

Adaptive resilience in educational leadership: navigating structural constraints in centralized school systems

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Abstract

Purpose – This study examines how elementary school principals lead within Türkiye's centralized education system under conditions of inadequate facilities, limited resources and demanding bureaucratic processes.

Design/methodology/approach – This study adopts an interpretive phenomenological approach to explore how elementary school principals navigate structural constraints within a centralized education system. Data were collected through semi-structured, in-depth interviews with 17 elementary school principals in Balikesir province, Türkiye, conducted between March and April 2025. Participants were selected using stratified typical case sampling to capture variation across urban and rural school contexts. Interview transcripts were analyzed using an inductive qualitative content analysis approach, allowing patterns of leadership practice to emerge from principals' lived experiences under conditions of resource scarcity, bureaucratic pressure and limited decision-making authority.

Findings – Analysis identified nine themes grouped into three interrelated domains shaping principals' leadership practice: resource challenges, human-centered challenges and systemic challenges. These constraints frequently overlapped, creating layered pressures on school leadership. Principals responded through practices conceptualized as adaptive resilience, including exercising bounded discretion, recombining scarce resources, mobilizing relational networks and implementing compliant incremental improvements. While these strategies helped sustain school functioning, notable disparities emerged between urban and rural schools, with rural principals facing more severe infrastructure, staffing and connectivity limitations. Overall, the findings indicate that leadership in centralized, resource-constrained systems is enacted through context-sensitive, adaptive practices rather than formal authority alone.

Research limitations/implications – This study is based on interviews with 17 elementary school principals in one Turkish province and therefore does not aim for statistical generalization. The findings reflect participants' lived experiences within a specific centralized and resource-constrained context. Future research could examine whether similar leadership patterns emerge in other regions or in different centralized education systems. Comparative or mixed-method studies may also help further refine the concept of adaptive resilience and examine how structural constraints shape leadership practices across diverse institutional settings.

Practical implications – The findings suggest that principals working in resource-constrained environments may benefit from adopting adaptive resilience strategies. These include flexible use of available resources, collaboration with community actors and neighboring schools, and incremental improvements implemented within existing regulatory frameworks. Leadership preparation programs may help future administrators develop skills in stakeholder mobilization, context-sensitive decision-making and problem-solving under constraint. For policymakers, the results highlight the importance of recognizing contextual differences across schools and considering more flexible support mechanisms for schools operating under sustained resource limitations.

Social implications – The study highlights how educational inequalities may be reinforced when uniform policies do not adequately account for local school contexts. Rural and socioeconomically disadvantaged schools often face compounded challenges, including infrastructure limitations, staffing shortages and restricted access to technology. Recognizing these disparities underscores the importance of socially responsive education policies and more context-sensitive resource allocation. The findings also suggest that collaborative engagement among schools, communities and local stakeholders can help support schools operating under structural constraints. Greater awareness of these dynamics may contribute to more equitable educational opportunities across diverse school contexts.

Originality/value – This study contributes to the literature by conceptualizing adaptive resilience as a context-embedded leadership orientation emerging under conditions of structural constraint in centralized education systems. Drawing on principals' lived experiences in Türkiye, the study shows how leadership practice involves



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bounded discretion, resource recombination and relational mobilization within limited institutional authority. By linking these practices to street-level bureaucracy theory, the study offers a refined understanding of how leadership is enacted when autonomy and resources are restricted. The findings provide a conceptual lens for examining leadership in centralized, resource-limited education systems and contribute to ongoing discussions on leadership practice under structural constraint.

Keywords Educational leadership, Street-level bureaucracy, Structural constraints, Adaptive resilience, Centralized education systems, Elementary school principals

Paper type Research article

Introduction

Global research consistently shows that structural barriers – ranging from deteriorating facilities to staffing shortages – compound inequalities, particularly in elementary schools serving disadvantaged communities (OECD, 2019; UNESCO, 2021). A substantial body of scholarship has established that physical infrastructure plays a critical role in shaping learning outcomes. Barrett *et al.* (2019), studying 153 schools, found that facility quality accounted for approximately 15% of the variance in student achievement, with far stronger effects on children from underserved backgrounds. Earlier longitudinal analyses reaffirmed that aging or poorly maintained buildings disproportionately disadvantage vulnerable student populations (Earthman, 2004). Complementary findings indicate that the aesthetic and functional qualities of school environments significantly influence student engagement and teacher morale (Uline and Tschannen-Moran, 2008). Such disparities are especially pronounced in rural contexts, where schools are more likely to face severe infrastructure needs, limited technology access and restricted maintenance budgets (Shoho *et al.*, 2012).

