

Sustainability-by-design in school–university partnerships: the case of the Teaching Clinic

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Abstract

Purpose – This paper develops a sustainability-by-design framework for school–university partnerships (SUPs) based on the case of the Teaching Clinic (TC), a research-based service-learning (RBSL) SUP. We use the TC’s history of scaling and forking to reflect on the framework’s sustainability. We argue that sustainability is best understood as a partnership’s capacity for adaptive resilience: the ability to remain functional, equitable and generative under changing conditions, rather than merely persisting over time or securing ongoing funding.

Design/methodology/approach – We present a conceptual synthesis of the TC’s design architecture, collaboration routines and documented implementation lessons across several countries and educational systems from 2019 to 2026. We treat the TC as a modular boundary-spanning infrastructure comprising roles, routines and boundary objects that reduce transaction costs and support continuity beyond individual actors. We position the TC within the broader landscape of research–practice partnerships, professional development schools and existing sustainability frameworks, drawing on comparative design knowledge generated through multiple adaptation and scaling waves of the TC.

Findings – We propose (i) six TC building blocks that should remain invariant when scaling, (ii) an “interface” logic that specifies which elements can be adapted without diluting the partnership mechanism and (iii) a six-lever sustainability-by-design framework (reciprocal value, support in-frastructure, governance and role clarity, adaptive modularity, recruitment pipeline and trust and legitimacy) that supports partnership durability and transferability. We discuss equity mechanisms embedded in the model’s design and identify persistent limitations, including facilitator dependency and quality variation across projects.

Originality/value – The paper contributes an actionable, leader-facing framework for scaling SUP models internationally without losing conceptual coherence. It advances comparative insight by distinguishing between what must remain stable and what can be localised, offers a definition of sustainability centred on adaptive resilience rather than funding or longevity alone, and critically examines the TC’s limitations alongside its affordances.

Keywords School–university partnerships, Sustainability, Adaptive resilience, Scaling, Third space, Research-based service-learning, Boundary infrastructure, Teacher education, Professional development schools

Paper type Case report

1. Introduction

School–university partnerships (SUPs) have proliferated internationally as systems seek to bridge research and practice, strengthen teacher education and create forms of professional learning that respond to local needs rather than externally imposed agendas (Arce-Trigatti *et al.*, 2021; Coburn *et al.*, 2013). Yet, while many partnerships begin with energy and goodwill, sustaining them beyond initial projects and beyond the involvement of specific

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individuals remains difficult (Day *et al.*, 2021; Walsh & Backe, 2013). A common pattern is that partnerships thrive during start-up phases (often supported by funding, champions and novelty) and then weaken as workloads grow, staff turn over and institutional priorities shift (Sarmiento-Márquez *et al.*, 2023).

This challenge has become more acute in recent years. SUPs now operate in turbulent times: contexts shaped by political polarisation, funding volatility, declining enrolments in teacher education and, in some regions, active hostility toward public education and the institutions that support it. In such an environment, the question is not only how partnerships survive but also what sustainability even means. Is it longevity? Scalability? Institutional embeddedness? Equitable outcomes? Or something else? And, crucially: can sustainability be designed from the start, or does it only emerge retrospectively from partnerships that happen to endure?

We argue that sustainability is best understood as a partnership's capacity for adaptive resilience: the ability to remain functional, equitable and generative under changing conditions (Duchek, 2020; Penuel, 2019), rather than as longevity, funding continuity, or relationship maintenance alone. In this paper, we draw on extensive experience managing a successful, long-running school–university partnership that we have maintained continuously over the past seven years and expanded from a single institution and a university–school setting to multiple universities and partner schools across national contexts. We work inductively: we take this one case seriously, read what kept it alive as it grew, and generate design principles from it. This longitudinal scaling trajectory gives us a practical basis for principles that support both continuity (sustainability) and adaptation (transfer) as partnerships grow. In that sense, we advance a sustainability-by-design argument: SUPs become sustainable when they work as durable infrastructure, a modular configuration of roles, routines and artefacts that (1) repeatedly produce value for all partners, (2) lower coordination burdens and (3) stay legible and workable even as personnel and contexts change.

In other words, partnership sustainability is not only, or even primarily, a matter of sustaining relationships. It is a matter of building partnership *systems* that can outlast individuals and project cycles. Put differently, it is a matter of design.

We develop this argument through the Teaching Clinic (TC), a research-practice partnership format conceptualised as a third space and implemented through research-based service-learning (RBSL) (Froehlich *et al.*, 2021). In the TC, in-service teachers submit authentic problems of practice (“cases”), and student teachers run practitioner research projects, supported by teacher educators, to generate evidence and usable learning products for schools. The TC is a particularly informative lens for sustainability because it has scaled through multiple “waves” while keeping the same conceptual core. Recent cases make the format concrete. In one project, student teachers built an educational escape game for German verbs and measured its effect on motivation in upper-secondary classrooms. In another, they investigated student wellbeing by tracing how social integration, teacher relationships and classroom climate interact. In a third, they studied evidence-based strategies for supporting students with autism, Attention-Deficit/Hyperactivity Disorder (ADHD) and dyslexia in mainstream classrooms and identified the teacher-training needs these strategies imply. These cases share a structure even though their topics differ (further examples are available at <https://teachingclinic.org/projects/>).

