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EDITED BY

Sereyath Em,
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REVIEWED BY

Luciano Seta,
National Research Council (CNR), Italy
Rahaela Varga,
Josip Juraj Strossmayer University of
Osijek, Croatia

*CORRESPONDENCE

Generosa Pinheiro

✉ silva.vilela@sapo.pt

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School leadership and organization in times of complexity: paths to a collaborative and regenerative school

Generosa Pinheiro*, José Matias Alves and Lídia Serra

Universidade Católica Portuguesa, Research Centre of Human Development, Faculty of Education and Psychology, Porto, Portugal

This article describes a possible metamorphosis of school grammar—the underlying structures, practices, and norms that shape how schools function—through the organization of teaching by educational teams. Educational teams can serve as catalysts for transforming schools into more personalized, flexible, interactive, and adaptive systems. It also discusses the implications of these structural changes for the shift toward more integrative leadership models, such as collaborative and regenerative leadership. Hence, the article tries to fill a conceptual gap concerning how educational teams can serve as a structural level for reconfiguring the traditional grammar of schooling through an integrative lens that implies school actors. To present further implications for practice, this article, a conceptual analysis, examines the role of principals, middle leaders, and teacher leaders in building these leadership perspectives. This whole approach emphasizes the importance of a joint, articulated and holistic effort, which will require a change of vision and purpose, but also of structures, of leadership and of the school cultures, in an ecological dynamic, to achieve the sustainable success of the school and the attainment of the goals of quality, equity, diversity and social justice.

KEYWORDS

regenerative leadership, collaborative leadership, educational teams, complexity, sustainability

1 Introduction

The complexity and ambiguity that increasingly characterize 21st century education systems, in the context of the unbridled change that marks today's world, pose unforeseen problems that are hindering sustainable success and lifelong learning, which are fundamental for global development and for the pursuit of the goals of quality, equity, diversity, and social justice [United Nations Educational, Scientific and Cultural Organization (UNESCO), 2017]. Thus, in the face of a complex, chaotic and fickle world, in order to be successful, schools must have the ability to adapt quickly, not only through more flexible organizational structures, horizontal and interconnected (Johnson, 2025), but also through multidimensional organizational systemic thinking that promotes articulation, interaction and involvement with local actions (Hardman, 2010).

On the other hand, as education systems become increasingly complex and interconnected, different sources of influence and leadership are also needed to navigate rapidly changing learning environments (Shava and Tlou, 2018). From this perspective,

leadership can no longer be a mere position, nor should it be limited to a single person or team symbolically located at the top of an organizational chart. Rather, it becomes the social behavior of each leader in a self-organized system that is intrinsically complex, unstable, and unpredictable (Hardman, 2012). Reimagining the school implies a shift toward more integrative, collective, regenerative, culturally responsive, and systemically oriented leadership approaches, capable of facing the threat of dispersion and chaos (Park et al., 2025; White et al., 2025).

As Biesta (2017) argues, the purposes of education are multiple, and this multidimensionality requires a complexity-oriented approach—one that, instead of relying on simple formulas, acknowledges the interaction of diverse factors in unpredictable contexts. Such an approach calls on schools to engage in self-reflection rather than merely respond to immediate social demands. Thus, given that the complexity of the educational world is irreducible to the piecemeal analyses we wish to carry out of it (Morin, 2005), in this conceptual analysis article, we will substantiate these assumptions by deepening and relating the concepts of school organization as a complex interactive and adaptive system (Fidan and Balci, 2017), with less hierarchical and more integrative approaches to leadership: regenerative (Hardman, 2010) and collaborative leadership (Coleman, 2011, 2012), in a context where leadership comes to value explicit purposes, contexts, educational prudence, and critical resistance to external pressures (Biesta, 2017).

To make the principles of collaborative and regenerative leadership, expressed at a general level, more meaningful, we will also address how the different school leaders—principals, middle leaders, and teacher leaders—can contribute to building these leadership models. In doing so, they help transform their school into more agile, responsive, and innovative organizations (Fidan and Balci, 2017)—that is, institutions that are more sensitive and attentive to the changes taking place in society. Hence, the article briefly reflects on the possibility of re-culturing the school through educational teams, a core organizational structure for developing collaborative cultures to enhance education. Two theses are addressed: first, combining different leadership styles in complex and interactive adaptive systems, as schools, may enforce their transformation; second, the interconnectivity among school actors, built through regenerative and collaborative leadership, may set the stage for in-depth and expanded cooperative strategies.

2 The school organization as a complex and interactive adaptive system

In a constantly changing and complex environment, without expectations of stability and predictability, education becomes a landscape marked by complexity and uncertainty. This context calls for a change in the organizational model of schools toward complex social, interactive, and adaptive systems (Fidan and Balci, 2017). Given their informal human architecture, school organizations must become self-organized, dynamic entities, freeing themselves from rigid and uniform central control mechanisms. In this

way, schools can take on new dynamics, new relationship patterns, and different structures capable of triggering collaboration and, consequently, the discovery and experimentation of new opportunities [United Nations Educational, Scientific and Cultural Organization (UNESCO), 2021]. An organization based on an industrial factory model, a rigid, reductionist, and mechanistic hierarchy, will not facilitate or allow sustainable navigation in the sea of unpredictability. Therefore, schools can no longer be conceived as orderly and predictable machines. On the contrary, they should be seen as living, agile, resilient, responsive, innovative organisms, based on models that favor interaction and interdependence, allowing beings and ecosystems to thrive together (Fidan and Balci, 2017; Johnson, 2025). Thus, changes in the school's organizational model will imply, from the outset, a move toward more flexible and horizontal structures, made up of autonomous teams, namely educational teams (Formosinho and Machado, 2009).

