Danish municipality facing persistent challenges with recruitment and retention in elderly care, local actors partnered with researchers to establish LC as part of a broader research and development initiative. The LC was conceived as a collaborative arena where stakeholders could jointly investigate and redesign the conditions shaping entry into vocational education and employment in the care sector. Its initial mandate was to examine a pre-vocational program that had been developed to support adults outside employment and education in transitioning into formal VET pathways. Despite considerable effort, the program had yielded only limited success, prompting a shared desire to understand why (problem-framing) and explore new venues (re-frame problem and co-design).

The 14 LC sessions brought together a diverse group of practitioners ($n = 8\text{--}11$, varied across the sessions) whose work intersected around the pre-vocational program: team leaders, supervisors and consultants from municipal elderly care; team leaders and consultants from municipal employment services; teachers and consultants from the local VET school; and researchers. This cross-institutional composition was essential, as the challenges facing elderly care education were not located within a single organization but emerged in the transitions between them (i.e. school, employment services and care practice). In this way, the LC can be seen as an infrastructure for inquiry across differences around a shared – and potentially contested – problem (Simonsen and Robertson, 2013).

Before the LC was convened for the first time, researchers conducted interviews ($n = 12$) with professionals involved in designing or running the pre-vocational program. The interviews surfaced early hypotheses about breakdowns in coordination, mismatched expectations and gaps between program design and everyday practice and work organization across the involved organizations. At the first LC meetings, the participants supplemented these insights with quantitative data, such as dropout rates, points of breakdown across the program's duration and the number of participants who successfully transitioned into formal vocational education or employment. The researchers also introduced qualitative material in the form of vignettes (Bloom-Christen and Grunow, 2024) based on interviews with newcomers ($N = 7$), which helped anchor discussions in concrete experiences rather than abstract assumptions.

The LC operated through iterative cycles of inquiry and reflection, echoing Brandt *et al.*'s (2012) cycles of *telling*, *making* and *enacting*. Based on quantitative and qualitative data on the pre-vocational program, the participants examined micro-situations where transitions between school, employment services and care practice faltered. One such micro-situation was revealed in a vignette about a merit student "Sally's" failed to attempt to transition to a higher educational level. Despite Sally's strong progression and motivation (assessed within the education and care practice), private financial barriers forced her to withdraw. Mentors from elderly care had searched for solutions, unable to find the support needed. The discussion of vignette revealed how the job center's absence in the process left potential compensatory options untapped. An employment team leader said:

So very few people think of the job center as a supportive part [...] They think we are really only out to take people's lives and punish them.

The conversation interweaved perspectives across organizations, opening a shift in how actors were positioned or deemed relevant (employment service as a relevant actor in elderly care vocational programs), how the problem was framed (a situation of multiple, co-occurring challenges including geographically dispersed offers of education, domestic and gendered circumstances and rising gasoline prices) and, where possible, solutions were later sought, as participants reported that the job center was involved more regularly.

These breakdowns became shared problem spaces for analysis (Akkerman and Bakker, 2011). By reconstructing specific episodes, such as exemplified by the vignette on Sally, participants were able to identify volatile systemic tensions that no single actor could control or resolve alone. Through this process, the LC gradually shifted from diagnosing the shortcomings of the existing program to collectively reimagining and exploring how recruitment and preparation for elderly care could be organized and supported in micro-situations. The inquiry cycles created a space for participants to challenge assumptions (e.g. about motives and relevance of the job center), articulate their different institutional logics and experiment with new forms of collaboration. In doing so, the LC functioned not only as a site for problem analysis but also as a platform for building more sustainable partnerships.

In response to our *RQ1, How did Learning Circles contribute to learning for participants?*, this case shows how the LC process reoriented participants' attention from abstract program evaluation from within single organizational perspectives to concrete, situated problems. Three things stand out that illustrate how the LC scaffolded for collaborative learning. The first is cross-boundary sense-making, as by bringing together actors from elderly care, employment services and the VET-school, the LC created a rare space where the participants could explore how their practices intersect. Second, the LC anchored inquiry in micro-situations of breakdowns, like moments where transitions fail, newcomers struggle or coordination collapses. These "shared problem spaces" (Akkerman and Bakker, 2011) formed the basis for collaborative and creative re-framing of problems as their understanding of the situation expanded beyond their own organizational silo. These breakdowns became shared learning objects not only about what went wrong but how and why it matters for the system as a whole. Third, the LC process ran over a process of two years. Hence, the LC fostered collaborative learning by positioning the participants as co-investigators of the broader ecosystem of elderly care practice and education, supporting iterations of telling, making and enacting that made problems visible and reframable, revealed breakdowns, including mismatches in coordination, communication and organizational logics.