The TC offers a particularly informative longitudinal case. It originated in Austria in 2019, and a second teacher-education institution within Austria adopted it shortly afterwards, which gave the first evidence of intra-national portability. Within a few years, the TC ran an international pilot (2022) and then scaled at the European level (2023) across Greece, Germany and Spain. Alongside this, the model kept expanding across different organisational settings within Europe and Austria, including a thematic fork into One Health education. As of 2026, the current major step is scaling to Indonesia, a new region that raises salient questions about transfer across language ecologies, institutional arrangements and school–university cultures. While this step is under way, previous pilot tests point to a favourable outcome.

The paper makes four contributions to current debates on SUP sustainability and international comparison. First, we formalise the TC as a modular partnership infrastructure and specify six building blocks (invariants) that should stay stable when scaling, organised around three guiding principles, equity, mutual benefit and resilience by design, that the building blocks are designed to satisfy. Second, we separate the building blocks from adaptable interfaces, the elements that can legitimately vary by context (timeline, grouping structures, curricular embedding), which gives leaders a practical way to think about “transfer without dilution.” Third, we propose a sustainability-by-design framework that links common third-space challenges (role ambiguity, coordination breakdowns, uneven workload, fragile trust) to concrete design moves such as structured onboarding, explicit deliverables, lightweight autonomy scaffolds and dissemination routines that build a renewable participation pipeline, and we position this framework against existing research-practice partnership effectiveness dimensions (Henrick *et al.*, 2017) and the Professional Development School tradition (Cosenza *et al.*, 2023). Fourth, we use the TC’s thematic fork into One Health education to propose interoperability, whether a participant from one site can function seamlessly at another, as a practical criterion for distinguishing compatible adaptations from derivative configurations during scaling.

A note on methodology and stance. The argument in this paper rests on an inductive, case-grounded synthesis informed by educational design research (Design-Based Research Collective, 2003; McKenney & Reeves, 2012). We do not start from a framework and look for confirmation. We start from one case and let the levers emerge from it. The evidence base is not a conventional empirical data set but a structured accumulation of implementation records, design memos, coordination artefacts and reflective practitioner notes produced across TC iterations from 2019 to 2026. Following design research traditions, such systematic documentation of design decisions, observed friction points and adaptation rationale serves as primary evidence for framework building (Wang & Hannafin, 2005). Our claims are therefore interpretive and constructive: we identify recurring patterns across contexts, operationalise them as framework levers and offer them as working hypotheses for leaders and researchers in other SUP settings. The TC works as a longitudinal existence proof rather than a statistical sample, and whether the framework applies to materially different SUP architectures remains to be tested (see Section 6).

Structurally, the paper proceeds inductively. Sections 2–4 develop the TC case (conceptual lens, building blocks and scaling trajectory), and Section 5 generalises these into the sustainability-by-design framework. This ordering follows the inductive logic of the paper: the framework levers grow out of case analysis rather than being imposed on it. In doing so, we answer calls for actionable, context-sensitive knowledge that travels across national and regional settings (Coburn *et al.*, 2013; World Bank, 2016). Rather than offering a single retrospective case narrative, we offer a transferable design language for SUP leaders: what to keep constant, what to adapt and how to design sustainability from the start.

2. Conceptual lens: third spaces and RBSL as partnership infrastructure

2.1 Sustainability as adaptive resilience

Sustainability in the SUP literature is typically invoked but rarely defined. Three implicit framings dominate (Walsh & Backe, 2013; Sarmiento-Márquez *et al.*, 2023). The first treats sustainability as *longevity*: a partnership is sustainable if it persists for years or decades. The second treats sustainability as *funding continuity*: partnerships are sustainable when they secure ongoing financial support. The third treats sustainability as *relationship maintenance*: partnerships endure because specific individuals maintain trusting relationships across boundaries.

Each framing captures something real, but each is also incomplete. Longevity can mask stagnation; a partnership that persists without generating new value is merely surviving, not thriving. Funding continuity conflates a resource condition with a design property; many

externally funded partnerships collapse when grants end precisely because they lack the internal architecture to continue (Arce-Trigatti *et al.*, 2021). And relationship-dependent partnerships, however rich, are inherently fragile because they cannot outlast the individuals who sustain them (Day *et al.*, 2021).

We propose a fourth framing: *sustainability as adaptive resilience*. A sustainable SUP is one whose design enables it to remain functional, equitable and generative under changing conditions, including personnel turnover, funding shifts, institutional restructuring and external disruption. On this view, sustainability is not an outcome to be assessed after the fact but a property of the partnership's architecture that can be deliberately built in. The question changes from "Did this partnership survive?" to "Is this partnership built to absorb shocks and adapt without losing its core mechanism?"