It seems relevant to begin by mentioning the context in which this new model of educational organization emerged and became operational. The second decade of the 21st century in Portugal has born witness to a reconfiguration of public education policies, in line with a new model of school governance, in which a centralized and bureaucratic tradition has been given way to a pendulum-like strategy that tends to value the school as the intermediate (middle) level of analysis and management between the educational system (macro) and the classroom (micro) and sees it as a center of change (Fernández-Enguita, 2020).

On the one hand, Order no. 6478/2027 of July 26, 2017 (Ministério da Educação Portuguesa, 2017) and Decree-Law No. 55/2018 of July 06, 2018 (Ministério da Educação Portuguesa, 2018) have provided scope for greater autonomy, giving organizational and curricular flexibility, in which the organization of the school by educational teams can be framed, as a technology that appeals to professional and organizational autonomy, opening up the possibility of contextualized educational responses (Formosinho and Machado, 2016a).

On the other hand, following the COVID-19 pandemic, schools were able to draw up the 2021/2023 *More School* plan to catch up on missed learning. One of the organizational strategies they planned and implemented was structuring the school into educational teams, an innovative process that involves creating teams of teachers from various subjects to whom every student in an academic year (or cycle) is allocated. In this way, the teachers in each team assume educational responsibility for the learning of all students in the group, participating collaboratively in the integrated and contextualized management of the curriculum, in terms of planning, operationalization, monitoring, and evaluation (Formosinho and Machado, 2009, 2016a,b).

In this sense, this pedagogical model could lead to restructuring the old *school grammar* (Tyack and Tobin, 1994), whose basic cell is the class, with a fixed composition, governed by a rigid timetable and structured around subjects that divide the curriculum. The classes are also allocated to classrooms, which end up individualizing the work of the teachers. On the other hand, the integrated and contextualized curriculum management by a multidisciplinary team for an entire school year assumes that educational innovation requires a systemic change perspective.

Therefore, it will involve making student clusters more flexible, an interdisciplinary organization of knowledge through integrative projects, and a new way of teaching, planned around a large group of students (Formosinho and Machado, 2016a; Machado and Formosinho, 2016).

Collaboration within educational teams will enhance interpersonal interactions and facilitate the flow of information and resources, as well as broader and more consistent reflection. Therefore, collaboration will contribute to reducing the departmentalization of knowledge, the fragmentation of the curriculum, the rigidity of classes, timetables, spaces, and a culture of teacher individualism (Formosinho and Machado, 2009, 2016a,b; Pinheiro and Alves, 2024a,b). In fact, in this organizational context, participatory governance will also be favored, listening to and involving everyone in decision-making, with leaders taking on the role of mentors, barrier removers, and facilitators of interpersonal relationships between the various social players (Fidan and Balci, 2017; Pinheiro and Alves, 2024d), from a true constructivist approach, which prioritizes the process of co-producing leadership and organizational change (Seta and Badiglio, 2024).

Thus, in a school structure made up of educational teams, it is important to give teachers more autonomy in carrying out their tasks. In this way, the traditional management perspective, marked by a top-down command and control style, loses influence and the principles of flexible self-regulation, focused on student learning, gain ground, in a framework in which the leader's work becomes reactive to the complex and dynamic nature of change (Allen, 2018; Snyder and Snyder, 2023). Studies show that schools with more flexible structures can be more successful because they meet personal needs, particularly those of the students (Fidan and Oztürk, 2015; Pinheiro and Alves, 2024a,b).

3 More integrated leadership: regenerative and collaborative leadership

3.1 Regenerative leadership

Within the framework of complex interactive and adaptive organizations, there is a growing call for educational leadership that is appropriate and responsive to the 21st century's ever-changing learning environments and the need to increase sustainability in educational contexts [United Nations Educational, Scientific and Cultural Organization (UNESCO), 2017]. In this sense, school leaders face many complicated and challenging dilemmas, with contradictory expectations, actions, and reactions. According to Hardman (2010), who coined the concept of regenerative leadership, these unpredictable leadership environments require conscious risk-taking, based on research and learning, to recreate, regenerate, and produce new capacities, interactions, connections, and actions that respond to the prevailing emergent state (Hardman, 2012). The model of regenerative leadership is characterized as an integral theory of leadership, based on developing a global ethic that balances the way we value subjective and objective realities. It is therefore a more effective approach to leading society toward sustainability. Regenerative leadership also

emerges as an approach that balances power by encouraging the emergence of multiple voices, actions, and dispositions within the system, from a heterarchical perspective, woven into a network. In this case, distributing leadership is not just a technical operation, but spreads the power to deliberate and act across several leaders. Instead, it is characterized by promoting interdependence in decision-making, collaboration at various levels and in multiple systems inside and outside the organization (Hardman, 2010), from a shared leadership perspective (Carson et al., 2007; Pearce and Conger, 2003).

