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# From compliance to responsiveness: the interplay of cultural and operational factors in developing schools as living systems

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**Introduction:** Contemporary schools operate in increasingly complex environments, yet much school improvement research continues to emphasize compliance, accountability, and measurable outcomes. This study examines how cultural and operational factors interact to foster organizational responsiveness in schools understood as living systems.

**Methods:** Using a Straussian Grounded Theory approach within an Interactive Research Design framework, researchers partnered with practitioners at an independent PreK–8 school in the United States. Data were generated through iterative workshops, interviews, and document analysis, and analyzed through open, axial, and theoretical coding.

**Results:** The resulting Dynamic Interplay Model conceptualizes responsiveness as a continuous cycle in which culture informs systems and systems reinforce culture. The analysis identified key “life force variables” (including psychological safety, teaming, reflection, and feedback loops) that sustain this interplay. Misalignments between cultural ideals and operational structures functioned as generative tensions, prompting learning and adaptation.

**Discussion:** Findings suggest that responsiveness is not a static attribute but an emergent, system-level capacity grounded in the ongoing alignment of values, behaviors, and organizational structures. The study contributes a conceptual framework for understanding how schools may navigate accountability pressures while sustaining adaptive, human-centered development.

### KEYWORDS

responsiveness, school leadership, systems thinking, grounded theory, organizational culture, attractive quality

## 1 Introduction

Schools today navigate unprecedented levels of complexity, which challenge their ability to generate attractive quality (Fidan and Balci, 2017; Hawkins and James, 2018; Holmes et al., 2013). Rather than asking questions about how schools can become places of learning and development for future growth, educators often yield to political and economic pressures that force them to focus on meeting only the most basic needs. Attractive quality suggests that meeting basic needs is not enough to sustain engagement or foster lasting improvement. For schools to truly thrive in an age of complexity calls for new ways of leading and organizing to

cultivate environments that are continuously responsive to all stakeholders (Fidan and Balci, 2017; Snyder et al., 2025) where students, teachers, and families feel valued, supported, and motivated to contribute to a shared vision. By intentionally designing systems and cultures that exceed expectations and meet deeper human needs such as belonging, recognition, and purpose (Johnson, 2025; Lilja and Wiklund, 2007), schools can move from a state of survival toward more flourishing forms of development. Despite growing recognition of this need (Fidan and Balci, 2017; Holmes et al., 2013), efforts to shift schooling from hierarchical, compliance-driven models toward systems approaches grounded in engagement and strengths remain limited (Senge et al., 2012). This persistent gap raises a central question for school development research: how can schools move beyond crisis management toward sustainable thriving?

Inspired by systems thinking and complexity theory, the concept of organizations as living systems (Pawar, 2007; Snyder et al., 2008; Vancouver, 1996) offers a powerful lens for expanding how quality in education is defined and used to shape value creation in schools. Living systems are interconnected, adaptive, and capable of evolving in response to both internal and external stimuli (Capra, 1996). Unlike mechanistic models inherited from the Industrial Age, which prioritize efficiency, standardization, and control (Pawar, 2007), living systems emphasize feedback loops, relationships, and continuous learning (Senge, 1990). The concept of living systems relates to contemporary quality management that is characterized as dynamic, value-driven, flexible, dialog-oriented, participatory, and systems-oriented (Fundin et al., 2020; van Kemenade and Hardjono, 2019). Adaptivity is strengthened when teaming replaces autonomy, shared experiences and empowerment replace authority, network connections are fostered, and stakeholder value drives innovation (Marko et al., 2022; Östberg and Eriksson, 2023; Snyder and Snyder K. J., 2023), and co-creation through participatory practice (Snyder, 2022) replaces top-down directives (Fundin et al., 2021; Lilja et al., 2022).

Viewing schools through the lens of complexity theory positions them as complex adaptive systems in which patterns of practice, culture, and outcomes emerge from dynamic interactions among multiple actors rather than from linear inputs and outputs. This perspective stands in contrast to dominant school improvement rhetoric, which has largely been shaped by the assumption that externally defined indicators of success can drive and determine school development in predictable ways (Townsend, 2007). Such assumptions underpin accountability and inspection regimes in countries such as the United States, the United Kingdom, and Sweden, where national standards and performance metrics are used to guide improvement efforts (Ehren et al., 2013; Ravitch, 2010; Westling Allodi, 2013).

While these indicators play an important role in promoting quality studies demonstrate that they are insufficient for capturing the nonlinear, context-dependent, and emergent nature of educational change (Ravitch, 2010). Contemporary school environments are characterized by diverse student needs, dense networks of relationships, and ongoing interactions with parents, businesses, and community actors, all within rapidly shifting societal conditions (Fidan and Balci, 2017; Hawkins and James, 2018; Snyder and Snyder K. M., 2023). As D'Souza (2023) notes, school leaders operate within multifaceted environments that are relational, emotionally demanding, and continuously adapting conditions that cannot be fully understood or influenced through standardized indicators alone. Research suggests the need to reframe educational leadership and school development to address the complex realities facing schools today.

Contemporary quality management increasingly frames value creation as a dynamic and relational process rather than a purely technical or linear one (Bergman et al., 2022; Prahalad and Ramaswamy, 2004). In an age of complexity, value creation is increasingly tied to people's experiences, emotions, and energy rather than to linear designs of structures and processes alone (Carlucci and Schiuma, 2018; Galvagno and Dalli, 2014; Meynhardt et al., 2016). Organizational responsiveness thus can be understood as the capacity to continuously generate value by attending to stakeholders' experiences, needs, and evolving expectations (Åslund and Bäckström, 2017).

Insights from quality management suggest that responsiveness to complexity is most effective when cultural and operational systems are intentionally aligned (Dahlgaard and Mi Dahlgaard-Park, 2006; Institute, S, 2017). Organizational culture reflects the systems and structures through which coworkers make meaning in their work, commonly described as "the way we do things around here" (Alvesson, 2002; Henri, 2006; Martins and Terblanche, 2003; Schein, 2010). More broadly, culture constitutes a shared and learned world of values, meanings, and understandings that shape how people work together, including trust, teaming, and shared beliefs (Alvesson, 2002; Henri, 2006; Martins and Terblanche, 2003).

Operations, by contrast, refer to the structures, processes, and routines that enable work to be carried out, including decision-making, planning, information systems, and quality assurance (Akalegbere, 2022; Bergman et al., 2022; Hill and Hill, 2017; Hoy and Miskel, 2013). In schools, these include budgeting, staffing, scheduling, technical support, and curriculum development (Badiie et al., 2024; Johnes, 2015). Considered independently, neither culture nor operations is sufficient for sustained responsiveness in dynamically changing environments. When culture is intentionally embedded in operational systems, it strengthens identity, cohesion, and organizational resilience (Fullan, 2011; Leithwood et al., 2020). Conversely, schools that rely primarily on compliance and technical fixes risk bureaucratic patterns that weaken connection and creativity. For schools to function as living systems, values, behaviors, and daily practices must be intentionally connected so that culture and operations mutually reinforce responsiveness over time.

Leading schools as complex living systems reframes cultural and operational dynamics to support flexibility, engagement, empowerment, and shared leadership (Snyder et al., 2008; Wheatley, 1999; Snyder et al., 2008; Wheatley, 1999). From this perspective, responsiveness emerges as a system property shaped through relationships, feedback, and continuous adaptation rather than individual actions. Such schools are better positioned to create value for stakeholders by fostering belonging and mattering, conditions central to well-being and collective engagement (Prilleltensky, 2020). When members feel valued and connected to share purpose, they are more likely to respond constructively to emerging challenges. While research on living systems and organizational development points to these dynamics, further study is needed to examine how leading schools as living systems shapes leadership practice, organizational design, and theories of school development (Hawkins and James, 2018).

The purpose of this grounded theory study is to generate a framework that describes the interplay between cultural and operational factors that can support the development of responsiveness in schools functioning as living, adaptive systems and contribute to understanding attractive quality in education. In this study, responsiveness is understood as a system-level capacity to continuously create value for stakeholders by aligning values, relationships, and organizational practices in response to evolving needs. The study is guided by two

research questions: (1) What cultural and operational factors do educators identify as central for the school to be continuously responsive to stakeholder needs? and (2) How can the interplay between cultural and operational factors supporting responsiveness in a school be described and understood?

This study draws on empirical data collected from a school that has been identified in earlier research as having a strong culture of responsiveness (Johnson, 2022; Johnson, 2025; Snyder et al., 2023; Snyder and Snyder K. M., 2023). Among the characteristics identified in this body of work are teaming and attractive quality as central components of a responsive school culture. Snyder and Snyder K. J. (2023) find that organizational responsiveness is strengthened when daily practices reflect shared values and when feedback systems support learning and adaptation over time. Similarly, Snyder and Snyder (2021) show that explicit purpose, flexible structures, and collaboration support schools in functioning as living systems. While these studies contribute important insight into the conditions associated with responsiveness, less is known about how cultural and operational elements work together in practice to sustain responsiveness over time. There remains a need to better understand how the interplay between values, behaviors, and organizational systems shapes a school's capacity to continuously create value for its stakeholders.