This framing draws on Penuel's (2019) concept of *infrastructuring*, the deliberate construction of durable social and technical arrangements that support equitable implementation across sites and over time. It also draws on the organisational resilience literature, where resilience is understood as the capacity to anticipate, cope with and adapt to disruptions (Duchek, 2020). The framing resonates with the emphasis of the research-practice partnership literature on mutualistic collaboration organised around practitioner-defined challenges (Coburn *et al.*, 2013; Coburn & Penuel, 2016) and with the Professional Development School tradition's insistence that effective school-university partnerships require shared governance, reciprocal professional learning and a commitment to inquiry as a stance (Cosenza *et al.*, 2023).

2.2 Third spaces, research-practice partnerships and research-based service-learning

Many SUPs work as third spaces: collaborative zones where universities and schools interact productively, but also where differences in norms, expectations, accountability structures and professional languages can make collaboration fragile (Zeichner, 2010; Trent *et al.*, 2011). Third spaces are promising because they can institutionalise recurring opportunities for reciprocal learning and knowledge exchange (Trent *et al.*, 2011). At the same time, they are vulnerable: without deliberate design, third spaces can become "symbolic" partnerships, visible but thin, rather than substantive collaborations that generate repeated value (Zeichner, 2010).

Research on research-practice partnerships (RPPs) confirms this pattern more broadly. Henrick *et al.* (2017) identify five dimensions of partnership effectiveness (trust and partnership culture, rigorous and relevant research, improvement in practice, capacity for continuous improvement and productive use of research) and find that partnerships investing in structured routines and shared infrastructure across all five dimensions last substantially longer than those relying on relational goodwill alone. Coburn and Penuel (2016) similarly separate the depth, breadth and sustainability of research use, and observe that lasting change occurs only when partnerships develop shared routines, distributed capacity and aligned incentives rather than depending on individual champions (Tseng *et al.*, 2017). Taken together, this scholarship shows that sustainability is an architectural problem as much as a relational one, a framing that guides our inductive reading of the TC.

The TC answers the vulnerability of thin third-space partnerships by anchoring the collaboration in RBSL, where research itself is the service provided to a community partner (Raberger *et al.*, 2026). In a classic definition, service-learning is a course-based, credit-bearing experience in which students engage in organised service activities that meet community needs and reflect on those activities to deepen learning and civic responsibility (Furco, 1996; Bringle & Hatcher, 1995; Eyler & Giles, 1999; Jacoby, 1996). In the TC, this becomes a structured mechanism: student teachers provide research labour and develop methodological expertise as a service to in-service teachers' cases; schools gain locally relevant evidence and usable learning products; and universities fulfil both educational and societal missions through boundary-spanning work (Froehlich *et al.*, 2023). This RBSL

framing matters for sustainability because it sets up a repeatable production cycle. Each iteration of the TC is not an ad hoc collaboration; it is a predictable sequence of (1) case intake, (2) research design, (3) data collection and analysis, (4) translation into usable outputs and (5) a public return moment. Repeatability is itself a sustainability asset, because it reduces uncertainty, supports institutional routinisation and allows incremental refinement.

Methodologically, the TC aligns with practitioner research traditions such as design-based research (Design-Based Research Collective, 2003; Wang & Hannafin, 2005) and action research (Altrichter, 2020), which emphasise collaborative inquiry, intervention and iteration and the production of usable knowledge under real-world constraint. This alignment is also a pragmatic choice: partnerships persist longer when participants experience research as feasible, meaningful and respectful of time and workload.

Feasibility, however, is not automatic. Reflections across TC iterations surface recurring friction points common to third-space partnerships: unclear objectives and deliverables, uneven readiness for autonomy, coordination breakdowns, uneven collaboration within student groups and communication gaps across the school–university boundary (Froehlich *et al.*, 2021). These are not merely implementation hiccups; they threaten sustainability because they raise transaction costs, reduce perceived value and make repeated participation less likely.

A sustainability-by-design lens treats these frictions as design requirements. Partnerships become sustainable when they build in mechanisms that routinely address predictable challenges, through clear onboarding, stable role definitions, boundary objects that reduce ambiguity and scaffolds that support autonomy without imposing bureaucracy. Boundary objects are artefacts plastic enough to adapt to local needs yet robust enough to hold a common identity across communities of practice (Star & Griesemer, 1989; Akkerman & Bakker, 2011). The TC's use of boundary objects such as templates and diaries across the whole process, together with structured routines (checkpoints, contact persons), shows this infrastructure approach at work.

This conceptual lens leads to a central claim: sustainable SUPs are those in which the third space is built as infrastructure that is modular, teachable and adaptable, rather than continuously renegotiated from scratch.

3. The Teaching Clinic as modular infrastructure

3.1 Guiding principles: equity, mutual benefit and resilience by design

Reading the case inductively, the TC's architecture rests on three guiding principles: equity by design, mutual benefit by design and resilience by design. These principles express the normative commitments that any sustainable SUP should satisfy. They precede the building blocks below because they define *what* the design must achieve; the building blocks then specify *how*.

3.1.1 Equity by design. The call for sustainability in SUPs cannot be separated from the question of equity (Farrell *et al.*, 2023). Partnerships that reproduce power asymmetries, where the university dictates the agenda, extracts data and returns little to practice, may persist but should not be called sustainable in any normatively meaningful sense. We therefore argue that equity considerations should be integrated into partnership design from the outset, not treated as an afterthought.