Regenerative leadership will therefore involve, on the one hand, environments that value all stakeholders, who will be actively and authentically included in conversations and reflective actions about achieving the organizational vision. On the other hand, it is based on a dynamic mindset (Johnson, 2025) that focuses on creating the conditions for teams to thrive. This appreciative thinking contrasts with leadership trapped in a static, deficit-thinking mindset, focused on limitations, inadequacies, and what they lack, leading to doubt, fear, and a belief that their shortcomings limit growth (Acker-Hocevar, 2023).

However, this change in mentality will mean that today leadership's great challenge is promoting learning (MacBeath, 2006). Given that human growth is an organic process and not a mechanical one, it will then be up to leaders, as if they were farmers, to cultivate the conditions for people to grow, learn, and develop (Robinson, 2010a). A challenge of this magnitude will require an integrated and articulated exercise of leadership for learning, with transformational and servant leadership.

3.1.1 Leadership for learning

The concept of *learning-centered leadership* or *leadership for learning* became widespread during the last decade of the 20th century (Gumus et al., 2016). According to the systematic literature review on studies of leadership models in educational research, these authors point out that Bush (2003), when defining instructional leadership, used the term *learning-centered leadership* as a synonym for instructional leadership and *learning-centered leaders* as the equivalent of instructional leaders, and the word then gained international expression (MacBeath et al., 2008; Robinson et al., 2008). This approach to school leadership resulted from synthesizing two previous conceptualizations: instructional leadership and transformational leadership. It thus emphasizes the importance of maintaining a focus on learning throughout the school, not only for students, but also for teachers and staff (Hallinger and Heck, 2010), through creating community, a sense of belonging, and purpose. According to MacBeath (2006, p. 44), "leadership is sterile when it is empty of learning, and learning is what feeds leadership and spreads and diffuses it."

In the 1990s and the first decade of the 21st century, researchers studied instructional, transformational, and shared leadership, seeking not only to define these constructs but also the impact of each of these models on student learning. These studies revealed very consistent patterns of impact, so the term *leadership for learning* now includes characteristics of instructional, transformational, and shared leadership. It thus emerges as a broader conceptualization that incorporates a wider range of

leadership sources and additional focuses for action (Hallinger, 2011).

In addition to focusing on learning, this model seeks to create favorable conditions for it to happen, namely through deep, consistent, reflective, and inclusive dialogue, through *accountability*, and through shared leadership, since learning requires interaction (MacBeath, 2006). We can therefore see that leadership is exercised in an organizational and environmental context, so although it does not directly impact student learning, its effect is mediated by processes and conditions at the school level. Therefore, the impact of the principal's leadership is mediated by the organizational culture(s), work processes, and people, so the school context has an important effect on leadership and learning (Hallinger, 2011). In this context, the concept of transformational leadership comes to the fore.

3.1.2 Transformational leadership

Transformational leadership has its origin in James McGregor's publication (Burns, 1978), in which he analyzed the ability of some leaders in many types of organizations to engage with staff in ways that inspire them to new kinds of energy, commitment, and purpose. This leadership perspective focuses on how charismatic leaders influence their colleagues (Leithwood and Louis, 2012) through their ability to engage and encourage staff to transform the school (Robinson et al., 2008). In this sense, through idealized influence, motivational inspiration, intellectual stimulation, and individual consideration (Anthony and Hermans, 2020), followers are motivated by the importance of organizational goals and inspired to transcend their interests for the sake of the organization (Marks and Printy, 2003). Transformational leadership is thus described as a product of multiple sources rather than a single authority (Hallinger, 2003). It focuses on establishing structures and cultures that improve the quality of teaching and learning, setting direction, developing people, and redesigning the organization (Day et al., 2016).

According to Robinson et al. (2008), transformational leadership is less likely to positively affect student outcomes than instructional leadership because it originally focuses on relationships with people. However, Marks and Printy (2003) concluded that when instructional, transformational, and shared leadership coexist in an integrated form of leadership, the influence on school performance, as measured by the quality of its pedagogy and the performance of its students, is substantial. Day et al. (2016) concluded the same, arguing that leaders who exercise transformational and instructional leadership progressively shape the culture and work of their schools, reinforcing teachers' commitment and capabilities during the different stages of their organizations' development.

The studies evoked corroborate the first thesis of this conceptual analysis, according to which the combination of different types of leadership in more integrative models may be more desirable or advantageous for sustaining effective school development. Indeed, multiple and collective influences can positively influence organizational results, under the right conditions (Shava and Tlou, 2018).

3.1.3 Servant leadership

As highlighted above, transformational leadership focuses on the organization, seeking to motivate followers to support organizational objectives by promoting either the quality of processes or results. For its part, servant leadership, a concept coined by Greenleaf (1977), although it appears as a complementary theory to the previous one, focuses essentially on people, to value them in a more relational leadership context (Stone et al., 2003). Servant leadership is based on the belief that organizational goals will only be achieved in the long term if, in the first instance, the growth, development, and overall wellbeing of the individuals who make up the organization are facilitated. Therefore, servant leaders believe that they cannot progress alone and that they can feel and appreciate other human beings. According to Greenleaf (2015), the servant leader shares power, puts the needs of others first, and helps people to develop and perform at the highest level possible.