## 2 Background

A brief overview of two competing research agendas in educational development is provided to situate the focus on responsiveness and schools as living systems within the historical trajectory of educational research and development. This background was not used in the grounded theory analysis that generated the theoretical model presented in the findings. In keeping with this methodological approach, additional references are introduced in the discussion section.

### 2.1 Viewing schools as effective instruments of the state

Research in school development and quality in education has been dominated by an orientation toward effectiveness and improvement since the 1960s, driven by policy reforms and the ongoing quest to enhance student outcomes (Hopkins and Reynolds, 2001; Snyder, 2023; Townsend, 2007). Effective schools research has largely focused on identifying factors that correlate with student achievement, positioning it as the primary measure of school quality (Javornik and Klemenčič Mirazchiyski, 2023). Hopkins et al. (2014) trace the evolution of school improvement in five phases, from understanding organizational culture and managing change through policy to leadership's role in learning, and finally to whole-system improvement. Across these phases, effectiveness is largely equated with student outcomes, and improvement is framed as a process of change implementation.

Hallinger and Heck (2011) further highlight how theoretical perspectives on school improvement emphasize processes of change and leadership during implementation. The field has produced frameworks such as instructional leadership (Heck and Hallinger, 2005; Hopkins, 2003) distributive leadership (Woods et al., 2004), transformative leadership (Hallinger, 2003), strategic leadership (Davies and Davies, 2006), and participative leadership (Somech, 2010). Yet Heck

and Hallinger (2005) argue that leadership research lacks a unified vision, limiting its capacity to generate a cumulative knowledge base.

Despite incorporating elements such as work culture, leadership, and professional development (Javornik and Klemenčič Mirazchiyski, 2023), the effective schools agenda maintains a linear and analytical focus. It identifies discrete factors correlated with high student achievement and promotes targeted interventions, often as "one-size-fits-all" solutions, within a managerial paradigm emphasizing measurable outcomes, standardized indicators, instructional practices, and accountability mechanisms (Javornik and Klemenčič Mirazchiyski, 2023; Luyten et al., 2005). This focus has profound implications for principal preparation programs, which traditionally emphasize managerial tasks such as budgeting, scheduling, and personnel management (Close and Raynor, 2010). Few programs focus on leading schools as dynamic organizational systems, partly because leadership theories remain grounded in positivist management models (Close and Raynor, 2010; Dantley, 2003). In practice, principals navigate far more complex responsibilities: developing safe and caring environments, supporting student and staff development, meeting community needs, complying with accountability systems, and fostering collaboration with parents and external agencies (Hawkins and James, 2018; Shields, 2004). The mismatch between theoretical preparation and practical demands remains substantial.

### 2.2 A systems orientation in education

An alternative research agenda, emerging from the systems thinking movement of the 1980s and later integrated with total quality management, reconceptualizes schools as interconnected, adaptive systems (Murgatroyd and Morgan, 1993; Shaked and Schechter, 2020; Snyder et al., 2008). In contrast to effectiveness-driven paradigms, a systems orientation reframes quality in education as emergent, relational, and developmental (Murgatroyd and Morgan, 1993; Shaked and Schechter, 2020; Snyder et al., 2008). This shifts the focus from compliance with predetermined indicators to sustaining learning, equity, and improvement over time. Snyder et al. (2025) argue that future school development depends on understanding schools as living systems, informed by complexity and network theory, allowing educators to respond continuously to dynamic conditions. Sustainability, they propose, emerges from healthy, evolving networks of human activity aligned around a unifying purpose. Systems-oriented research examines patterns of interaction, feedback loops, and emergent properties arising from relationships among people, structures, policies, and cultures over time (Jackson, 2003; Shaked and Schechter, 2017).

Empirical studies in the US, Sweden and Russia demonstrate that educators who adopt systems thinking and quality management approaches foster stronger work cultures, engage staff, and develop learning organizations capable of supporting students and responding to accountability demands (Bruner, 1996). Such approaches balance compliance with the development of healthy, participatory work cultures. Snyder and Snyder (2021) demonstrate that connecting structure and culture fosters internal systems that are adaptive and responsive. Key enablers include teaming and networking, which empower staff to engage in shaping daily school practices. These findings align with Tsoukas and Chia (2002) concept of organizational flow, in which responsiveness emerges from the continuous reweaving of culture and operations in response to new conditions.

From a systems perspective, leadership is reframed as relational rather than positional. When schools are viewed as social systems shaped by continuous interaction and disruption, leadership emerges through relationships rather than hierarchical authority (Benoliel et al., 2019; Schwan and Spady, 1998; Snyder, 2023). Leithwood et al. (2020) show that staff involvement in strategic decision-making strengthens the interdependence of strategic and operational levels, in contrast to traditional models where teachers influence only classroom-level decisions.

More recently, scholars are recognizing the complexity of schooling that calls for new ways of conceptualizing school development beyond the initial views of systems theory (Hawkins and James, 2018). However, Fidan and Balci (2017) points out that early views of complex adaptive systems defined through structures and operations are insufficient. The human dynamic nature of schooling requires an understanding of the interconnectedness of all systems and their interdependency. Turning to quantum physics and living systems theory, Snyder et al. (2025) build on this idea and conceptualize schools as living systems in which learning, leadership, and responsiveness emerge through ongoing interactions rather than hierarchical control. Living systems are interconnected and adaptive, evolving through feedback loops and continuous learning (Capra, 1996; Senge et al., 1999). Information flows across teams and roles, enabling collective sensemaking and coordinated action (Crick et al., 2015). In this context, teaming constitutes the infrastructure of responsiveness, allowing schools to detect emerging needs, share insights, and adapt practice (Snyder et al., 2025). Adaptive capacity arises from distributed leadership and high-quality relational connections rather than heroic individual effort (Bryk et al., 2015; Snyder et al., 2025) oriented toward creating value for stakeholders (Bergman et al., 2022).

### 3 Methodology

This study used a Straussian Grounded Theory approach to describe and understand the cultural and operational factors present in a school designed as a living system, and how these factors interact to support responsiveness. Grounded Theory was chosen as the research method due to its focus on generating theory from data. This tradition emphasizes the importance of managing theoretical sensitivity through a systematic, rigorous process of coding and constant comparison, reflective memoing and disciplined use of prior knowledge that allows insights from the data to emerge into themes and new theoretical perspectives.

Two Research Questions guided the analysis of data:

- 1 What cultural and operational factors do educators identify as central for the school to be continuously responsive to stakeholder needs?
- 2 How can the interplay between cultural and operational factors supporting responsiveness in a school be described and understood?

#### 3.1 Interactive research design

The study was carried out following an IRD framework that partners researchers and practitioners. Interactive Research Design (Ellström et al., 2020) is a Scandinavian adaptation of action research that aims to partner researchers and practitioners in a collaborative process emphasizing the co-production of knowledge. Two systems

interact throughout a study: the research system and the practice system. The research system examines problems and issues using theoretical concepts and traditional data collection methods to help illuminate understanding and potential solutions (Johansson and Wallo, 2019). The practice system provides knowledge and perspectives based on local theories of understanding and concrete examples. This interactive model stimulates both knowledge development and organizational development over time, through which new ideas are formed and tested through data collection, analysis, and dialog between researchers and practitioners.

In this study, the research system was represented by two researchers from a university and one doctoral student, who is also a practitioner at the case site. The practice system is represented by the school faculty, including teachers and school leaders, who participated collectively in the study through a series of structured workshops. These workshops functioned as analytical seminars in which previously collected data were presented and discussed collaboratively, followed by additional data collection designed to further explore and refine understandings of responsiveness within the school.

The design followed three main phases: (1) problem identification and definition, (2) design and testing of prototypes, and (3) deep analysis. Phase one clarified the focus of the study in relation to ongoing continuous improvement and professional development efforts at the school and the potential application of attractive quality and living systems theory to strengthen responsiveness to stakeholder needs. Three workshops were designed and facilitated by the research team in collaboration with members of the practice system and involved teaching and administrative staff. The workshops introduced concepts related to attractive quality and perceived customer value and served as analytical seminars in which participants engaged in dialog around existing practices. Insights generated during each workshop informed the design and focus of subsequent workshops. In the final phase, the research team conducted a grounded theory analysis drawing on data from the workshops, supplemented by interviews and document analysis.

#### 3.2 Participants

Participants included faculty and administrators from an independent K–8 school in the United States of America known for its innovative and community-centered approach to education. They represented a cross-section of grade levels, subject areas, and leadership roles, ensuring that perspectives from across the school's ecosystem were included. Participation was voluntary, and all individuals were invited to contribute insights through workshops, interviews, and reflective exercises. This inclusive approach captured a broad range of voices, from classroom teachers to members of the leadership team.

#### 3.3 Data collection

Data were collected through three primary sources: whole-school workshops, inquiry-based interviews, and document analysis. Each source contributed unique insights and together provided triangulation to strengthen the trustworthiness of the findings.