The TC embeds equity through three structural mechanisms. First, the bottom-up case intake ensures that the research agenda is set by schools, not by the university. This is a deliberate inversion of the traditional dynamic in which university researchers define problems and recruit school sites as data sources. In the TC, the university responds to school-identified needs and every research project begins with a practitioner's authentic challenge. Second, the triadic role system formally includes in-service teachers as members of the research team. They are not passive recipients of university expertise but active co-inquirers who contribute practice knowledge, contextual access and interpretive authority. Empirical

evidence from the TC shows that this arrangement generates reciprocal learning: in-service teachers develop research skills and scientific mindsets through a reverse mentoring dynamic inherent in the collaboration (Rabberger *et al.*, 2024). Third, the service-learning architecture itself is an equity mechanism. In the TC, the university provides concrete resources (research labour, methodological training and usable products) to the school in exchange for a rich learning environment for student teachers. This “research as service” logic (Rabberger *et al.*, 2026) ensures that the partnership is not extractive: schools receive tangible value and the university’s educational mission is fulfilled through boundary-spanning work rather than at the school’s expense.

These mechanisms do not eliminate all power asymmetries. The university retains control over curricular embedding, assessment and quality assurance, and the teacher educator’s scaffolding role carries inherent authority. However, the TC’s design makes the exchange legible and the distribution of benefits explicit, which is a precondition for equity-oriented partnership work (Farrell *et al.*, 2023).

3.1.2 Mutual benefit by design. Across implementations, the TC retained a consistent architecture. Teachers contribute authentic problems of practice; student teachers conduct practitioner research as a service; teacher educators scaffold quality and boundary work; and outputs return to practice in usable forms. Three design choices were instrumental in achieving this.

First, the TC sets a clear purpose for methods (addressing a real case) and allows methodological choice within feasibility constraints. This supports transfer because the inquiry cycle remains recognisable even as methods vary. Second, templates, guidance materials, reflection tools and a shared support space make the partnership less dependent on tacit know-how and individual champions. Third, a culminating presentation, poster, or report ritual makes the service visible, creates closure and provides a recurring symbol of reciprocity. These features function as sustainability anchors because they keep the partnership mechanism stable while allowing contextual tailoring.

3.1.3 Resilience by design. A common concern about SUPs operating in authentic school settings is project failure due to logistical disruption: teachers falling ill, scheduling breakdowns and data collection complications. In the TC, the failure rate has remained minimal, not because the model avoids messiness but because the architecture is designed to absorb it. When a field disruption occurs (e.g. a partner teacher is hospitalised mid-project), the TC re-conceptualises the project so that students can continue working with what is available, producing outputs that remain useful for the teacher upon return. The contract grading system plays a crucial role here: because assessment is calibrated to effort and output rather than to a fixed deliverable specification, students are not penalised for disruptions beyond their control. This flexibility transforms potential failure into adaptive learning.

This resilience mechanism is also a trust-building mechanism. Partners who have experienced the TC’s capacity to absorb setbacks without blame are more likely to return in subsequent cycles, precisely because they know the partnership does not collapse when conditions are imperfect. Sustainability, in this sense, is not about avoiding disruption but about designing systems that remain functional under it. This is precisely what we mean by adaptive resilience as the core of sustainability: the TC’s first cohort predated the COVID-19 pandemic, and the model transitioned to remote and hybrid formats without structural breakdown because its modular building blocks were not dependent on a single mode of delivery.

3.2 Building blocks

Building on these three guiding principles, we identify six building blocks that we argue should stay invariant when scaling the TC across contexts (see Table 1). These building blocks are not merely “steps”; they are the minimal architecture that makes the partnership repeatable and transferable, while still leaving the partnership flexible in other respects. They let local

Table 1. Building blocks and their contribution to guiding principles

Building block	Equity by design	Mutual benefit by design	Resilience by design
Case intake	Schools set the research agenda; university responds to practitioner-identified needs	Cases ensure relevance, making participation worth repeating for all actors	Renewable pipeline: new cases each cycle reduce dependence on prior commitments
Triadic roles	In-service teachers are formal co-inquirers, not passive data sources	Each role receives distinct value (research competence, usable products, boundary-spanning learning)	Distributed responsibility prevents single-broker failure
Collaboration routines	Named contact persons ensure school voices are structurally included	Predictable meeting rhythms lower coordination costs for all partners	Role-based (not person-based) routines survive personnel turnover
Shared artefacts	Differentiated versions for school and university stakeholders	Templates and diaries reduce tacit dependency and onboarding effort	Codified workflows allow new sites to adopt the model without informal knowledge transfer
Capacity scaffolds	Curated method supports democratising access to research skills	Scaffolds protect feasibility for students with uneven readiness	Reduced dependence on “ideal” participants absorbs cohort variation
Outputs and dissemination	Usable products return concrete value to schools	Public return moments create visible, recurring symbols of reciprocity	Dissemination artefacts serve as recruitment assets for future cycles

sites adapt interfaces (timelines, grouping, partner recruitment channels) while keeping the partnership mechanism.