More recent large-scale international analyses further demonstrate that material resource gaps and infrastructural disparities remain persistent predictors of unequal educational outcomes across OECD and middle-income countries (OECD, 2019; UNESCO, 2021). These findings suggest that structural constraints are not episodic disruptions but embedded features of many education systems, particularly those characterized by centralized governance and standardized accountability regimes.

These structural shortcomings intersect with persistent teacher shortages across many nations. Sutchter *et al.* (2019) identified staffing deficits in mathematics, science and special education as widespread challenges, while UNESCO (2021) reported that low-income and rural areas face the steepest recruitment barriers. Administrative overload further reduces principals' capacity to provide meaningful instructional leadership. Sebastian *et al.*'s (2018) multi-year study revealed that principals spent roughly two-thirds of their time on paperwork and compliance tasks, leaving less than 20% for instructional leadership activities linked to improved student learning. Similar patterns documented by the OECD (2019) demonstrate that bureaucratic demands are systemic rather than tied to specific national contexts. Taken together, these studies point to a convergence of material scarcity, human resource constraints and compliance pressures that shape the everyday conditions under which principals' work is enacted (OECD, 2019; UNESCO, 2021).

These challenges become even more acute in centralized education systems, where uniform mandates often fail to align with local realities. Comparative analyses suggest that even countries undergoing gradual decentralization, such as France, retain strong central authority over curriculum and assessment (Eurydice, 2020; Meuret and Maroy, 2021). Greece continues to operate under a highly centralized governance structure (OECD, 2011), while East Asian systems tend to pair centralized administrative control with high-stakes standardized testing regimes (Yang and Ni, 2020). Within this global landscape, the Turkish education system illustrates vividly how centralization interacts with on-the-ground constraints.

A recent qualitative meta-synthesis by Gümüş *et al.* (2021), examining 28 studies of instructional leadership in Türkiye, revealed that principals rely heavily on informal strategies

– relationship management, procedural adjustments and workarounds to compensate for limited decision-making authority. While this body of research compellingly documents the prevalence of such coping strategies, it largely remains at the level of description. Existing studies show what principals do under constraint, but less frequently theorize how these patterned responses reshape leadership itself or constitute a coherent orientation emerging from structural limitation.

These observations resonate with [Lipsky's \(2010\)](#) theory of street-level bureaucracy, which conceptualizes frontline practitioners as agents who reinterpret and modify policy through discretionary actions taken under resource constraints. Lipsky's framework is particularly useful in highlighting how discretion operates not as unrestricted autonomy but as bounded professional judgement exercised within institutional limits. However, street-level bureaucracy primarily explains policy enactment under constraint; it does not fully account for the relational, strategic and organizational dimensions of leadership practice in schools.

Theoretical framing: leadership under structural constraint

To clarify how leadership is enacted within structurally constrained environments, this section situates the study within existing leadership scholarship and introduces the conceptual foundations of adaptive resilience.

Leadership scholarship offers important frameworks for understanding how principals respond to adversity, yet many widely used models rest on assumptions that do not fully correspond to the realities of centralized and resource-limited systems. Adaptive leadership emphasizes mobilizing stakeholders to tackle complex challenges ([Heifetz et al., 2009](#)), conceptualizing leadership as the orchestration of collective learning. Yet this perspective often presumes that leaders possess sufficient authority and flexibility to redistribute attention and resources – conditions that may not hold in tightly regulated systems. Resilient leadership research highlights psychological endurance and organizational capacity during difficult circumstances ([Day and Gu, 2014](#); [Gu and Day, 2007](#); [Beltman et al., 2011](#)) but provides limited guidance in situations where resilience alone cannot compensate for chronic structural deficits. Transformational leadership theories ([Leithwood and Riehl, 2003](#)), though influential, tend to foreground vision-building and organizational improvement within relatively stable institutional parameters and are less explicit about leadership enacted under sustained bureaucratic restriction.

Taken together, this literature reveals a conceptual gap. Although infrastructure deficits, staffing shortages, bureaucratic overload and informal coping strategies are well documented, far less is known about how these conditions interact to shape a distinct mode of leadership practice in high-control, resource-constrained systems. In particular, existing frameworks tend to treat structural constraint as contextual background rather than as the starting condition and organizing logic of leadership itself.

More specifically, prior research has documented how principals employ informal coping strategies in response to structural constraints, yet these studies rarely conceptualize how such strategies collectively shape a coherent orientation of leadership practice. As a result, existing literature tends to describe adaptive responses without fully theorizing how leadership itself is reconfigured when structural limitations constitute the normal operating conditions of schools. Addressing this gap requires moving beyond descriptive accounts of coping toward a conceptual understanding of leadership practice that emerges within, rather than despite, structural constraint.