Servant leadership style highlights the importance and relevance of articulating yet another leadership model which, like transformational leadership, features "visionary leaders who generate high levels of trust, serve as role models, show consideration for others, empower their followers, teach, communicate, listen to and influence them." (Stone et al., 2003, p. 359).

Therefore, through the articulation of these three leadership models, the characteristics that could make it possible to develop regenerative leadership have been brought together. In reality, this is characterized by the attributes that bring together the three leadership models presented above: continuous learning; empathy and the ability to feel and appreciate other human beings; resilience or the ability to recover and move forward in the face of adversity, as well as the humility that we cannot move forward alone (Jenkins-Scott, 2020). These attributes will enhance a culture of responsiveness within a school, which is a prerequisite for schools to find quality and flourish (Snyder and Snyder, 2021).

3.2 Collaborative leadership

Leadership in complex contexts, the theoretical basis of this conceptual analysis article, assumes that effective school change, as a complex adaptive organism, will depend on the exercise of integrative leadership, in which results will be generated by an interactive dynamic between interdependent actors (Jiang, 2023). Harris (2010) argues that the schools of the future will need multiple leaders rather than individual leaders to achieve organizational goals. Given this new understanding of leadership in school systems, different concepts have emerged, such as collaborative, shared, and distributed leadership, demonstrating different approaches to implementing less hierarchical and more integrative models of leadership (Shava and Tlou, 2018).

Although distributed leadership is often used synonymously in the literature with other terms such as shared and collaborative leadership (Gumus et al., 2016; Spillane, 2005), they are distinct approaches. Although all these models reconceptualize school leadership as a collective rather than individual effort, abandoning the belief in traditional solo leadership that sees the leader as a

hero, they are not identical. All three models of leadership can be implemented to varying degrees, depending on the organizational culture and the specific needs of each group, on a continuum ranging from highly structured forms of limited delegation to almost total team autonomy (Hargreaves and Fink, 2005).

So, on the one hand, distributed leadership is more about specific leadership behaviors, formal positions, and particular types of influence, and refers to an approach in which several people share responsibility and decision-making in a team or organization (Gronn, 2002; Spillane, 2005). On the other hand, shared leadership focuses on multiple sources of influence within teams, constituting one of its emergent properties. It results from participation in activities that influence other members, in areas related to direction, motivation, and support, through interactions involving negotiation and the sharing of leadership responsibilities. Therefore, shared leadership is a relational phenomenon that implies mutual influence between team members as they work to achieve their goals (Carson et al., 2007; Pearce and Conger, 2003).

Coleman (2011) also presents two main ways of using the concept of collaborative leadership. On the one hand, collaborative leadership appears as an alternative way of describing distributed leadership practice. In this case, collaborative leadership relates to sharing leadership with followers to promote learning and greater organizational effectiveness. On the other hand, in a slightly different conception, collaborative leadership focuses on promoting joint work, within and outside the boundaries of the organizational structure, so leadership aims to obtain the benefits of collaborative advantage.

In this work, we approach shared and collaborative leadership approaches, given the growing interest in collaborative work over the last 30 years, driven by the idea that working in partnership can improve efficiency and add value to results (Stoll et al., 2017). Therefore, collaborative work has emerged as an inevitable feature of the 21st century. However, as Coleman (2011) argues, very little research has been carried out into the nature of the leadership needed to maximize the potential of this collaborative work. Hence, the relevance of focusing on the collaborative leadership model.

Collaborative leadership emerges as a strategic approach to leadership at the school level that involves principals, middle leaders, and teachers in shared decision-making and co-responsibility for the learning of all students (Hallinger and Heck, 2010). Thus, collaborative leadership encompasses both formal and informal sources of leadership and conceptualizes leadership as an organizational property aimed at school improvement. This concept of leadership aligns with the broader literature that highlights the importance of empowering teams, minimizing hierarchies, and promoting shared leadership to drive improvement (Jutzi et al., 2025).

In this sense, collaboration will require leaders to give teams the authority to make decisions, allowing team values and structures to develop through interaction rather than control. Thus, leadership styles are co-constructed within the team as roles are shared between members, which increases the overall effectiveness of the group (Kramer and Crespy, 2011). Empirical studies by Hallinger and Heck (2010) have shown that collaborative leadership contributes to school improvement by building academic capacity in targeted areas. The authors consider academic capacity to be a

set of organizational conditions that impact what teachers do in the classroom to influence student learning.

To ensure improvement in schools, the literature on collaborative leadership has identified four main focuses of leadership action: sense-making, by promoting a common vision and inspiring others to follow it; empowerment, through encouragement, ownership and participation in the collaborative process; conflict resolution between partners at a strategic and operational level, as well as commitment and effectiveness, to help ensure the benefits of working together (Coleman, 2011). In this way, we can see that collaborative leadership appears, again, as a composite and mixed form of leadership. It involves a skillful combination of various leadership styles and behaviors. According to Coleman (2011), the central question is not which of these elements is preferable for promoting effective collaborative work, but rather which combination of these elements is most appropriate for improving a given context.

4 Building regenerative and collaborative leadership among the different school actors

The principles of regenerative and collaborative leadership presented above have been expressed considering their theoretical constructs at a general level. However, the principles must become meaningful to a very heterogeneous group of people who have different conceptual, historical, and cultural frameworks and even conceptions of education and schools, which creates problems of coherence and sustainability.