3.2.1 Building block 1: case intake (“what?”). The TC begins with cases: in-service teachers articulate a current professional challenge that becomes the starting point for joint inquiry (Froehlich *et al.*, 2021). This step guarantees the partnership’s value, because the bottom-up approach keeps it relevant and makes participation worth repeating. That matters greatly, given that teacher time is scarce (Reidl *et al.*, 2023). It also gives the partnership an ethical grounding: the partnership does not impose university agendas but responds to school-identified needs. For sustainability, case intake benefits from light screening criteria. Cases should be authentic, feasible within the available timeframe and likely to generate transferable learning for participants (inclusion, multilingual learning, engagement); this also keeps the partnership productive for the university, since the cases become useful learning experiences for the students.

3.2.2 Building block 2: triadic role system (“who?”). The TC stabilises the partnership through a triadic role structure. *Student teachers* contribute research labour and developing methodological expertise; *in-service teachers* (who previously submitted their case) contribute practice knowledge and access to classroom contexts; *teacher educators* scaffold the process and provide feedback and quality assurance. The triadic design supports sustainability because it distributes burdens and stops the partnership from relying on a single broker. It also makes reciprocity structurally plausible: each actor has a clear reason to return in subsequent cycles (Froehlich *et al.*, 2021).

Importantly, the triadic structure treats in-service teachers as epistemic partners rather than research subjects. In several TC iterations, in-service teachers have co-contributed to public outputs, including published reports and practitioner conference presentations, alongside student teachers and teacher educators (Froehlich *et al.*, 2023). This co-production is a deliberate design choice with direct sustainability implications: partners who experience genuine recognition of their knowledge contributions return more readily in subsequent cycles.

3.2.3 Building block 3: collaboration routines. Sustainable partnerships rely on predictable routines: who meets whom, when and for what (Van de Ven & Walker, 1984). TC experience shows that collaboration improves when a contact person is named and appointments are coordinated early. “Contact person” here does not refer to specific individuals but to the roles described above, which makes the routine replicable across semesters and national contexts.

3.2.4 Building block 4: shared artefacts. The TC uses shared artefacts that coordinate work across communities (Star & Griesemer, 1989). Typical artefacts include case submission formats (we typically rely on one centralised platform for submissions across countries and distribute the cases afterwards), project templates, deliverable expectations and reflection tools (for example, a long-form TC workbook that explains the process, acts as a learning diary, and serves as the major data collection instrument for all TC-related research). A key sustainability lesson is that boundary objects must read as useful tools rather than bureaucratic requirements; otherwise participants experience them as tokenistic. Clear purpose statements, differentiated versions for different stakeholders and integration into routine feedback loops keep this drift in check.

3.2.5 Building block 5: capacity scaffolds. A defining feature of the TC is meaningful autonomy: student teachers take responsibility for designing and running projects. Yet autonomy cuts both ways (Ryan & Deci, 2000). Some participants thrive, while others struggle without added structure. Sustainability-by-design calls for scaffolds that protect feasibility without undermining ownership. Examples include clear timelines, explicit deliverables, light interim checkpoints and access to curated method supports (short videos and exemplars). Scaffolds matter for scaling because they reduce dependence on “ideal” participants and support consistent quality across sites.

3.2.6 Building block 6: outputs and dissemination pathways. Sustainability depends on visible value (Coburn et al., 2013). The TC builds in explicit moments where outputs become public and usable: project reports on the partnership website (www.teachingclinic.org), practical recommendations directed at the in-service teachers involved in each project, posters and presentations. These return moments do more than close projects; they become recruitment and legitimacy assets by showing schools and institutions that the partnership yields concrete benefits. Dissemination can stay lightweight, but it should be routinised so that value travels beyond the immediate participants. In the TC, a standard output template, easy for students to complete, lets outputs assemble into a standardised, publicly accessible format.

4. Scaling the teaching clinic (2019–2026)

Many accounts frame sustainability as a “post-project” problem: how partnerships persist once the initial champion, grant, or novelty ends. The TC suggests a complementary framing. Scaling can be a sustainability strategy, provided the model is built from the start as a set of portable building blocks that recombine across contexts without losing the partnership mechanism (Coburn, 2003).

4.1 Partnership architecture

Across implementations, the TC kept a consistent architecture. Teachers contribute authentic problems of practice; student teachers conduct practitioner research as a service; teacher educators scaffold quality and boundary work; and outputs return to practice in usable forms. Three design choices proved instrumental. First, the TC sets a clear purpose for methods (addressing a real case) and allows methodological choice within feasibility constraints; this supports transfer because the inquiry cycle stays recognisable even as methods vary. Second, templates, guidance materials, reflection tools and a shared support space make the partnership less dependent on tacit know-how and individual champions. Third, a culminating presentation, poster and report ritual makes the service visible, creates closure and provides

a recurring symbol of reciprocity. These features anchor sustainability because they hold the partnership mechanism stable while allowing contextual tailoring.