##### 3.3.1 Workshops

Three workshops, conducted over a three-year period, served as a primary data source for this study and the site for analytical seminars

between the practice and research systems. The workshops were co-facilitated by the first two members of the research team, one of whom was a school staff member. Held during the school's weekly scheduled professional development sessions, each workshop included all faculty, staff, and administrators, totaling approximately 70 participants. The external researcher was familiar to many staff through prior research at the school and collaborated with the school-based researcher as part of the school's ongoing commitment to integrating research into school improvement and professional learning. These conditions supported an open and transparent forum for dialog and collective knowledge exploration. Prior to the workshop, all staff were informed of the topic that would be addressed and given the option to opt-out. Further, they were informed that all data would be used for research purposes, and all names would remain anonymous. No participant opted out.

The workshops were intentionally sequenced, with each building on the previous one to deepen collective inquiry into cultural and operational factors. Each workshop was 1.5 h in length and took place at one-year intervals. Data generated during the workshops were captured through written documentation, researcher field notes, and video recordings of group discussions and activities. Transcriptions from the video recordings were produced to preserve participants' language and provide verbatim excerpts for analysis.

- Workshop 1 focused on identifying attractors within the schools. Mixed-role groups consisting of teachers, specialists, and school leaders engaged in identifying key attractors, shared values, and defining cultural characteristics of the school.
- Workshop 2 brought participants together in division-level teams to analyze concrete moments of “surprise and delight” that reflected attractive quality in practice.
- Workshop 3 also involved division-level teams and invited participants to create visual and narrative metaphors illustrating how cultural and operational factors interact in daily school practice to contribute added value.

### 3.3.2 Interviews

The school's arts-integrated design across all grades provided a focal point for examining the intersection of cultural and operational factors. This was further explored through face-to-face interviews with four members of the “specials” team (art, music, drama, and dance), selected for their perspectives on the school's expressive dimensions and their role in operationally reinforcing its cultural values. Interviews were conducted by the second author (a non-insider), following email recruitment and informed consent. Participants could decline or refrain from answering at any time. Each one-hour interview was audio-recorded, transcribed using Cockatoo, and verified against the recordings for accuracy. A semi-structured protocol used metaphors to elicit participants' perspectives, asking each to describe the school through their artistic discipline, with follow-up questions probing the meanings behind these metaphors.

### 3.3.3 Document analysis

Document analysis was conducted on a range of school artifacts, including handbooks, communication protocols, organizational charts, and pedagogical models. Among the documents included were the International Baccalaureate Learning Profile for both elementary

and middle school; School policy on “child-centered education,” Faculty Handbook, Student/Parent Handbook, School Magazine, Extracurricular Activities Planning, M. O. R. E model, School vision, mission, and curriculum planning. These documents provided evidence of how cultural values and operational systems were formally articulated and enacted. For example, team teaching serves as an operational approach to support the cultural foundations of student-centered learning, respect, and trust.

Taken together, the sequential workshops, arts-based interviews, and document review offered a multimodal perspective. The combined design allowed for comparison and cross-validation of data sources, ensuring that the findings reflected both lived experiences and the institutional context. Details of how these data were coded and interpreted are presented in the following Data Analysis section.

## 3.4 Data analysis

Data were analyzed using a hermeneutic circle within a systematic, structured process to support theoretical sensitivity. Each data set was initially coded independently by three researchers during open coding, followed by reflexive dialog during axial coding. These discussions drew on knowledge of the school's history while critically examining potential bias arising from the researchers' roles as pseudo-members of the school community. This process reflected a double hermeneutic of empathy and affirmation tempered by analytic suspicion (Smith et al., 2021). The third researcher, less familiar with the site, provided balance by questioning underlying assumptions. Saturation was reached when no new codes or analytic insights emerged.

During selective coding, cultural and operational factors identified from prior theory were used as sensitizing constructs to guide the integration and refinement of codes and categories without predefining analytic outcomes (Corbin and Strauss J. M., 2015). Theoretical codes were derived by examining the interplay between these factors, operationalized as instances where “culture informs operational systems and operational systems reinforce culture.” Factors meeting both conditions were defined as serving simultaneous cultural and operational functions.

## 3.5 Theoretical sensitivity

Data were analyzed using a Straussian Grounded Theory approach (Corbin and Strauss J. M., 2015), following a systematic structured process to manage theoretical sensitivity. This is necessary for researchers to stay analytically open and reflexive so that theory emerges from the data rather than being imposed on it. Consistent with a Straussian grounded theory approach, operational and cultural factors from prior theory functioned as sensitizing constructs rather than analytic determinants. The substantive findings—including core categories and their relationships—emerged inductively through constant comparison and selective coding grounded in the data, that was supported by reflexivity and analytic memoing.

### 3.5.1 Structured coding

Following a hermeneutical cycle, data analysis involved interpreting text from the interviews and workshops, following three steps: naïve reading, structural analysis, and comprehensive understanding (Lindseth and Norberg, 2004). Three levels of coding common to

TABLE 1 Frequency and insights of cultural and operational factors in first-level analysis.

Factor type	Factor	Frequency / Presence	Qualitative insights
Cultural	Teaming / Collaboration	High—multiple workshops & stories	Collaboration drives innovation and shared attractive quality (AQ) moments
Cultural	Trust	High—recurring in safety, relationships	Trust enables psychological safety and openness
Cultural	Community	High—linked to events & traditions	Events and rituals strengthen belonging and identity
Cultural	Empowerment	Moderate/High—linked to leadership & PD	Empowerment bridges culture and operations
Cultural	Value Orientation (e.g., “Kids First,” Growth Orientation, DWIT)	High—consistently articulated across workshops	Explicit value language guides decision-making, prioritizes student needs, and reinforces a shared moral purpose across the school
Cultural	Surprise and Delight	Moderate/High—prominent in Workshop 2 narratives	Moments of surprise and delight reflect shared values and signal when cultural intentions are successfully experienced by students, families, and staff
Operational	Professional Development (PD)	High—cited as enabling teacher autonomy	PD equips teachers to act autonomously
Operational	Shared Decision-Making	Moderate/High—embedded in leadership culture	Inclusive structures ensure broad input into decisions
Operational	Flexible Systems & Resource Allocation	Moderate—supports ‘in the moment’ AQ	Operational agility allows for spontaneous AQ creation
Operational	Communication Systems	Moderate—supports parent & community ties	Structured communication sustains engagement

grounded theory (Corbin and Strauss J. M., 2015) were applied in this study that directly aligns with the first, second, and third-level analyses presented in the Findings section. This approach ensured a close connection between participant experiences, emergent categories, and the resulting theoretical framework. Each step of the process employed a variety of methods to manage theoretical sensitivity, which are described here within.

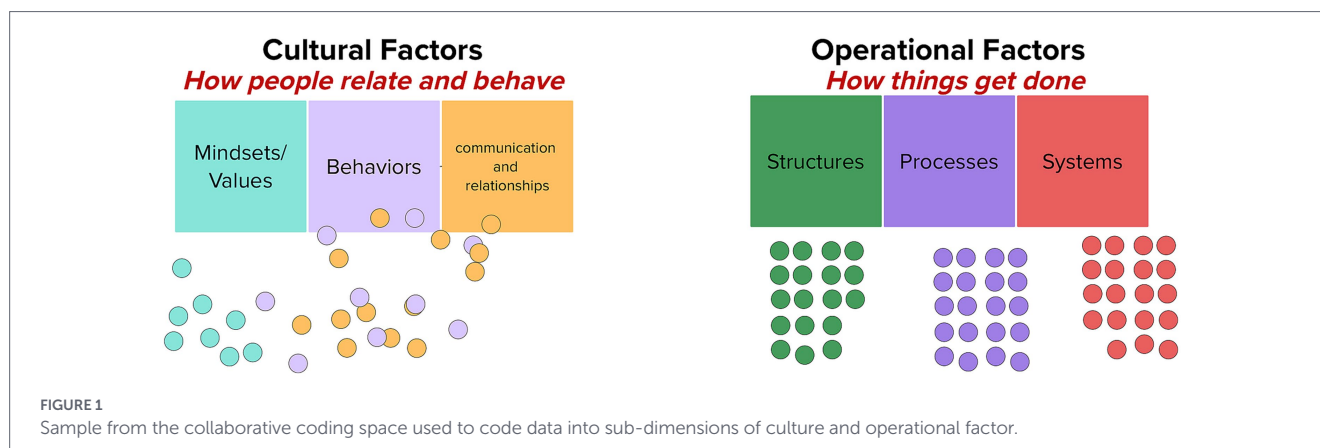
- **Open and Axial Coding - First-Level Analysis:** Data analysis began with open coding to deepen familiarity with the data while reducing researcher subjectivity and analytic bias by anchoring interpretations firmly in the data. During *open coding*, each researcher independently reviewed workshop transcripts, interviews, and arts-based artifacts, using line-by-line techniques to identify words, phrases, and incidents that reflected cultural and operational responsiveness. Researchers presented their codes, accompanied by original data, using a digital collaboration tool MURAL. Data from workshops and arts-based artifacts were often coded as both cultural and operational requiring further evidence to understand the distinction between what was described as “is” versus what people “mean” (Saldaña, 2015).