According to MacBeath (2006), for learning and a change in mentality, the principles regarding regenerative and collaborative leadership need not simply be accepted but internalized in schools' thinking and made concrete in their actions. Therefore, according to the author, for these principles to become meaningful, they must be complemented with tools and strategies that lead to their application. Teachers and school leaders may embrace new ideas with enthusiasm but find it challenging to translate them into coherent actions without the necessary tools (MacBeath, 2006).

Therefore, we will present a set of tools and strategies to support principals, middle leaders, and teacher leaders to contribute to building more regenerative and collaborative leadership, capable of helping to shape new relationship patterns and different structures, as well as discovering and experimenting with new opportunities. The interconnectivity nurtured among school actors is the central piece of the second thesis explored in this conceptual analysis, because it is essential in contemporary schools, which, according to Fidan and Balci (2017), are increasingly out of balance and on the brink of chaos.

4.1 Principals

Overcoming a sense of permacrisis, a term coined by Collins (2022) to define a context marked by an extended period of instability and insecurity resulting from a series of catastrophic events, will require principals to remain focused on driving a

long-term vision, without losing sight of their innovative and entrepreneurial spirit (Johnson, 2025). The term permacrisis in education may be evoked to state the continuous mutability and ongoing societal and technological challenges that influence teaching and learning environments. Robinson et al. (2008), in a literature review on the effects of leadership, found that vision and goals were the second most significant factor in which principals contribute to improving learning in the classroom. They considered vision to be the broad image of the school's direction. Senge (1990) also presented shared vision as one of the five disciplines of the learning organization, when all stakeholders are encouraged to participate in developing that vision. Managing a high level of complexity is only possible by developing a comprehensive and appealing vision that integrates different perspectives and guides the school's activities, showing the path that stakeholders must follow to avoid uncertainty and surprise (Morgan, 2013). It is essential to communicate this vision clearly and involve everyone in it (O'Connell et al., 2011).

It is also up to top leaders to build more collaborative and regenerative leadership, encouraging a change in the school's organizational structure by promoting the school's organization into more autonomous teams, the educational teams. In this way, they can trigger more consistent, reflective, active, productive, and authentic collaboration (Pinheiro and Alves, 2024a,b) and, consequently, deeper and more meaningful teacher learning (Pinheiro and Alves, 2024c). Collaborative management of the learning of all the students in a year or cycle of schooling will require top leaders to give educational teams autonomy and authority to make decisions. In this case, team values and structures develop through interaction rather than control. In this way, leadership styles are co-constructed within the team as roles and responsibilities are shared between members, which also increases the overall group effectiveness (Kramer and Crespy, 2011). This type of collaborative leadership is effective because it uses the diverse skills of all group members and can overcome the weaknesses of designated leaders (Kramer, 2006).

School leaders can therefore play a particularly important role in consistently modeling the elements of professionalism, helping to rebuild the context in which relationships of trust and collaborative work can flourish (Coleman, 2012). In fact, by organizing teaching into educational teams, which function as Professional Learning Communities (Pinheiro and Alves, 2024a), a more productive school climate can be created, since within the same organization there are almost autonomous teams with a high capacity for deliberation, focused on the learning of a large group of students (Formosinho and Machado, 2016b).

When the structure of teaching and learning organization changes, the ability to acquire knowledge becomes destabilized, and it must be recreated through individual or collective action (Bennet et al., 2007). Hence, the importance of changing the organizational structure as an engine for promoting learning and changing mentalities is fundamental for triggering professional learning and innovation in schools. In order to create the conditions for everyone to flourish, it is also up to principals to provide teachers with spaces and times to meet, including in their work schedules, which support the development of more consistent collaboration communities. The literature has shown that it is through more complex professional interactions, through co-construction, that

contexts of active and meaningful learning are provided (Drossel et al., 2019; Gräsel et al., 2006; Hargreaves, 2019; Little, 1990), within the framework of a constructivist and social vision of organizational practice.

In their meta-analyses, Robinson et al. (2008) and Grissom et al. (2021) suggests that the principal's support and participation in teachers' professional learning produced the most significant effect on student learning outcomes. Therefore, the principal is important but can only achieve success through the cooperation of others, i.e., the impact of the principal's leadership is mediated by culture, work processes, and people. Therefore, even when leadership is shared, the principal's own leadership is essential to promote the leadership of others (Hallinger, 2011).

In this way, the principal must function as a regenerative leader, prioritizing empowering the members of his or her team to make their contribution through attentive and deep listening and encouragement. The principal must also see people and not just their positions and roles; they must be compassionate, able to show how people are connected, and set an example through a supportive and inclusive attitude. It is also up to them to elevate people to bring out their true potential and help them grow, bringing value to the team, rather than just using them as a workforce to achieve organizational goals. In short, principals, as regenerative leaders, seek to create a strong collective and highlight the qualities of each member.