4.2 Adaptation as contextual alignment

Scaling the TC internationally did not mean cloning it. It meant re-aligning interfaces to local constraints while preserving the same building blocks (Coburn, 2003). We read the trajectory chronologically.

4.2.1 *Origin and early transfer within Austria (2019)*. The initial implementation established the baseline configuration: case intake, triadic roles, collaboration routines, basic artefacts, scaffolds and return moments were defined. Early transfer to another teacher-education institution in Austria served as the first proof of portability, showing that the model could travel even within one national context where institutional cultures differ. Notably, this transfer required explicit articulation of the building blocks, since the receiving institution lacked the informal knowledge that had accumulated at the originating site. This was an early confirmation that building block documentation is a sustainability resource, not bureaucratic overhead. A further sustainability signal from this early transfer was that the teacher educator who implemented the TC at the receiving institution was himself a former TC participant: he had submitted a case as an in-service teacher in the preceding year. This means the model reproduced through its own alumni, a recruitment pathway that does not depend on top-down coordination but on the partnership's capacity to generate practitioners who understand and can facilitate the process from the inside.

4.2.2 *International pilot with Spain (2022)*. The first international pilot worked as a stress test for transfer. It surfaced translation and coordination costs and underlined the importance of making the building blocks explicit, so that new sites can implement the model without relying on informal knowledge transfer. In practice, adapting case submission materials from German to Spanish meant renegotiating not only language but also implicit expectations about case specificity and scope, an early sign that interfaces can carry tacit cultural assumptions that must be made explicit during transfer.

4.2.3 *European scaling to Greece, Germany and Spain (2023)*. European-level scaling required the most explicit articulation of the building blocks. Across Greece, Germany and Spain, the core mechanism stayed stable, but interfaces varied (curricular embedding, meeting routines, language of artefacts and the degree of group versus individual responsibility). This wave amplified a key sustainability insight: scaling across countries benefits from a shared "configuration language" that lets sites adopt the model while negotiating local fit.

4.2.4 *Ongoing scaling within Europe and Austria in different organisational settings (2023–today)*. As the TC kept scaling across different organisation types, partner ecologies and teacher-education structures, the model's modular nature became more visible: the building blocks stayed recognisable even as the partnership's surface features changed.

A particularly significant development was the emergence of the One Health Teaching Clinic (OHTC), a thematic fork (Hobusch *et al.*, 2024, 2025). The OHTC was rolled out simultaneously to more than ten universities across three countries, adapting the TC architecture to integrate human, animal and environmental health topics into science teacher education. In this variant, the partnership topology changed: scientists from health and environmental disciplines entered as a third knowledge community, altering the triadic structure. The case intake logic also shifted: rather than teachers submitting problems of practice, scientists submitted topics they wished to see communicated in classrooms, making the student teachers' didactic expertise the service rather than their research labour. The OHTC thus shows that the TC's building blocks can be reconfigured in their directionality, the service flow reversed, while the rest of the architecture (triadic roles, collaboration routines, shared artefacts, scaffolds, dissemination) stayed intact.

This fork raises a question about model identity that matters for scaling decisions generally: when is an adapted implementation still "the same" partnership and when has it become

something else? We propose interoperability as a practical criterion: can a participant from one site function seamlessly at another? Within the main TC configuration, this holds; students can move between institutions and re-experience the same partnership mechanism. The OHTC, while sharing the TC's building blocks, constitutes a different configuration that is not fully interoperable with the main TC. This distinction between compatible configurations and derivative forks gives other SUP leaders a practical tool for navigating similar scaling decisions, including the Indonesia expansion discussed below.

4.2.5 Export to Indonesia (2026). Scaling to Indonesia raises a new set of context-fit questions. Rather than treating Indonesia as a “new site,” we treat it as a new configuration problem: which interfaces will require localisation (language ecology, governance norms, digital infrastructure and credit and curriculum structures), and which building blocks must stay invariant for the partnership mechanism to function.

Across scaling waves, several recurring issues emerged as sustainability-critical. First, autonomy motivates, but it can overwhelm; clear timelines and interim deliverables protect ownership without over-structuring. Second, unclear objectives and deliverables drain the partners' time and goodwill, so sustainability rises when onboarding is explicit, exemplars are shared early and named contact persons reduce boundary drift and information loss. Third, as noted above, the pipeline of “cases” is the lifeblood of the TC, yet teacher time constraints make case recruitment fragile; sustainability improves when recruitment runs as an ongoing pipeline supported by visible outputs and low-burden entry points. These lessons are not peripheral; they are partnership infrastructure. They decide whether the TC and other SUPs stay a one-off success or become a durable routine.

5. A sustainability-by-design framework

Reading the TC's evolution since 2019 and its scaling pathway inductively, we generalise six levers that make partnerships more likely to endure and travel. Each lever translates into design choices, routines and artefacts that a partnership can build in from the beginning. We offer the levers as working hypotheses grounded in the TC's design experience; they are not causal claims but propositions for researchers and leaders to test in other SUP contexts.