For example, “kids first” was an expression used by many respondents in both the workshops. This reflected a cultural value developing the school for kids. It also communicated the presence of operational factors designed to develop a student-centered school. *Axial coding* (Saldaña, 2015) was then used by the researchers to introduce deeper knowledge about the school’s practices to better understand how to label the code as either a cultural or operational factors. In cases where

the distinction was unclear, data were labeled with both, which served as the basis for the emerging theoretical component of “interplay” that emerged over time. This work generated the first-level analysis (Table 1), which maps the foundational cultural and operational factors influencing responsiveness.

- **Selective Coding - Second-Level Analysis:** Following Straussian traditions, prior theory from organizational development was used to sharpen the broad categories of cultural and operational factors from the open coding phase in order to support theoretical integration. Cultural factors were defined as “how people relate and behave” that were reflected in “mindsets” “behaviors” and “communication-relationships.” Operational factors were defined as “how things get done,” as described by “structure,” “process” and “systems.” Figure 1 is a visual from the collaborative workspace illustrating the coding categories used during this phase:

During the selective coding process, researchers first worked independently to group data from the open and axial coding into one or more of the cultural or operational factor sub-categories. Reflexive dialog followed in a series of collaborative analytic seminars to compare codes. During this phase, the following questions typical in Straussian analysis served to guide to selective coding: which category best explains the data? How do other categories relate to the data? Are the categories peripheral or central to understanding the interplay between cultural and operational factors? Does the category occur frequently and contribute something unique to the analysis? Additional data were integrated into the analysis to strengthen and clarify operational themes. These data included internal school



documents, handbooks, and planning materials related to scheduling, staffing, and pedagogical systems. This added layer, supported by an iterative and reflexive process, ensured that the final theoretical framework was grounded in participants' lived experience while critically examined through multiple lenses. The resulting second-level analysis (Table 2) shows how the initial codes were reorganized into higher-order themes and illustrates early evidence of cultural–operational interplay.

- **Theoretical Coding - Third-Level Analysis:** The final phase of analysis focused on identifying a core category that integrated all major themes and explained how cultural and operational factors interact to support responsiveness. This process is visualized in Figure 2, which illustrates how data were coded and connected to identify the interplay between cultural and operational factors.

Through an iterative process, researchers returned to the full data set to confirm the robustness of this category as explanatory of the interplay rather than descriptive. Further, to refine the framework through dialog and reflexivity guided by prior knowledge until theoretical saturation was achieved. Guiding questions included: are the relationships between the factors conditional, planned, processual? Do the relationships hold across data sets? What is the direction of the relationship: uni- or bi? What roles does the interplay have in creating responsiveness in the organization? For example, the cultural factor “global mindset” was mitigated by operational factors that include the application of International Baccalaureate framework, commitment to global learning supported by a director of Global learning, professional development in the sustainable development goals, and school-based partnerships that engage student in global learning contexts. The interplay between the two contributed to a school culture and practice that promoted diverse perspectives, cultivating curiosity and viewing the world as interconnected. The third-level analysis (Table 3) incorporates findings from document analysis to strengthen and contextualize the emergent theory.

### 3.5.2 Constant comparative method

The constant comparative method was used throughout data analysis to develop and refine emerging concepts and categories. Data were continuously compared between datasets, examining common and distinct codes, and categories to identify similarities, differences, and patterns of variation. This iterative process supported the refinement of categories, ensured analytic consistency, and grounded

theoretical development firmly in the data. Specifically, data were first compared within data sets, then across data sets. Following this, codes were compared across data sets, as were categories with coding schemes. Finally, the theoretical model was continuously compared back to codes and categories identified across datasets to ensure consistency and that the theory emerged from the data. This process provided the researchers with deeper understanding of the meaning behind words.

### 3.5.3 Reflexivity and prior knowledge

In grounded theory, prior knowledge and experience are used in a disciplined manner to ask better questions of the data and to “sensitize” rather than prescribe categories. Researchers remain reflexive about where their ideas come from and test them continuously against the data (Corbin and Strauss J. M., 2015). Reflexivity in this study was shaped by the collaborative work of the research team, which combined insider and outsider perspectives to strengthen rigor and trustworthiness (Dwyer and Buckle, 2009). Throughout all phases of coding, the team engaged in ongoing dialog, asking questions of one another and using analytic memos to surface insights, challenge assumptions, and clarify meaning. This iterative process was an important part of managing theoretical sensitivity based on researchers' prior knowledge.

One member of the research team held a dual role as both practitioner and researcher, offering critical contextual knowledge to interpret aspects of school life that might have been opaque to external observers. This insider perspective illuminated key cultural routines such as Spirit Week traditions and informal communication patterns that were essential to understanding the school as a living system. A second researcher brought longitudinal insights from earlier ethnographic studies conducted in the school as well as theoretical knowledge of organizational culture and leadership theory. The third researcher was new to the setting, which contributed an outsider lens that prompted clarifying questions and guarded against taken-for-granted assumptions. Reflexive guiding questions used throughout the analysis included, are we giving full value to all the data or privileging specific perspectives? Is this theory applicable in other school contexts? Have any theoretical links been imposed on the data rather than generated from the data?

### 3.5.4 Analytic memoing

The team used analytic memos throughout the coding process to reflect on evolving themes and to generate shared

TABLE 2 Categorization of first-level codes into broader themes.

Theme	Representative codes	Description & interplay
Mindsets / values	Putting children first, Growth Mindset, Relationships, Dignity & Respect, Altruism, Best getting better mentality, Do whatever it takes mentality, Caring, Positivity & Solution-Seeking, Psychological Safety	Core cultural values shaping behaviors across all stakeholder groups. These mindsets drive attitudes, decision-making, and the emotional climate.
Behaviors with students	Collaboration across classes, Parent collaboration, Community-building events, Cultivating independence, Fostering empowerment, Student-led initiatives (e.g., Spirit Weeks, Performances)	Tangible actions reflecting mindsets; often require interplay between operational supports (structures, schedules, PD) and cultural norms of empowerment and inclusion.
Behaviors with teachers	Peer Coaching, Teacher empowerment, Innovation through improvisation, Self-organization, Accountability	Professional culture that values autonomy, collaboration, and mutual growth, enabled by operational factors like shared leadership, CPD, and teaming systems.
Behaviors with parents	Event collaboration, Shared problem-solving (“same side of the table”), Committee involvement, Systematic communication (Letters from the Head of School, learning management system, Social Media)	Parent engagement embedded into school culture; operational systems create channels for meaningful interaction, reinforcing trust and community.
Operational factors to support culture	Care program, Team Teaching, Division Teams, IB Learner Profile, Traditions, Coaching/Feedback Systems, pedagogical models, Flexible budgeting, Cross-curricular programs, Digital information systems	Structures, processes, and systems that embed cultural values into daily operations, ensuring consistency and scalability of responsive practices.
Interplay & attractive Quality	Surprise & Delight moments, Altruism events, AQ cascades, Experiential Learning, Integration with community, Empowerment opportunities	Points where cultural values and operational mechanisms align to generate memorable, high-value experiences for stakeholders, driving responsiveness and long-term engagement.

understanding. These memos captured emerging questions and interpretations, acting as tools for meaning making. This process helped shape the transition from axial to selective coding and guided the development of the final theoretical categories. Analytic memos were recorded in the collaborative work platform Mural and used by the research team to re-examine perspectives and ask new questions of the data. Memos were written continuously across open, selective, and theoretical coding phases, functioning as tools for sense-making and documentation of decision points. These memos captured emerging questions, evolving interpretations, and reflexive considerations, creating an audit trail of analytic rigor.

### 3.6 Ethical considerations

This study adhered to established ethical research practices to ensure respect, confidentiality, and transparency for all participants. All individuals who took part in workshops and interviews were fully informed of the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without consequence. Written consent was obtained prior to each session, and participants were assured that no identifying information would be used in reporting findings.

Given that one member of the research team also held a leadership role at the school, particular care was taken to minimize potential power imbalances and to create conditions of psychological safety. Participation was framed as non-evaluative, and workshops were intentionally structured to encourage openness and collective meaning-making rather than judgment.

All data were anonymized during transcription and stored securely on password-protected systems, accessible only to the

research team. The iterative use of analytic memos also served as a form of ethical reflexivity, prompting the team to remain aware of their positionality and its potential influence on interpretation.

The study design was reviewed by the research institution’s doctoral advisory team and followed ethical guidelines to ensure participant respect, confidentiality, and transparency (APA, 2017).

## 4 Findings

### 4.1 First level analysis

The first level of analysis represents findings from the open and axial coding phase of the grounded theory process, based primarily on data from the workshops and interviews. Trust, collaboration, shared values, and psychological safety were identified as essential cultural conditions, while distributed leadership, professional development, and flexible scheduling were the operational supports that allowed those cultural elements to thrive. Without these operational channels, values such as collaboration or empowerment remained abstract aspirations.