In response to our *RQ2, What knowledge, tools and practices emerged that promoted active participation and critical engagement?*, this LC case illustrates several ways in which knowledge, tools and practices promoted critical and active participation. First, the practice of starting with a concrete and shared practical challenge (high investment and low success rate of a pre-vocational program), defining problems collaboratively and letting the problem definition evolve as the process of inquiry posed new perspectives. This was enhanced through a practice of collaboratively creating and making sense of a shared set of data in the LC, including multiple sources of knowledge and practical experience. Participants brought in quantitative indicators (such as dropout rates, transition points) from all three organizational contexts (i.e. school, employment services and care practice). Also, narrative tools (telling) were used for grounding inquiry: the vignettes (Bloom-Christen and Grunow, 2024) based on newcomers' experiences, brought to the LC by the researchers, functioned as boundary objects (see Akkerman and Bakker, 2011) that made the consequences of systemic

misalignments tangible and affectively resonant to the participants, enabling critical engagement without blaming individuals or single organizations. The vignettes thus evolved a dialogical sensibility on the discursive, layered aspects of meaning-making (see [Warren et al., 2020](#)) as a critical site of re-imagining normative structures that affect the learning process.

The LC created a common evidentiary ground that everyone could interrogate, regardless of institutional background, and cultivated a process of tracing problems across organizational boundaries rather than locating them within one site. Altogether this worked as a form of cross-institutional diagnostic practice. Tools and practices were not imported from outside but emerged from the LC's co-design efforts and became part of the group's repertoire for collaborative learning and innovation. As a result, cross-organizational collaborative practices were improved in several ways. First, elderly-care consultants became involved in VET-teaching to proactively address learning culture there. Second, VET-staff and internship providers began participating in placement review meetings to support at-risk students and align education–practice expectations. Finally, LC was implemented as a framework for cross-municipal VET collaboration.

Case 2: change laboratory for co-designing an instructional leadership model amidst curriculum reform

A Finnish primary school was facing transformational needs due to an upcoming curriculum reform, which emphasized transversal competencies, co-teaching and interdisciplinary learning. The historical background of the Finnish educational system, grounded in the German *Bildung* tradition combined with a stress on didactics (the practice and theory of teaching), positions schoolteachers as relatively autonomous professionals. Finnish teacher training prepares teachers to interpret the curriculum and use it as a basis of their individual instruction, rather than merely execute the pre-determined curricular outcomes. This tension between the individual and collective interests inspired our research group to conduct a CL intervention with the primary school teachers and principal.

The project began with an ethnographic study of the school, with observations of classroom and recess activities and interviews of the principal and several teachers. The acquired data was used for planning the CL sessions, which were structured into six 90-min gatherings over a two-month period. Six months later, a follow-up session was conducted to reflect on the intervention process and the implementation of its outcomes.

The school was both a national pilot site for the curriculum reform and in itself a complex organization at the intersection of multiple institutional logics – providing basic education, pre-service teacher training, educational research and experimentation and continuous learning – conceptualized in activity theory as multiple objects of activity. During the first CL sessions, as the most pressing problems of the community, the participating teachers identified mastering of the changing individual and organizational needs related to how the community would orient itself to these objects. Consequently, and as a deviation from the facilitators' initial plans, instructional leadership became the central topic of the intervention project.

During the seven sessions, researchers provided the participants ($N = 6\text{--}12$, depending on the session) with conceptual and theoretical tools derived from activity theory, such as the concepts of “disturbance” and “object of activity” and the models of expansive learning and reflective interaction. The purpose of these was to help participants conceptualize their work practices as a systemic, dynamic and interconnected activity, to descend from the surface level of ill-feeling and discomfort in their daily work to the level of systemic contradiction, a

more nuanced understanding of the systemic and historical nature of the experienced problems.