In turn, the praxis resulting from participation in Professional Learning Communities can change principals' thinking about collaborative leadership practices. In this way, it can result in reported changes in their approaches to leadership, shared leadership, and improved collegiality and collaborative learning for teachers (Vijayadevar et al., 2019). Hence, the importance of promoting the organization of teaching by educational teams, capable of functioning as Professional Learning Communities (Pinheiro and Alves, 2024a,b). In this scenario, the school functions as an orchestra, and each educational team is one of its sections. As a harmonious whole, everyone will be able to contribute to the promotion of collaborative and interactive professionalism (Fullan and Hargreaves, 2001) and, therefore, to a culture of learning, within the framework of an ethical school culture, respect for teachers' professionalism and an environment of mutual support (Formosinho and Machado, 2016b; Hargreaves, 2019; Stoll et al., 2017).

Principals of successful schools thus orchestrate the structural, cultural, and agential conditions for distributing leadership. Principals take center stage in the structural reformulations needed to bring shared leadership to life, allowing self-organized leadership practices to occur and evolve naturally. In this way, they play an important role in developing leadership throughout the school. Thus, principals move from being someone at the top of the organization to someone with the primary function of developing the leadership and capacity of others (Shava and Tlou, 2018), by redesigning the organizational structure.

4.2 Middle leaders

The concept of middle leadership is part of a wider and broader framework that is related to distributed leadership and

collaborative practice. However, writing about middle leadership requires clarifying this concept, which is sometimes slippery and has several meanings (Forde and Kerrigan, 2023). In this reflection, we will clarify various definitions of middle leadership, starting with De Nobile's (2018), according to which middle leadership is the influence that people exert in the space between senior leadership at one end and teachers at the other. Therefore, middle leaders may or may not hold formal positions but have responsibility for an aspect of the school's functioning. However, this concept is marked by a blurring of informal and formal leadership roles and confuses the concepts of middle leadership and teacher leaders. For their part, Forde and Kerrigan (2023) make this distinction, considering that middle leaders have positional authority, while teacher leaders exert informal sources of influence through their knowledge and experience. In this article, we follow Gurr's (2019) conception, according to which middle leaders are teachers with formal organizational responsibility, usually focused on the curriculum, responsible for a learning area or a school year.

These middle leaders, particularly in the context of the organization of teaching by educational teams, have significant potential to evolve the modes of educational action, summoning peers to other ways of working and creating new interactions and synergies in the teams they lead (Pinheiro and Alves, 2024d). In this sense, they can contribute to empowering teachers, promoting a change in the way they are teachers, changing their beliefs, improving their skills and thus promoting a culture of collaboration and learning (De Nobile, 2018; Formosinho and Machado, 2009, 2016a,b; Leithwood et al., 2008, 2019; Stoll et al., 2017).

Therefore, it will be up to middle leaders to strengthen collegial relationships to ensure a culture of collaboration, create a harmonious group climate, a *sine qua non* condition for gaining the trust of team members. In fact, by building harmonious social ties, teachers begin to demonstrate a strong sense of unity and a greater commitment to the work to be done in their team (Chen and Zhang, 2022). Then, it is important that leaders take every opportunity to create empathy and collaboration, as well as a safe environment, promoting opportunities for meetings that force teachers to leave their workrooms, to talk, work, and think together (Tintoré, 2022). In this sense, it is crucial to create affirmative learning environments so that teachers have the courage, strength, and desire to reflect, examine, and improve their practices. So, promoting collaboration between teachers and developing relational trust are two key areas for practicing middle leadership (Forde and Kerrigan, 2023).

However, meaningful learning will require that teachers' current knowledge be challenged (Grimm, 2023). To achieve this, it is essential to de-privatize practices to be widely shared among all team members. Critical reflection on these practices is also important to provide constructive guidance. No less important is the promotion of shared responsibility for the team's improvement efforts (Leithwood, 2016; Tintoré, 2022). Likewise, it becomes essential for these middle leaders to lead by example, presenting exemplary practices, and designing impactful tools that they consider powerful to help stimulate and accompany changes in colleagues' practice, focused on improving student learning. They must also support and encourage colleagues to experiment with new practices, encouraging risk-taking (Chen and Zhang, 2022;

Stoll et al., 2017). Middle leaders must act as researchers to be able to analyze the structural conditions that inhibit learning and identify the meaning of the data collected to be able to use it to implement change effectively. In this way, it is up to them to evaluate the impact of the approaches adopted, using a variety of perspectives (Forde and Kerrigan, 2023; Stoll et al., 2017).

Indeed, to change and improve teaching, leaders need to set up Professional Learning Communities, in which teachers examine and negotiate their current understandings of teaching, promoting a habit of inquiry. Seeing the world differently and doing things differently will therefore involve reflecting on experiences, making reflective observations, using abstract conceptualizations, and risking active experimentation, in other words, becoming inquiry-minded (Grimm, 2023).

By promoting collaboration between peers, as well as a critical and constructive analysis of classroom practices and knowing how to read the data collected to promote effective and meaningful change, these middle leaders will become authors and co-authors of their profession. In this way, they will be able to promote the construction of specific and specialized knowledge that allows them to find effective solutions to the problems diagnosed, contribute to the professional development of their peers, and promote teachers' sense of agency and leadership (Stoll et al., 2017).