Table 1 highlights both the frequency and nature of the most prominent elements. Cultural factors such as trust, collaboration, community, and empowerment were consistently referenced, pointing to a strong relational foundation and shared values that shape the school’s daily interactions. Operational factors such as professional development, shared decision-making, flexible systems, and communication structures appeared with similar prominence, underscoring

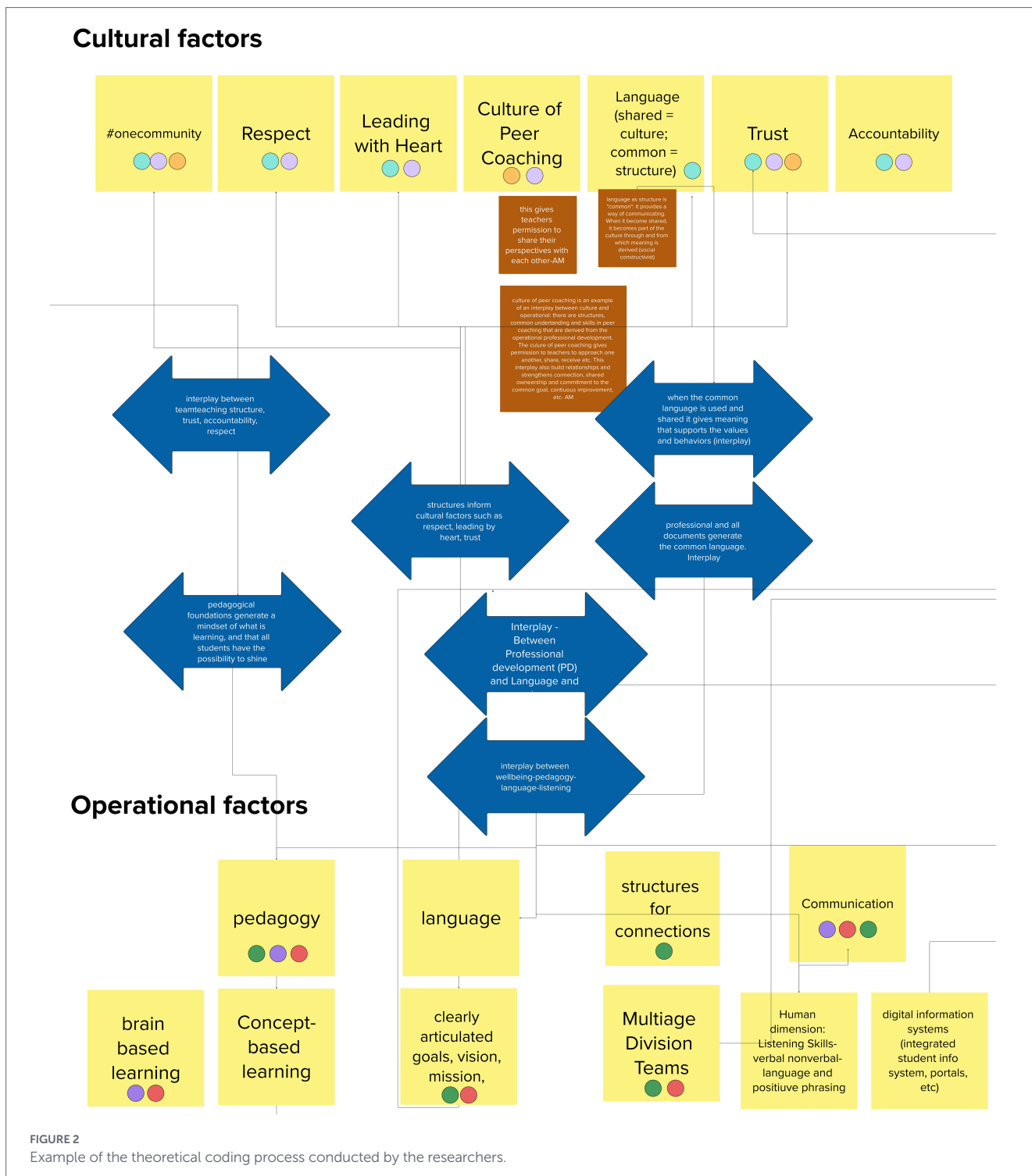


FIGURE 2 Example of the theoretical coding process conducted by the researchers.

the importance of clear, coordinated processes that sustain a responsive environment.

For example, when asked what factors are central to creating attractive quality in the school, teachers shared repeatedly “we work together as a team in which we trust and respect one another. Our open communication is vital.” Another iterated that “we are empowered to make decisions. Our school motto is ‘Do-whatever-it-takes (DWIT) and we are supported by our school leaders to do that.” Others talked about the strength of community, both within and external to the school. As one teacher shared, “We have regular contact with our parents, which is vital for helping us meet the needs of their child. Some parents are in my classroom everyday, which we

encourage. ‘it takes a village to raise a child’ is something that we believe in fundamentally.” Teachers also talked about the importance of the scheduling and planning process for reinforcing communication and empowering them to make decisions. For example, “Our planning and scheduling process gives us the flexibility to meet regularly, reflect on the needs of our kids, and make adjustments necessary.”

### 4.2 Second level analysis

Using a color-coded system on the collaborative research mural, the research team organized individual codes into six overarching themes: Mindsets, Behaviors with Students, Behaviors with Teachers,

TABLE 3 Document analysis linking cultural and operational factors.

Document source	Cultural factors (mindsets, values, behaviors, relationships)	Operational factors (structures, processes, systems)	Interplay
Vision, mission, goals	Child-centered vision, curiosity, creativity, moral integrity, Community mindset	Curriculum design, professional growth systems, differentiated instruction	Vision drives operational priorities, ensuring systems reflect core values
Faculty handbook	Respect, dignity, appreciation of differences, celebration of learning, positive relationships	Classroom management protocols, behavior expectations, PD structures, restitution/contribution systems	Policies formalize relational norms, embedding them into daily routines
Parent/student handbook	Partnership with families, transparency, community engagement	Parent conferences, communication guidelines, event planning processes	Parent relationships reinforced through formal communication and engagement systems
Press releases	Culture of celebration, highlighting student achievement and innovation	Event coordination, project showcases, aligned scheduling	Public recognition strengthens internal culture and aligns operations with values
Program brochures	Joyful learning, risk-taking, supportive community	Flexible scheduling, safety protocols, thematic programming	Seasonal programs extend core school culture into alternative settings
Pedagogical models	Student agency, inquiry mindset, appreciation for unique learners	Integrated curriculum planning, assessment systems, interdisciplinary collaboration	Learning philosophy operationalized through intentional instructional frameworks

Behaviors with Parents, Operational Factors, and Interplay/Attractive Quality. These themes represent increasingly abstract layers of meaning, with mindsets reflecting shared value orientations, behaviors capturing how those values were enacted in daily practice, and operational systems providing the structures and routines that supported them.

The second-level analysis moved closer to answering the second research question by clustering open codes into themes of mindsets, behaviors, and operational supports. For example, values such as trust, psychological safety, and dignity clustered consistently within the Mindsets theme and were expressed through behaviors with students, teachers, and parents, including collaborative problem-solving, student agency, and relational communication. Operational practices such as professional development, communication systems, and flexible scheduling clustered within the Operational Factors theme, illustrating how cultural commitments were embedded into daily routines and organizational structures. The values found in the culture elevated as drivers of responsiveness that shaped behaviors with students, colleagues, and parents. Those behaviors were sustained by operational routines such as scheduled collaboration time, coaching systems, and professional growth structures. The interplay between these domains revealed that culture becomes actionable only when supported by operations, and operations remain meaningful only when guided by shared values.

Importantly, the analysis revealed moments of interplay where cultural values and operational systems converged to generate instances of Attractive Quality. These moments, frequently described by participants as experiences of “surprise and delight,” were particularly prominent in Workshop 2 and included examples such as student-led initiatives, experiential learning activities, and family engagement events. As illustrated in the research mural (Figure 2), these instances demonstrated that responsiveness did not emerge from culture or operations in isolation, but through their dynamic interaction.

In another example, one group shared a story during workshop 2:

*“So for a few years now we have been working on developing altruism as part of the well-being lessons. When you are*

*working with such little people, oftentimes it can be difficult to bring such a large concept and make it a little bit more concrete. Last year our kids made smile cards and delivered them to friends and family. This year, I really wanted to continue to find a way to make more of an impact. So “Katie,” had an amazing idea of connecting with one of our local businesses,” WDE” and having our students write thoughtful messages of cheer and kindness on the Coffee Sleeves, and then anyone who visited that location during the day would receive a message from one of our kindergarteners. This was a great way for the kids to not only see that they can have a greater impact on people outside of just our little corporate community. But also, it was a great way for the families to be involved. We spent a lot of time letting everybody in the school’s community know if you go to this location, you might get to receive one of these messages. And then the people who are going to those locations to receive a coffee anyways, got a bonus and received a message that they were not expecting.”*

This was reinforced in the interviews with the four leaders of the artistic team as well. The music director shared how they work across grades and subjects to integrate teaching in music with state standards and curriculum. “Everything comes down to our standards and rubrics for learning that we have to follow. In our school we do it differently. I do not look at my standard and say, okay, kids have to sing between a five and seven note scale by a second grade. Instead, I say, hey, we are doing global music this year. We are learning about South Africa this month as a cross-grade curricular focus. And we know we are going to sing some song games. And those are going to be in a five to seven note reading. So, we look at what we want the kids to know. And then we make sure it does fit into the into our standards.” This example illustrates the interplay between the values for learning and growth that puts kids’ experience first, with the operational frame of state-level standards. Further, it illustrates the interplay that is shaped by cross-curricular planning.