Across the sessions, an iterative process of identifying and engaging with tensions underlying the problematic organizational activity unfolded. Developing a shared understanding of the central object, or future-oriented “purpose,” of all the school’s activities (summed up by a participant in the third session as “*pupils and their learning*”) allowed the teachers to reframe the identified problems and visualize the future possibilities for reorganizing the activities. This process culminated in the formulation of a new model of distributed instructional leadership, with a mandate from the principal, which enabled the teachers to align their work activities better with the demands of the new curriculum.

In response to our *RQ1, How did the change laboratory contribute to learning for participants?*, the CL, as a formative intervention method, offered a space for experimenting with organizational transformations and the tentative creation of novel practices. It provided a co-design method where collaborative learning began by the participants jointly recognizing the actual “need state” of the work community. Both this problem definition and the design and modeling of the intervention’s outcomes were the responsibility of the participants, as they worked out expansive solutions to the contradictions of their activity. Yet, the meaningfulness of this expansive learning process for its participants heavily depended on the facilitators’ capacity to enable a truly bottom-up learning and development process, which is based on real-life experienced problems and needs but is simultaneously theoretically grounded.

The expansive learning process in the primary school’s CL started with questioning the current work practices, i.e. identifying and articulating the immediate negative experiences and feelings at work. These “disturbances,” such as a lack of commitment to the work community and teachers’ developmental interest being focused only on short-lived individual pedagogical solutions, were gradually realized to reflect a deep-seated historical contradiction between individual and collective interests, built into the schooling system and aggravated by the demands of the reform. Along with the understanding of the school’s shared object, this historical and systemic analysis of the problems formed the basis of the co-design process, in which novel, tentative ways to organize the activity were envisioned. The CL also allowed experimentation with the proposed solutions and the follow-up of their implementation to see if they gained traction or would need refining.

The learning trajectory of the participants can be described as crossing a “collective” zone of proximal development (Vygotsky, 1978), with both the learning zone and the steps needed to collectively cross it defined by the participants. This involved reconceptualizing: leadership in distributed, team-based terms instead of the old individualistic, “strong” leadership style and teachers’ professional orientation in collective terms instead of the old individualism, building on the historical strong teacher-autonomy. New organizational structures (such as task-based teacher teams and an instructional steering group) and new conceptual tools (such as metaphors to reframe the problems) were co-designed and implemented to balance the work practices of the community of autonomous teachers with the new educational landscape building on collaboration and interdisciplinarity.

In response to our *RQ2, What knowledge, tools and practices emerged that promoted active participation and critical engagement?*, the CL, facilitated by researchers with expertise in activity theory, promoted collaborative learning by offering two kinds of instruments to the participants. First, ethnographically collected data from the school was used to promote initial problem-framing through reflection of problematic practices. Second, theoretical models were provided to foster a more systemic and historical understanding of the problems. These instruments helped participants analyze their immediately experienced

disturbances as historically and culturally rooted and to envision an expanded shared object of their instructional activity.

For the CL's teacher participants, who historically had substantial autonomy over their own instruction, the curriculum reform required transforming both individual and shared practices. This meant crossing the conventional boundaries of the teacher community and individual teachers' work, as the school organization had structurally developed to support high teacher autonomy, with only limited structures and practices to support collaborative planning, execution and evaluation of instruction.

In this case, a key boundary object (see also [Akkerman and Bakker, 2011](#)) that emerged during the project was a new team-based instructional leadership model, collaboratively drawn in the sixth session by the teachers. This model incorporated many practical and organizational ideas, which had been discussed throughout the sessions, as well as various metaphors (e.g. "donut," "heliocentricity," "compass") for reconceptualizing collaboration and leadership (see [Hyrkkö and Kajamaa, 2021](#)). This boundary object, named by the CL participants as "Compass model for shared instructional leadership," was subsequently taken up as a mediating instrument for the school's transformation. With the help of the model, new tentative forms of boundary-crossing collaboration, such as roles and responsibilities of the teacher teams and the steering group, were co-designed. Existing organizational infrastructures were also kept in the design, albeit remodeled, for example, the teachers' general meeting gained a significant role as final decision-maker on initiatives prepared by the teacher teams. The principal's role, on the other hand, became more a coordinator of development, via participation in the steering group and chairing the general meetings.