4.3 Teacher leaders

Like the concept of middle leader, that of teacher leader fits into a broader and wider context of shared leadership and collaborative practice. However, there is a relevant distinction between the two concepts. While middle leaders hold formal authority, teacher leaders exercise more informal sources of influence, for example, through their knowledge and experience (Forde and Kerrigan, 2023). According to Tucaliuc et al. (2025), from a functional perspective of distributed leadership, different people can naturally exercise leadership practices. However, this form of social differentiation does not necessarily overlap with the formal hierarchical structure of the school, understood by the authors as a structural perspective of distributed leadership, which concerns the formal allocation of leadership responsibilities (principal and middle leaders).

Teacher leadership exists when all members of an organization can lead, and leadership is an agency that is distributed (Harris, 2004). Therefore, teacher leadership is exercised when teachers occupy a central position in how schools operate and in the essential functions of teaching and learning (Gumus et al., 2016). Then, teachers are leaders when they become someone who inspires students to construct knowledge, which will involve having an educational approach centered on student learning, addressing their overall development, having a broad concept of educational success, and promoting the development of active citizens (Alves, 2021). Teachers also exercise their leadership when they decide collegially on the appropriate means of instruction, collectively and critically analyze the results of decisions and actions, and

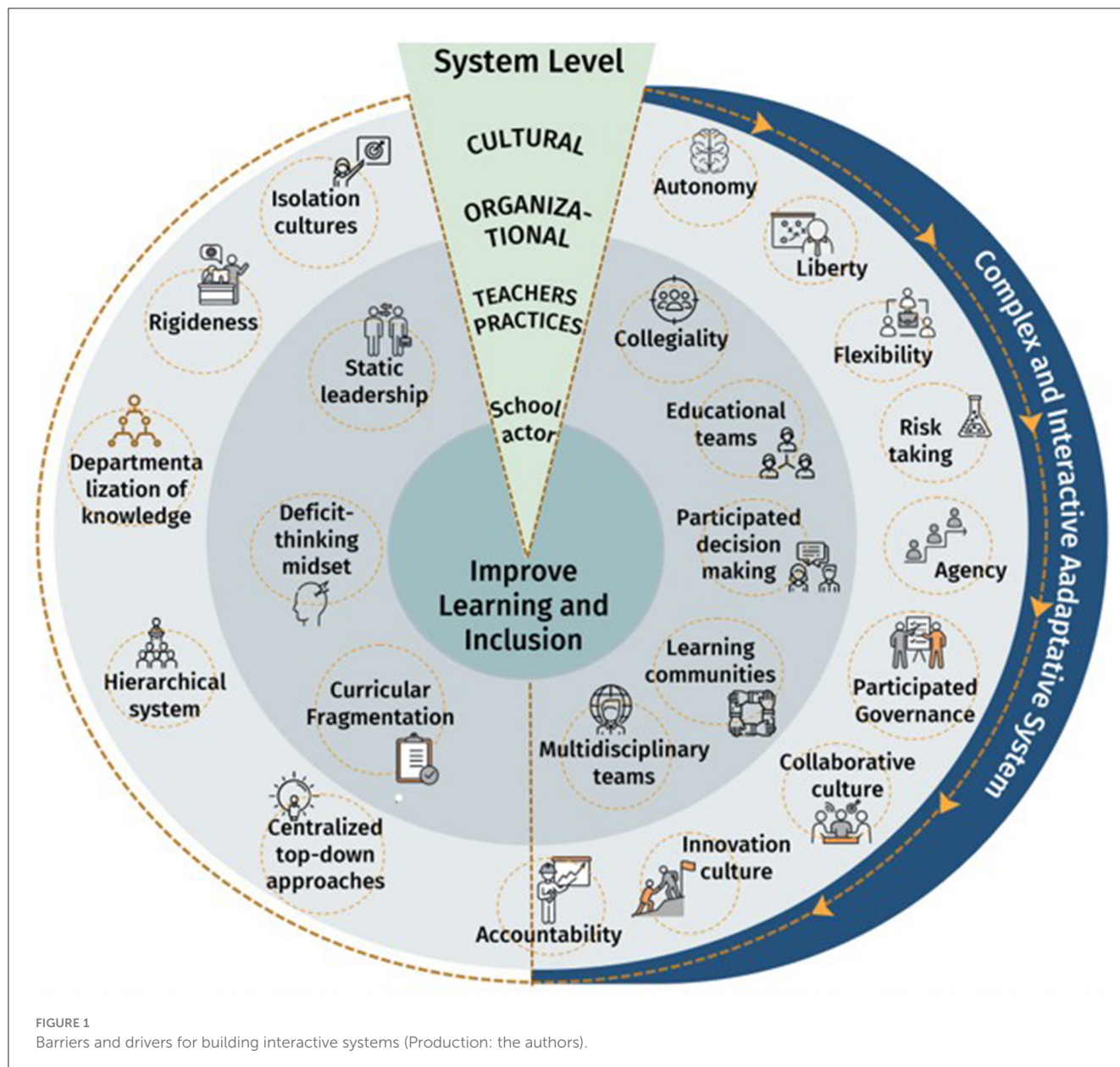


FIGURE 1
Barriers and drivers for building interactive systems (Production: the authors).

collaboratively transform the prescribed and taught curriculum into a learned curriculum. All these dynamics are enhanced within educational teams, thus promoting teachers' professional agency and professionalism (Formosinho and Machado, 2009, 2016b). Teachers also lead when they try to understand the changes they are being asked to make and get involved in them; they participate collectively in decision-making at an organizational, pedagogical, and curricular level; and they generate new ideas for the development of the school.