Because the open codes were numerous and often overlapping, the next analytic step focused on grouping them into higher-order categories to capture shared meaning and illuminate recurring patterns. Tables 2, 3 build directly on this first layer, showing how codes were clustered into broader themes (e.g., mindsets, behaviors, and structures) and validated through document analysis, laying the groundwork for the selective and theoretical coding phases that follow.

By mapping these patterns across domains, the second-level analysis provided a conceptual bridge from the raw codes of Table 1 to the interpretive synthesis represented in Table 3. Together, these findings reveal how mindsets act as a compass for the school community, guiding behaviors and decisions, while operational systems provide the infrastructure to enact and sustain those values. Interplay between the two domains emerged as a central mechanism, reinforcing that responsiveness in schools is not a static condition but an ongoing process of alignment between cultural ideals and operational practices.

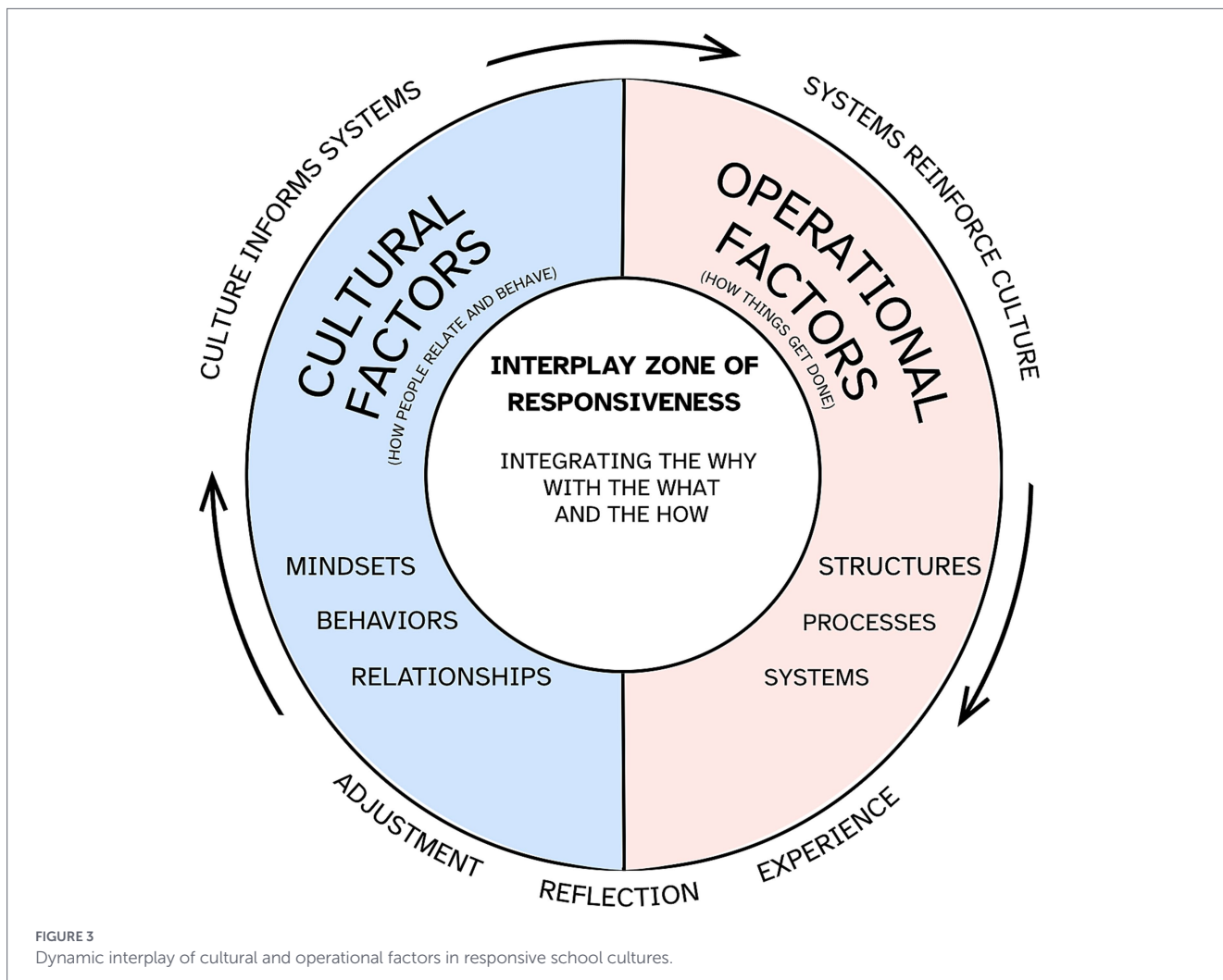
### 4.3 Third level analysis and proposed framework

The third level of analysis represents the theoretical coding phase of the grounded theory process. This stage integrated the selective codes from Table 2 and the document analysis presented in Table 3 into a unifying conceptual model that explains how responsiveness

emerges in schools functioning as living systems. Findings from this third-level analysis showed how responsiveness is developmental and iterative. Participants described events, initiatives, and routines as testing grounds where new ideas were tried, reflected upon, and refined. This process demonstrated that schools as living systems are never finished but always evolving.

This third level of analysis also reframes friction between cultural ideals and operational realities as an essential part of the system rather than a flaw. Misalignments between values and structures acted as generative data, prompting reflection, dialog, and system-level learning. For example, participants described tensions between a shared commitment to student-centered learning and operational constraints such as scheduling structures or curriculum pacing requirements. Rather than resolving these tensions through compliance, teams used them as opportunities to engage in dialog, adjust practices, and redesign routines in ways that better aligned systems with shared values. This perspective draws on Ford and Ford (2010), who argue that resistance can serve as a valuable source of feedback, enabling continuous organizational learning rather than halting progress.

To represent this phenomenon visually, a framework is presented in Figure 3. The framework serves to illustrate how cultural mindsets, enacted behaviors, and operational systems can work together to form a coherent and dynamic system of responsiveness. The purpose is not to suggest a specific model that is generalizable to all schools but



rather to represent the relationships between cultural and operational factors which are otherwise typically discussed separately. For example, in highly responsive schools, for example, it is expected to find a strong interplay between all variables in the culture and operations.

The framework depicts responsiveness as an ongoing interplay between cultural factors (mindsets, relationships, and behaviors) and operational factors (structures, processes, and systems). Rather than acting as separate or linear influences, these two domains continually inform one another. Culture shapes how members of the school community think, feel, and behave, while operational systems embed those values into practice, ensuring they are enacted consistently and scaled across the school. The model's circular design reflects the iterative nature of this process, where experience generates reflection, reflection informs adjustment, and adjustment strengthens future practice.

The framework emerged inductively through systematic comparison of participants' accounts rather than through selective attention to data that confirmed pre-existing assumptions. Although leaders' tacit and organizational knowledge informed their interpretive frames, the model was developed from recurring patterns across the data and reflects a broader set of processes and conditions not attributable solely to these knowledge-based influences. Theoretical coding highlighted the interplay as the central mechanism driving responsiveness. Instances of responsiveness most often occurred at points where cultural values and operational supports converged. For example, empowerment mindsets became most powerful when paired with concrete systems for teacher autonomy, such as scheduled collaboration time and professional development loops. Similarly, values like trust and psychological safety were reinforced by structured feedback protocols and inclusive decision-making systems. These intersections frequently produced moments described by participants as surprising, joyful, or particularly meaningful, aligning closely with the concept of Attractive Quality. In this way, responsiveness was revealed not as the product of culture or operations alone but as the outcome of their dynamic interaction.

## 5 Discussion

### 5.1 Interplay as the core of responsiveness

The results of this study suggest that responsiveness emerges not from isolated initiatives or top-down reforms, but from the dynamic interplay of cultural and operational factors. This aligns with Ingelsson (2013) argument that high-performing organizations continuously reweave their cultural and operational threads to remain adaptive. The interplay between culture and operations allows for resistance to serve as a driving force for continuous improvement. This perspective draws on Ford and Ford (2010), who argue that resistance can serve as a valuable source of feedback, enabling continuous organizational learning rather than halting progress. Evident in the data was how responsiveness in the case site emerged through relationships, sensemaking, and coordinated action rather than through isolated interventions or hierarchical control (Senge et al., 1999; Snyder, 2023).