With the "Compass model" taken up as new school leadership practice in the following fall term, instructional leadership and decision-making concerning the school's diverse duties were effectively distributed across the primary school organization. However, in a follow-up session held after six months of experimenting with the new practices, discussion arose about new organizational problems and discontent arising from the implementation of the model as a school-wide practice. Despite the success of democratizing instructional leadership, the long-term learning process of the school community thus seemed to be entering a new cycle (see [Hyrkkö and Kajamaa, 2025](#)).

Discussion and synthesis

The two cases examined in this study illustrate how research-assisted, problem-driven co-design can be organized through different yet complementary learning infrastructures. As our RQ3, we asked: *Which learning and facilitation principles guide the adaptation or combination of these co-design methods for different aims and contexts?*, to which we provide a synthesizing response here. Across cases, we found that both methods share a broad commitment to collaborative, dialogical and inclusive engagement, yet they differ in the ways these commitments are operationalized, reflecting their historical roots, epistemological foundations and organizational contexts of use.

LC and CL have evolved within distinct knowledge traditions and settings of application. LC, rooted in community-based and adult education initiatives (e.g. [Lahdenperä, 2014](#); [Larsson and Nordvall, 2010](#)), has increasingly been adopted within multi-organizational public-sector development. In these contexts, LC typically convenes participants across organizational and hierarchical boundaries, fostering dialogical inquiry into locally salient challenges. CL, by contrast, emerged within DWR ([Engeström, 2005](#); [Virkkunen, 2004](#)) as an interventionist approach to workplace and organizational renewal. Its applications in various fields, such as education, healthcare and public administration, center on analyzing and transforming systemic contradictions within and between organizational activity

systems. These differences shape the kinds of learning processes each method supports: while LC primarily strengthens reflective professional inquiry and cross-boundary understanding, CL aims to generate expansive learning and transformative agency oriented toward collective activity redesign.

The epistemological underpinnings of the two methods further distinguish their orientations. LC draws on pragmatic-dialogical and situated theories of knowing ([Brandt and Elkjaer, 2024](#); [Dewey, 1986](#)), emphasizing the integration of experiential practitioner knowledge with research-based insights. CL is grounded in dialectical and cultural-historical epistemologies, combining theoretically informed conceptual tools with practitioner-generated analyses (see [Engeström, 2005](#); [Virkkunen and Newnham, 2013](#)). The two epistemologies lead to different learning dynamics: in LC, learning advances through iterative reflection, dialogue and inquiry into ambiguous or contested situations in everyday work. This creates a shared evidentiary basis and practice that enables participants to critically examine and develop cross-institutional diagnostic practices. In CL, learning is driven by an analysis of systemic contradictions, such as the profound tension between individual and collective interests in school instruction in our case.

Structural and facilitation arrangements also diverge. LC proceeds through an adaptive, conversational, participant-driven inquiry process, supported by facilitation that cultivates reflective depth, participation and collective meaning-making. CL follows a more formally structured intervention cycle, guided by expert researchers who introduce conceptual tools and mediate the multi-step process from diagnosis to experimentation and consolidation. Both in LC and CL, “raw” data concerning the participants’ real work activities (captured, e.g. as quotes from interviews or videos) is introduced by the researchers to stimulate discussion and problem definition. The differences between the two methods lead to diverse types of outcomes: LC processes typically generate enhanced professional agency, collaborative capacity and shared understanding of problems and criteria for change, whereas CL interventions more often yield redesigned practices, new conceptual tools, models and organizational reconfigurations aimed at transcending systemic contradictions.

Our presentation of the two cases demonstrates how these outcomes can become mutually reinforcing. In the LC case, participants made visible challenges, such as discontinuities in assessment and coordination, generating shared values and criteria that legitimized future redesign work. In the CL case, participants identified contradictions, manifested in practice e.g. as tensions between professional autonomy and interdisciplinary demands and modeled new forms of distributed leadership that addressed these tensions. Together, these cases show that LC makes problems reframeable without eliminating complexity, while CL provides a structure for transforming those problems into redesigned practices and systemic solutions.