Before presenting the levers, it is worth positioning them against existing frameworks. The five dimensions of research-practice partnership effectiveness (Henrick *et al.*, 2017) (trust and partnership culture, rigorous and relevant research, supporting partners' goals, productive use of research and building capacity for continuous improvement) describe what effective partnerships *do*. Our framework complements this by specifying what effective partnerships *are built from*: the design moves that make those dimensions achievable and sustainable over time. Where the Henrick *et al.* framework is evaluative, assessing partnership health, ours is generative, guiding partnership design (see Table 2 for a mapping). Similarly, the The National Association for Professional Development Schools (NAPDS) “Nine Essentials” (Cosenza *et al.*, 2023) articulate what a Professional Development School should embody; our framework specifies the infrastructure that lets those aspirations persist across personnel changes, funding cycles and cross-national scaling.

A first lever concerns the mutual value proposition that governs the SUP. Sustainable SUPs reduce asymmetry by securing recognisable value for each actor (Bringle & Hatcher, 2002 & Hatcher, 2002). In the TC, “research as service” is the mutual value proposition (Rabarger *et al.*, 2026 *et al.*, 2026): student teachers gain authentic research competence and professional identity development; in-service teachers gain locally relevant evidence and usable learning products (Reidl *et al.*, 2023 *et al.*, 2023). Sustainability rises when value return is visible and timely, for example through a poster event, a report handover, or a practice briefing. One implication is to institutionalise a recurring return moment and make deliverables explicit.

A second lever is the core infrastructure of the SUP. Partnerships fade when they need continuous effort and cost to maintain. A well-designed infrastructure lowers this effort and so

Table 2. Sustainability-by-design levers and dimensions of research-practice partnership (RPP) effectiveness

Dimensions of RPP effectiveness					
Design lever	Building trust	Rigorous research	Supporting partners' goals	Relevant, useful knowledge	Building capacity
Reciprocal value	Visible value return builds relational trust	–	Each actor's goals are structurally addressed	Usable products tied to practitioner cases	Student teachers gain research competence; in-service teachers gain scientific mindsets
Support infrastructure	Low transaction costs sustain willingness to collaborate	Method scaffolds support rigour at scale	Onboarding and templates reduce barriers to entry	Standardised outputs ensure usability	Codified knowledge base enables self-directed learning
Governance and role clarity	Named contacts and check-ins maintain relational quality	Clear deliverable expectations support methodological discipline	Accountability structures prevent coordination drift	–	
Adaptive modularity	–	–	Local adaptation ensures contextual fit to partners' needs	–	Enables cross-national scaling without diluting core mechanism
Recruitment pipeline	Alumni pathways signal that past partners valued the work	–	–	Dissemination artefacts demonstrate practical relevance to prospective partners	Secures renewable participation across cycles
Trust and legitimacy	Norm that setbacks are tolerable deepens relational trust	–	Partners return because they know the model absorbs disruption	–	Builds institutional reputation that outlasts individual champions

Note(s): Cells indicate how each design lever supports the corresponding effectiveness dimension. Empty cells mark areas where the lever operates outside the RPP effectiveness framework, addressing sustainability concerns (scaling, renewal, disruption tolerance) that the evaluative lens does not foreground

Source(s): [Henrick et al. \(2017\)](#)

raises the chance of sustainability. It includes onboarding scripts, reflection tools, curated method supports and a shared support space, all of which reduce transaction costs and standardise quality across cohorts and contexts. It also enables scaling, because newcomers learn quickly how to join the SUP community. We treat such artefacts not as extra teaching work but as partnership infrastructure that holds the whole SUP together.

A third lever is clarity of roles and accountability. A SUP's sustainability weakens when coordination is diffuse. Naming accountability (one school-side contact, one university-side coordinator, explicit check-in moments) reduces boundary drift and ensures that collaboration does not depend on informal communication channels ([Tseng et al., 2017](#)). The implication is to formalise minimal governance: roles, responsibilities, timeline and feedback points.

A fourth lever is a system of adaptive modularity that allows standardisation and localisation at once. The TC’s scaling shows that sustainability benefits from explicit modularity: stable modules stay invariant across contexts, while localisable interfaces (specific semester timelines, curricular embedding, or language of artefacts) adapt. This produces a unique, locally configured partnership that still gains synergies from cross-site standardisation. Capacity scaffolds (clear timelines, exemplars, curated method supports) are the operational expression of this lever, making the invariant building blocks workable across participants with varying levels of prior preparation. [Table 3](#) illustrates this logic with examples drawn from the TC’s scaling trajectory.

A fifth lever is the deliberate cultivation of trust and legitimacy signals. SUPs are cross-institutional entities, and differences in professional cultures, accountability structures and status assumptions can undermine collaboration even when formal structures are in place. Trust is not simply a relational by-product of participation; partners can design for it ([Henrick et al., 2017](#); [Bringle & Hatcher, 2002](#)). In the TC, this has meant building in structured communication moments between school and university partners (case briefing calls at the start of a semester, feedback rituals at the end), making decision-making processes transparent and ensuring that practitioner contributions are visibly acknowledged in reports, in presentations and in co-authorship where appropriate. Legitimacy signals matter because institutional endorsement by school leadership, recognition of TC participation in formal professional development records and co-branded public outputs embed the partnership in organisational memory rather than leaving it to the goodwill of individual actors. The design implication is to treat trust not as a precondition to hope for but as an outcome to cultivate through routine and structure.