Based on our analysis, leadership in such contexts can be conceptualized not merely as adaptation or resilience in isolation but as a patterned mode of practice in which principals simultaneously (1) interpret structural limits, (2) exercise bounded discretion, (3) strategically reallocate scarce resources and (4) cultivate relational networks to stabilize school functioning. Building on these empirically grounded patterns, we conceptualize this

constellation of practices as adaptive resilience, which emerged inductively from the data through iterative analysis.

Adaptive resilience refers to a context-embedded leadership orientation through which principals sustain school functioning by strategically navigating structural constraints rather than overcoming or eliminating them. In this study, adaptive resilience is not treated as a predefined theoretical framework, but as an empirically derived construct that emerged through iterative analysis of principals' lived experiences. Unlike adaptive leadership, which centers on mobilizing collective learning around complex challenges, adaptive resilience foregrounds leadership enacted within pre-defined bureaucratic limits. Unlike resilience framed primarily as psychological endurance, adaptive resilience emphasizes relational, organizational and discretionary practices through which principals reconfigure limited space for action. In this sense, adaptive resilience extends Lipsky's street-level bureaucracy by incorporating the strategic and collaborative dimensions of leadership practice alongside discretionary policy enactment. It thus offers a useful analytical lens for examining leadership in centralized systems where constraint is constitutive rather than incidental.

By theorizing constraint as constitutive rather than incidental, this empirically grounded framework builds on existing descriptive accounts of coping (Gümüþ *et al.*, 2021) to illuminate how structural limits actively shape a distinct leadership orientation.

This gap is particularly evident in centralized systems such as Türkiye, where principals navigate limited decision-making authority, inequitable resource distribution and rigid accountability structures simultaneously. Addressing this gap, the present study investigates how elementary principals enact adaptive resilience within such environments, thereby offering a theoretically grounded account of how agency is exercised under structural constraint.

Drawing on Lipsky's (2010) street-level bureaucracy theory, principals are conceptualized as frontline agents who transform policy through discretionary decisions under constraint. Here, discretion is understood as bounded professional judgement exercised within institutional rules, distinct from full autonomy (formal authority to determine policy) and from agency in its broader sociological sense (capacity to act within structural conditions). This bounded discretion – micro-level informal professional judgement within macro-level centralized control – distinguishes adaptive resilience from models assuming greater structural autonomy. Clarifying these distinctions enables a more precise examination of leadership in centralized education systems.

This study addresses the knowledge gap using interpretive phenomenological inquiry with seventeen elementary school principals. Three interconnected research questions guided our investigation:

- (1) What structural challenges do elementary school principals encounter in their daily leadership practice, and how do these challenges shape their work?
- (2) What adaptive strategies do principals develop to navigate these challenges when traditional resources and levers prove insufficient?
- (3) How do these lived experiences illuminate the nature of leadership in resource-constrained, centralized education systems

Method

Research design

This study employed an interpretive phenomenological approach (Smith *et al.*, 2009; Van Manen, 2016) to explore how school administrators understand and navigate structural constraints embedded within a centralized education system. In this study, the terms "principal" and "school administrator" are used interchangeably to refer to formally appointed principals. Interpretive phenomenology is well suited for examining how individuals make

sense of organizational realities, as it conceptualizes experience as relational and situated – shaped through ongoing interactions between people and the social, institutional and material contexts in which they operate. Here, “meaning-making” is used in a descriptive sense to denote participants’ interpretive engagement with their professional contexts, rather than as a formal application of Weick’s (1998) sensemaking theory.

In this study, principals routinely encounter tensions between formal policy expectations and the practical demands of leading schools with limited autonomy. A phenomenological perspective enabled us to examine these tensions as lived experiences, focusing on how administrators interpret constraints, what dilemmas arise in their day-to-day decision-making, and how they develop adaptive strategies when institutional procedures prove insufficient. While quantitative indicators can document resource shortages or limited authority, they cannot capture the interpretive processes through which principals understand these gaps, negotiate competing demands or devise informal workarounds in response (Creswell and Poth, 2018). By centering meaning-making in real-world settings, interpretive phenomenology provided an analytic lens through which to understand the nuanced ways principals act within – and occasionally push against – the limitations of a centralized governance structure.