Based on these findings, we developed a synthesis of learning and facilitation principles that underpin both methods. Shared learning principles include initiating inquiry from locally experienced, problem-driven challenges (e.g. [Simonsen and Robertson, 2013](#)), iteratively framing and reframing problems through dialogue and analysis (building on [Warren et al.’s \(2020\)](#) heterogenous meaning-making) and fostering cross-boundary perspectives to develop a more systemic understanding of how practices interact [building on [Akkerman and Bakker’s \(2011\)](#) boundary-crossing and boundary objects]. Distinct learning principles reflect their theoretical lineages: LC supports situated sensemaking through dialogical inquiry ([Aakjaer and Wegener, 2023](#)), whereas CL promotes expansive learning through contradiction analysis and modeling of new practices ([Kajamaa and Hyrkkö, 2022](#)).

The shared facilitation principles include establishing a safe, dialogical space for flattening the existing power dynamics of the context to enable critical yet constructive inquiry, mediating inquiry through shared artefacts and documentation that render challenges

visible and structuring work cyclically to link analysis with experimentation and follow-up (see e.g. [Cumbo and Selwyn, 2022](#); [Sanders and Stappers, 2008](#)). Distinct facilitation principles concern how this scaffolding is enacted: LC facilitation sustains participation in reframing problems and identifying agile micro-scale responses that reflect the complexity involved, while CL facilitation relies on conceptual tools and a phased intervention logic that supports the process of expansive learning ([Engeström, 2015](#)), leading to collective reorganization of activity.

Taken together, our LC and CL cases illustrate a dynamic pathway from inquiry, collaborative sensemaking and problem articulation toward redesign, experimentation and reflection, a sequence that may unfold cyclically. This pathway supports sustained collaborative learning, strengthens practitioner agency and enhances the relevance and durability of outcomes for organizations.

Conclusion

Our study advances co-design methodology by shifting attention from isolated design events toward a process of infrastructuring ([Aakjær and Pallesen, 2022](#); [Bannon and Ehn, 2013](#)), the cultivation of relationships, routines, tools and roles for sustained and equitable collaboration. Being future-oriented yet rooted in situated understanding of what is possible in the given context, such infrastructures carry potential for sustainably supporting collaborative learning and problem-driven system redesign as well as the long-term engagement of practitioners (see also [Penuel, 2019](#); [Severance et al., 2016](#)) to practice renewal. By articulating shared and distinct learning and facilitation principles across LC and CL, we provide insights for operationalizing different approaches to co-design and bringing co-design into dialogue with various learning theories. Overall, our study traces both theoretical and practical connections between Scandinavian democratic traditions of participation and the cultural-historical tradition of expansive learning. Our analysis may also help researchers, facilitators and practitioners decide when each method may be warranted.

As our study demonstrates, both LC and CL help create agency-enhancing educational practices by promoting democratic participation ([Benz et al., 2024](#)), boundary-crossing collaboration ([Akkerman and Bakker, 2011](#); [Brandt et al., 2012](#)) and the development of shared responsibility for change ([Severance et al., 2016](#)). Our findings are based on two in-depth cases within Nordic educational contexts, which may limit transferability of our insights to the application of the methods in other sectors. However, both methods have over the decades been widely used across other organizational and cultural settings, using similar learning and facilitation principles. Still, as both are practitioner- and problem-driven methods, steering clear from a linear or scalable understanding of design-based research, there can never be certainty of a successful learning process or specific outcomes. As the follow-up of the CL case shows, for example, practitioner agency may lead to rejection of the co-designed model and a need for redesigning. Furthermore, these methods do not principally aim at solutions that are transferable or scalable as such, but rather generative (see [Sannino et al., 2016](#)), in other words, building practical and theoretical infrastructures of learning for the long term. These infrastructures may help sustain a learning process both within the context of a particular change effort, whether LC or CL, and in the form of theoretical and methodological insights to be applied in further contexts and domains.

Ultimately, LC and CL together contribute to more inclusive, equitable and durable forms of educational and organizational learning, development and change. Both methods create processes of much needed infrastructuring that strengthen connections between schools, communities, workplaces and research institutions, enabling professional participants to act

as co-designers of their own systems and practices. In doing so, these methods offer promising avenues for long-term collaborative learning and organizational transformation. Further research might investigate ways in which LC and CL can be used as a “hybrid combination” of mutually supportive co-design methods and what theoretical and practical challenges would arise from planning and facilitating such change efforts.

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