A sixth lever, ultimately a question of renewal, concerns the participation pipeline. SUPs need teachers, yet teacher participation runs up against workload and competing priorities. Sustainability improves when recruitment runs as a pipeline supported by low-burden case submission, clear articulation of practical benefits and visibility artefacts derived from outputs. Dissemination is not simply an end-of-project communication task; it is a recruitment mechanism and a legitimacy signal for future partners. The public return moment (the debriefing event, the shared report, the website entry) is therefore not merely a way to “close the case” but a way to generate new cases for future iterations.

Table 3. Invariants and adaptable interfaces in the teaching clinic (selected examples)

Invariant	Adaptable interface	Example
Bottom-up case intake	Recruitment channel	Personal networks (Austria) vs. school board invitations (Greece) vs. institutional partnerships (Indonesia)
Triadic role structure	Group size; degree level	Teams of 3–5 in a master’s-level implementation vs. individual students in a bachelor’s-level implementation at the second Austrian institution
Predictable collaboration routines	Meeting format	Bi-weekly in person (Austria), monthly online (Erasmus + consortium), hybrid (post-COVID)
Shared boundary artefacts	Language and medium	German print reflection diary (early cohorts), English digital templates (consortium), local-language adaptations (Greece, Spain)
Capacity scaffolds	Support format; scope	Self-paced online modules (full autonomy) vs. live workshops (guided inquiry)
Routinised dissemination	Output format and venue	Poster session, written report, video summary (Indonesia pilot)
Research-as-service logic	Credit load and curricular embedding	Full-credit research methods course (originating institution) vs. reduced-credit professional development seminar (second Austrian institution) vs. interdisciplinary elective (Indonesia)

6. Conclusion

This conceptual reflection argues that sustainability is not only about maintaining partnerships but also about designing them to be re-configurable across contexts. The Teaching Clinic shows how a school–university partnership persists and expands when its core mechanism stays stable (research-as-service around authentic cases) and its delivery stays modular (timelines, grouping, curricular embedding and recruitment channels localise).

A pragmatic test for model identity during scaling is interoperability: if a participant from one site can function seamlessly at another, the configuration is the same. When adaptations are extensive enough to break interoperability, as in the One Health fork, the result is a derivative configuration that shares the model’s architecture but constitutes a distinct variant. This distinction between compatible implementations and derivative forks offers SUP leaders a practical criterion for assessing transfer fidelity.

6.1 Implications

For leaders of school–university partnerships operating across national and organisational contexts, three transferable implications follow. First, build sustainability into infrastructure, not only relationships; templates, scripts, shared tools and predictable rituals reduce transaction costs and help partnerships outlast individuals. Second, protect partner autonomy with clarity, because clear onboarding, explicit deliverables and role and accountability structures support trust and reduce drift. Third, treat scaling as adaptation, since comparative learning accumulates when sites document what stayed stable (“What were the invariants?”), what was localised and what sustainability risks emerged; with this information, sites build a reusable knowledge base for future transfers (Henrick *et al.*, 2017).

For comparative and international perspectives on SUP sustainability, the TC case points to a pragmatic research and leadership agenda: focus less on whether partnerships “work” in general and more on which design levers make partnerships survivable under constraint (time, staffing, funding volatility) and transferable across national and regional contexts.

At the system level, these findings point to several adjustments in how teacher-education governance supports SUPs. First, partnership infrastructure development (the creation of boundary objects, onboarding protocols and case pipelines) should count as legitimate scholarly and institutional work; without such recognition, this labour stays invisible and unsustainable. Second, accreditation and quality frameworks for teacher education should include indicators of partnership *durability*, not only partnership existence, so that they reward design investment rather than relational maintenance alone. Third, mechanisms for cross-institutional knowledge transfer (shared repositories of adaptable partnership materials, coordinator networks and joint professional development arrangements) can speed future scaling while cutting reinvention costs at each new site.

6.2 Limitations

The sustainability-by-design framework developed here grows from a single partnership model, the Teaching Clinic, across one cluster of implementation contexts. While the TC’s longitudinal trajectory and cross-national scaling provide meaningful design knowledge, we have not yet tested the framework against SUPs with fundamentally different architectures: research–practice consortia without a service-learning backbone, teacher professional learning communities not embedded in university credit structures, or partnerships operating under substantially different school governance regimes. The six levers are working hypotheses rather than established generalisations, and their validity in materially different contexts (settings with lower digital infrastructure, different academic calendar rhythms or highly centralised governance) remains to be investigated. Future research should test the framework comparatively: applying the six levers as an evaluative lens to diverse SUP models, developing a self-assessment instrument for SUP leaders and conducting cross-national replication studies that document invariants and localisations to build a cumulative

design knowledge base. The evidence base is also practitioner-generated and self-reflective, which provides longitudinal depth but not independence; external validation by researchers not involved in the TC would strengthen the framework's empirical standing.

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