As depicted in Figure 3, the interplay zone of responsiveness functions as the beating heart of the school, integrating purpose (the why), relationships and behaviors (the how), and structures and processes (the what). Culture informs systems, systems reinforce culture, and each experience feeds a cycle of reflection and adjustment.

This cyclical process mirrors Deming (1986) Plan-Do-Study-Act cycle and Senge (1990) vision of learning organizations, while also aligning with more contemporary perspectives that conceptualize quality and adaptability as emergent and generative rather than prescribed. From this viewpoint, responsiveness can be understood as an organizational capacity that develops through ongoing interaction, learning, and alignment over time (Bergman et al., 2022; Uhl-Bien and Arena, 2018; van Kemenade and Hardjono, 2019) positioning responsiveness as an organizational habit rather than a static trait.

These findings reveal that responsiveness at the case site is built on a balance of cultural and operational components. Cultural elements such as trust and psychological safety provide the foundation for professional risk-taking and collaboration, while operational systems offer the scaffolding that turns these values into consistent practice. Early evidence of interplay between these domains emerged in this stage, where moments of collaboration were often tied to enabling systems, and empowerment was reinforced through professional development and shared leadership. As Stoica and Florea (2012) suggest, organizational resilience depends on pairing entrepreneurial, risk-tolerant culture with intentional planning structures. The interplay zone of responsiveness provides such a container, balancing improvisation with coherence, innovation with stability, and inspiration with execution. This framing aligns with contemporary systems-oriented research in education, which emphasizes leadership practices that integrate cultural meaning and operational design to support sustainable adaptation over time (Shaked and Schechter, 2020).

The strength of a school lies not in culture or operations alone, but in the quality of their relationship, reflecting how contemporary organizational theory conceptualizes performance as an emergent property of aligned systems (Uhl-Bien and Arena, 2018; van Kemenade and Hardjono, 2019). Responsiveness arises where beliefs and structures intersect, creating a zone of interplay in which growth, adaptability, and shared purpose emerge. This interaction allows schools to remain stable enough to preserve their identity while also being flexible enough to innovate in the face of complexity, consistent with research on adaptive capacity and continuous learning in complex organizations (Bergman et al., 2022; Uhl-Bien, 2021).

Viewed in this way, the resulting framework functions both as an explanatory model and as a practical guide. It offers a means for schools to reflect on how well cultural beliefs are aligned with operational mechanisms and where this alignment might be strengthened to enhance responsiveness. As a conceptual lens, the model invites educational leaders to examine where values are fully enacted in practice and where additional structures or processes may be needed to support them, aligning with recent work on systems thinking and leadership for sustainable school improvement (Hargreaves and O'Connor, 2018; Shaked and Schechter, 2020).

### 5.2 Human-centric engagement and life force variables

Another major insight concerns the role of human-centric engagement as the catalyst that keeps the interplay cycle moving to build responsiveness. The case school is organized around the motto "kids first," a cultural anchor that has shaped decision-making, curriculum design, and community relationships for more than two decades. This shared commitment is more than rhetoric. It reflects a human-centric orientation in which meaning, relationships, and lived

experience are central to how value is created within the organization (Prilleltensky, 2020).

As a guiding value, “kids first” activates both cultural and operational systems by aligning beliefs, behaviors, and structures toward a common purpose. Research on mattering and human-centered systems suggests that when individuals feel valued and experience their work as meaningful, they are more likely to engage, adapt, and contribute to collective learning (Prilleltensky, 2020; Sten, 2023). In this case, the human-centric focus functioned as a generative force that sustained responsiveness over time, directly addressing the first research question concerning which cultural factors matter most for continuous responsiveness (Snyder et al., 2025).

Engagement also extended into informal school life. Workshop stories highlighted how teachers and students enacted mattering and valuing in small but powerful ways, reinforcing the human-centric conditions that support sustained engagement and responsiveness. Students described altruism projects such as smile cards and messages written on coffee sleeves, which spread joy to families and local businesses. These seemingly simple acts reflected deep cultural commitments to care, belonging, and contribution, aligning with Prilleltensky (2020) concept of mattering as the experience of feeling valued and adding value within a community.

At the same time, these moments required operational routines such as teacher facilitation, communication with community partners, and integration into the school’s learning program. Through this alignment, altruism moved beyond isolated acts and became embedded within repeatable systems of practice. In this way, moments of surprise, delight, and positive disruption exemplified attractive quality, where experiences exceeded basic expectations and generated emotional engagement for stakeholders (Kano et al., 1984; Lilja and Wiklund, 2007). Together, these examples illustrate how cultural values and operational systems interacted to create responsiveness grounded in both human connection and organizational design.

The alignment between cultural intent and operational execution strengthened life force variables trust, empowerment, psychological safety, teaming, reflection, and feedback loops built social capital, and reinforced the community’s identity under the #OneCommunity narrative. This finding relates to Bryk and Schneider (2002) assertion that relational trust drives school improvement and aligns with Fullan (2011) emphasis on connecting moral purpose with coherent systems. Together, human-centric engagement functioned as regenerative forces that keep the system responsive over time. This was identified across all three levels of analysis, representing the connective tissue between beliefs and structures and between behaviors and systems. In particular the Life force variables clarify which cultural and operational factors matter most and illustrate how those factors interact dynamically within schools understood as social systems. Such integration enables adaptive capacity by allowing relational energy and meaning to be translated into coordinated action (Uhl-Bien and Arena, 2018; Uhl-Bien et al., 2007). Research in quality management reinforces this articulating the necessity for culture and operational factors to be consciously connected (Åslund and Bäckström, 2017; Dahlgard-Park et al., 2013; Fundin et al., 2021; Institute, S, 2017; Snyder et al., 2024).

### 5.3 Teaming as a mechanism for responsiveness

Teaming emerged as one of the most powerful mechanisms for sustaining interplay; a finding supported others (Beyerlein and Harris,

2003; Senge et al., 1999; Snyder and Anderson, 1986). Teaming is both a behavior and a process that brings people together to generate ideas, solve problems, and learn in real time (Edmondson, 2012). This is an important contribution to earlier studies on the value of teaming in education that has been more focused on team-teaching and team planning (Johnson, 2019) reflecting an operations perspective. In this study, teaming surfaced repeatedly as a central cultural practice and also illustrated how this practice depends on operational structures that provide time, routines, and resources for collaboration. Teaming crossed traditional boundaries, linking divisions, grade levels, staff roles, and school–community partnerships. This networked approach allowed ideas to spread, knowledge to be distributed, and capacity to be built collectively rather than held centrally, aligning with theories of networked and team-based organizing in complex systems (Barabasi and Pósfai, 2016; Beyerlein and Harris, 2003).

Beyond coordination, teaming functioned as a generative social process. Participants described teaming as creating conditions for psychological safety, shared sensemaking, and collective experimentation, particularly when teams were supported by clear structures and protected time. This aligns with Edmondson’s (2012) work on teaming as an ongoing learning process and with dialogic organization development research, which emphasizes the role of collective meaning-making and generative conversations in adaptive change (Bushe and Marshak, 2015). From this perspective, teaming is not simply a technique for improving efficiency, but a mechanism through which new understandings and practices emerge in response to evolving conditions (Young et al., 2017).

Sten (2023) research on real teamwork and sustainable quality culture adds further weight to these findings. She argues that effective teamwork extends beyond cooperation to include emotional commitment, psychological safety, and a balance between structure and culture. These conditions mirror what was observed in this study, where teaming was only effective when supported by systems that created safe spaces for risk-taking and reflection. Her work also emphasizes that teamwork itself contributes to a culture of continuous improvement, aligning with the iterative process of experience, reflection, and adjustment described in Figure 3.

Seen through the lens of Figure 3, teaming functions as a living mechanism that keeps the culture–system cycle active. This can contribute to generating shared experiences, prompting reflection, and informing adjustments in both cultural practices and operational routines. Participants’ accounts showed that teaming produced both stability and adaptability: stability emerged as collaboration became expected and embedded in daily routines, while adaptability emerged as teams created space for experimentation and problem-solving. This dual role reinforces the model’s central claim that responsiveness emerges through the interplay of cultural values and operational systems rather than through isolated initiatives or top-down control. As such, teaming represents one of the clearest expressions of responsiveness in practice.

### 5.4 Shifting the paradigm from compliance to responsiveness: contributions

A central contribution of this study is its reframing of the ongoing tension between compliance-driven approaches to school improvement and the need for responsiveness in complex educational environments. Traditional approaches to school improvement often focus on identifying and eliminating weaknesses

(Shakman et al., 2020). Quality models based on standards and compliance are increasingly insufficient in addressing the relational and experiential dimensions of schooling. Alternatively, school leaders who develop systems for responding to complexity and stakeholder needs, alongside more traditional quality measures, are better positioned to create value for stakeholders and support long-term sustainability.