The leadership role teachers embrace aligns with MacBeath's (2006, p. 45) view that

(...) teachers must take responsibility for the knowledge they organize, produce, mediate, and translate into practice. Otherwise, they run the risk of being seen as the technical

means of intervention through which knowledge is transmitted to students, erasing themselves in an uncritical reproduction of received wisdom.

Hargreaves (2025) also argues that only when teachers and teacher leaders start to work together and take the lead will they be able to offer hope for a revitalized profession and this sick, complex, and unpredictable world in which we live.

5 Discussion

Transforming the school into a dynamic and interconnected agency, capable of adapting to constant change and responding to the multiple and complex challenges of today's increasingly

unpredictable and turbulent world, will require a joint, articulated, and holistic effort. In this sense, it will require the mobilization of the entire school organization, leadership and the performance of professionals, with a common focus on the classroom and the mission of making people learn (Roldão, 2017), in an ecological (Cabral, 2017) and autopoietic dynamic (Machado et al., 2016), which can be a lengthy, critical and complex process (Stoll, 2020).

Thus, a metamorphosis of schools will require the design of more flexible and interconnected structures that trigger more consistent, reflective, authentic, and productive collaboration, through the organization of teaching by educational teams. As explained in the previous sections, these have the potential to promote an evolution in professional relationships in a more positive and integrative way, since they unite teachers from different curricular subjects around a common goal, improving the learning of all students in a year or cycle of schooling. They can also trigger a more open and participatory reflection among this large group of students, generating a search for solutions to the problems diagnosed, ultimately establishing more shared and consistent professional relationships (Pinheiro and Alves, 2024a,b). However, the creation of educational teams, despite facilitating and promoting interaction between all, leaders and those being led, alone may not trigger a change in mentality, which is also fundamental for effective transformation in school organizations (Pinheiro and Alves, 2024c).

Therefore, it seems fundamental and essential to move from a mechanistic and static mentality to a regenerative and dynamic mentality, focused on opportunity, proactive and appreciative thinking that strives to learn and grow, based on the goals they want to achieve, committed to sustainable professional and organizational excellence (Johnson, 2025). This involves transforming the school into a learning organization with the capacity to respond flexibly to change (Seta and Badiglio, 2024).

These changes in the mentality of school players will require leaders to cultivate the social field, i.e., create all the conditions for everyone to flourish (Robinson, 2010b). In this sense, it will be up to them to invest in consistent interaction between teachers, a deprivatization of classroom practices, and reflection before, during, and after action (Schön, 1997). This more consistent collaboration could, in turn, awaken the courage to experiment, without fear of taking risks, since decision-making and responsibility are shared in the context of an ethical culture based on trust, respect, and mutual support, which are characteristics of Professional Learning Communities (Stoll, 2020). The teaching organization by educational teams can meet all these desiderata, as it allows teaching to be conceived as a collective task, resulting from the collaboration and interaction of all team members, through the exchange of good practices and the assumption of shared responsibilities. By assuming their agency in curriculum development within teams, teachers can improve their professional practices and develop their students (Alves et al., 2016; Machado and Formosinho, 2016). This teaching perspective is part of the concept of interactive professionalism (Fullan and Hargreaves, 2001), which involves not only redefining the role of the teacher but also their working conditions, improving their professional development, and transforming the school into

a learning organization (Formosinho and Machado, 2016b), as shown in Figure 1. We are thus faced with a constructivist perspective, in which an educational environment is created - one that is capable of learning to learn from change, adapting its values, and generating social capital to develop a sustainable school that can respond flexibly to ongoing transformation (Seta and Badiglio, 2024).

In conclusion, only interactive and collaborative professionalism (Fullan and Hargreaves, 2001; Hargreaves, 2019), as well as regenerative and collaborative leadership, will allow teachers to change the way they see, envision, and carry out teaching. A change in mindset can result in greater flexibility to adapt continuously to the dynamic nature of change in the world and society. Through this, a more articulated action can be affirmed, allowing schools to “develop a growth-enabling innovation narrative that will act as an organic growth strategy” (Serra et al., 2024, p. 22).

6 Conclusion

Responding to the world's complexity and unpredictability will necessarily require schools to undergo an organizational and professional metamorphosis that is a process of constant creation, production, and self-regulation. The transformation presupposes, from the outset, the reconfiguration of organizational structures through the creation of educational teams capable of generating the conditions for all the different players to establish relationships, dialogue, act, change perspectives, educate themselves, and learn. It will also require a more regenerative and collaborative approach to leadership. In this way, the conditions could be in place to shift toward more dynamic mentalities and collegial learning cultures. In this context, combining diverse leadership styles, the first thesis set in this conceptual analysis, can be seen as a powerful driver for transformation, including empowering interconnectivity oriented to expand cooperative approaches, in educational teams that act as professional learning communities—the second thesis.

In short, all leaders, in collaboration, can ensure that systems continually evolve, adapt and self-renew through professional and organizational learning, if they know how to redesign the organizational structure of their schools to develop a shared and robust culture that unites people, services, programs and practices around a shared vision, intentional and meaningful actions (Acker-Hocevar, 2023). In this process, it is possible to imagine and generate a common future built on trust, complementarity, and inclusive gratification.

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