Shifting the paradigm in school development from compliance to responsiveness is to not suggest a radical move away from accountability and the importance of school outcomes. Rather it is to suggest a shift in the definition and orientation to quality in education that places stakeholder value as central driving forces rather than compliance to government measures of success. This is important for education to move out of the audit society (Power, 1999) and into a responsiveness paradigm that positions educators to adapt to complexity. Bruner (1996), Snyder (2023) and Snyder et al. (2008) illustrated how school leaders were able to strike a balance between accountability and responsiveness by shifting to a systems thinking orientation to schools. Central to the success of the schools was the integration of work culture with operational systems that was driven by teaming and human relationships. This is further reinforced by D'Souza (2023) in his framework for "Reading School Organizations" that included understanding the context, the environment, forming culture, parameters and signs in the work culture that mattered.

Developing responsiveness and value in organizations is based on the interdependence of strategic and operational levels. These two levels need to work together to achieve the desired goals, an organizational culture necessary for sustaining quality in complex times (Ingelsson and Mårtensson, 2014; Leithwood et al., 2020). At the strategic level vision, policies, values, and principles are found, which serve as guideposts for the organization. These are translated into structures, processes, decision-making, and actions at the operational level. Laszlo and Zhexembayeva (2011) also found an important interdependence between the strategic and operational levels for sustainable development.

Understanding responsiveness as a core property of living systems provides an important bridge to helping school leaders navigate the shift from compliance to responsiveness. If responsiveness is a system-level capacity, then leadership cannot be understood solely in terms of individual decision-making or authority. Instead, leadership involves shaping the cultural and operational conditions that enable responsiveness to emerge and be sustained through curiosity, continuous learning, appreciation for diverse perspectives, collaboration and resilience (Jenkins-Scott, 2020). Developing the capacity to be more responsive as a leader has its roots deep within the complex systems where schools exist. Painter-Morland (2008) posits that in the dynamic environment of a complex adaptive organizational system (such as a school), where it is impossible to anticipate and legislate for every potential circumstantial contingency, creating and sustaining relationships of trust has to be a systemic capacity of the entire organization. It is this nurturing of a culture of trust within a school that becomes the responsive leader's most valuable asset. Understanding the cultural and operational interplay helps explain why efforts to improve responsiveness through isolated leadership behaviors or discrete initiatives frequently fall short. Changes to structures without attention to culture may produce compliance without commitment, while cultural initiatives unsupported by operational systems may remain aspirational rather than lived. From a systems viewpoint, responsiveness depends on the continuous interaction between what

a school values and how it organizes its work, rather than on any single component in isolation (Schein, 2010; Uhl-Bien and Arena, 2018).

## 6 Conclusion

This study set out to answer two questions: What cultural and operational factors are present in a school designed as a living system, and how do these factors interact to strengthen responsiveness? The findings suggest that responsiveness is not a fixed state, but a continuous process of alignment between what a school values and how it operates. As illustrated in Figure 3, the interplay zone of responsiveness functions as the engine of this process, where culture informs systems, systems reinforce culture, and cycles of experience, reflection, and adjustment support ongoing learning and adaptation.

In responding to the challenge raised in the introduction, where schooling was described as struggling to keep pace with increasing complexity through mechanistic and compliance-oriented practices, this study contributes a different way of understanding school development. Rather than framing improvement as a series of prescribed changes or isolated initiatives, the findings highlight how responsiveness emerges through the dynamic interaction of cultural values and operational structures within a living system. From this perspective, schools are better understood as complex and adaptive organizations that sustain growth through ongoing interaction, learning, and adjustment over time.

The three levels of analysis revealed that trust, empowerment, psychological safety, teaming, reflection, and feedback loops form the life force variables that keep the school regenerative. Cultural elements such as shared purpose and collaboration only came to life when supported by operational structures like distributed leadership, professional learning, and flexible scheduling. Together, they created conditions for surprise, delight, and joy, experiences that energized the community and fueled continuous improvement.

For school leaders, the message is clear: responsiveness can be cultivated. It begins by clarifying core values, aligning systems to those values, and creating opportunities for teaming and reflection that keep the cycle moving. This study offers a framework for leaders who want to design schools that are not just efficient but alive, schools that grow, adapt, and inspire.

By treating schools as living systems, educators can move from managing compliance to cultivating possibility. They can create learning communities where culture and operations work together to generate resilience, belonging, and a shared sense of purpose. The invitation is to lead in a way that keeps the interplay alive so that schools remain responsive, human-centered, and full of energy for the future.

### 6.1 Implications for practice

This study offers practical insight for school leaders who want to strengthen their school's ability to adapt and respond within a complex organization. The prevailing model of the interplay zone of responsiveness provides a way for leaders to continually examine whether the "why," "how," and "what" of their schools are aligned. Leaders can start by clearly naming the values that matter most to their community, such as putting students first, nurturing a growth mindset, or cultivating collective accountability and belonging. Once

these values are clarified, they can reflect on whether the systems in place, including scheduling, communication platforms, and teacher development structures, actually support those values. For example, if autonomy is emphasized, it is important for flexibility in planning and instructional practice to be present. If collaboration is a core value, then time for teaming should be protected, and decision-making structures should allow for participation by multiple voices.

The life force variables identified in this study (trust, empowerment, psychological safety, teaming, reflection, and feedback loops) offer a practical blueprint for designing schools that stay regenerative over time. These variables function as connective tissue linking beliefs to structures and behaviors to systems. They cannot simply be written into policy; Life force variables need to be cultivated and maintained through ongoing attention. Leaders can embed them into daily practice by modeling trust and transparency, ensuring there is space for reflection, and using feedback as a tool for learning and growth. Professional development can become a key lever for strengthening these variables by including peer coaching, collective problem-solving, and shared leadership exercises that give staff opportunities to experiment and refine their practice.

At the classroom and schoolwide level, it is important for values to be operationalized through tangible routines and rituals. Class charters, collaborative goal setting, and student-led conferences allow students and teachers to enact dignity, respect, and mattering in their everyday work. The school calendar can become a delivery system for culture, ensuring that moments of surprise, delight, and celebration are strategically embedded across the year. These events sustain cultural energy and reinforce the shared narrative of the community.

Leaders can treat interplay as an ongoing cycle of experience, reflection, and adjustment rather than as a one-time alignment exercise. This means setting rhythms for revisiting key questions: Are our systems still aligned with what we believe? Are our behaviors and routines reinforcing the culture we want to grow? Are our feedback systems timely, inclusive, and generative? These questions can be explored collectively during faculty meetings, retreats, and professional learning communities so that improvement becomes a shared responsibility. When schools adopt this posture, they begin to function like living systems, continually evolving while staying anchored in their core purpose.

## 6.2 Limitations and future research

This grounded theory study was conducted within the unique cultural and operational context of a single independent PreK–8 school. While the interplay themes and the resulting framework offer transferable insights for understanding responsiveness, they are necessarily shaped by the mission, leadership style, and community values of the case site. Other schools may express different constellations of cultural and operational factors, or may prioritize them differently, which could influence how interplay manifests. The single-site design limits the generalizability of the findings, yet the depth of data collection and analysis provides a strong foundation for theory-building that is typical of grounded theory. The iterative process of open, selective, and theoretical coding, combined with document analysis, arts-based interviews, and collaborative workshops, suggests that this approach can be replicated or adapted in other school settings to uncover similarly situated frameworks. It is important to acknowledge that the proposed

Interplay framework is not a determinant framework for developing responsiveness. It is intended to serve educators as a reflective lens for asking new questions to examine how the cultural and operational factors are interacting in the school to add value to stakeholders.

Future research could extend this study by using the Dynamic Interplay Framework (Figure 3) as a conceptual guide for testing and validating the relationships between culture and operations across diverse educational contexts. Tables 1–3, which map the progression from raw codes to higher-order themes and document sources, provide a roadmap for replication. Comparative studies could explore whether similar clusters of mindsets, behaviors, and operational factors appear in other schools and whether their interplay also generates the same zone of responsiveness. Longitudinal research might track how these interplay cycles evolve over time, offering insight into whether sustained attention to these factors strengthens organizational coherence, staff retention, and student engagement. Further, how interplay can be developed in schools that are heavily guided by government accountability models based primarily on student outcomes.

Future studies could also examine how the life force variables (trust, empowerment, psychological safety, teaming, reflection, and feedback loops) operate as mediators or catalysts in other systems. Do schools that actively design around these variables experience more rapid adaptation during leadership transitions or curriculum reforms? Can intentional cultivation of attractive quality and teaming predict higher levels of collective efficacy or parent satisfaction? Researchers could investigate these questions across networks of schools or entire districts to determine whether the interplay model can be scaled as a tool for systems-level change.

By explicitly connecting findings to Figure 3 and Tables 1–3, this study invites other researchers and practitioners to not only adopt its insights but also to test, refine, and extend the theory. This ongoing process of validation will help determine whether the interplay framework functions as a robust model for designing schools as living, regenerative systems in diverse contexts.

## Data availability statement

Due to the qualitative nature of this study and the need to ensure confidentiality and anonymity, data will not be made available for secondary use by other researchers.

## Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

MJ: Investigation, Conceptualization, Project administration, Writing – review & editing, Writing – original draft, Data curation,

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