Although the analytic procedures employed elements of qualitative content analysis, the phenomenological commitment of the study was maintained by prioritizing participants’ lived experience accounts and interpretive meaning structures rather than relying on frequency-based coding alone. In this sense, analytic categories were developed inductively while remaining grounded in the experiential narratives that constitute the core focus of interpretive phenomenological inquiry. At later stages of analysis, these empirically derived categories were further interpreted through iterative engagement with relevant theoretical perspectives, consistent with an abductive analytic logic.

Research context

The study was conducted in Balıkesir province, Türkiye, covering urban centers and rural villages. Urban schools generally faced crowded classrooms, competing stakeholder interests and resource allocation pressures. Rural schools often experienced challenges related to teacher recruitment, aging buildings, inconsistent connectivity and geographic remoteness. Despite these contextual differences, both operated under identical Ministry of National Education [MoNE] (2023) rules governing curriculum, accountability and administrative procedures.

Providing a detailed contextual description enables readers to assess the applicability of the findings to comparable centralized education systems (Lincoln and Guba, 1985).

Participants and sampling

Seventeen elementary school principals participated in this study. Following Patton’s (2014) logic of typical case sampling, participants were selected to reflect the most commonly encountered conditions in the province rather than exceptional or atypical situations. This procedure constituted a purposeful stratified typical case sampling strategy: one principal was purposefully selected from each district of Balıkesir to ensure representation across the province’s urban, peri-urban and rural contexts. This stratified approach strengthened the transferability of findings by grounding the analysis in schools experiencing widely shared structural and organizational constraints reported in national administrative data (e.g. infrastructure needs and staff mobility patterns) (MoNE, 2024). These thick descriptions of contextual realities – combined with typical case sampling – enable readers to assess transferability to other centralized systems facing comparable structural pressures.

It is important to note that this study does not claim statistical generalizability. Instead, consistent with qualitative research traditions, the goal is analytic transferability (Lincoln and Guba, 1985), whereby detailed contextual description and typical case sampling allow

readers to determine the extent to which the findings may be applicable to comparable educational settings.

Data saturation was monitored systematically throughout the data collection process. After 15 interviews (late March 2025), both researchers independently reviewed emerging codes and agreed that no substantively new themes were appearing. To ensure that saturation had not been reached prematurely, two additional interviews (P16 and P17) were conducted in early April 2025 with principals purposively selected as maximum-contrast cases: P16 led a very small rural school (84 students), and P17 led a large urban school (742 students). Although the contextual expressions of constraints differed – greater isolation in rural settings and overcrowding in urban schools – the underlying thematic structure remained stable. This pattern aligns with [Guest et al. \(2006\)](#), who note that saturation in relatively homogeneous samples commonly occurs within 12–15 interviews. It is also consistent with [Hennink et al.'s \(2017\)](#) distinction between code saturation and meaning saturation, as no substantially new codes emerged after fifteen interviews and subsequent interviews served primarily to deepen and confirm thematic meaning rather than introduce new analytic categories.

The final sample size of seventeen principals was therefore adequate – large enough to capture variation across the province’s geographic, socioeconomic and infrastructural contexts, yet small enough to allow for in-depth phenomenological analysis of each participant’s narrative ([Creswell and Poth, 2018](#)).

Participants’ ages ranged from 36 to 61 years ($M = 48.2$, $SD = 7.1$). Administrative experience ranged from 2 to 15 years ($M = 6.8$, $SD = 3.4$) and teaching experience from 12 to 39 years ($M = 21.8$, $SD = 7.9$). School enrolments ranged from 84 to 742 students ($M = 389$). The sample consisted of 11 male and 6 female principals, with 9 leading urban schools and 8 leading rural schools. Socioeconomic contexts varied across the sample: 5 low-SES, 5 middle-SES and 7 high-SES communities. [Table 1](#) presents detailed participant and school-level characteristics.

Table 1. Participant demographics and school context characteristics

Participant	Gender	Age	Admin Exp	Teaching Exp	Location	Enrolment	SES	Years at school
P1	Male	45	6 years	20 years	Urban	485	Middle	3
P2	Male	52	12 years	28 years	Rural	156	Low	5
P3	Female	41	4 years	16 years	Urban	620	High	2
P4	Male	49	8 years	23 years	Rural	94	Low	6
P5	Male	46	7 years	21 years	Urban	542	High	4
P6	Female	38	3 years	14 years	Rural	127	Low	3
P7	Male	55	15 years	32 years	Urban	698	Middle	8
P8	Male	43	5 years	18 years	Rural	178	Middle	4
P9	Female	39	2 years	13 years	Urban	456	High	1
P10	Male	51	11 years	26 years	Rural	203	Middle	7
P11	Male	47	9 years	22 years	Urban	589	High	5
P12	Female	36	2 years	12 years	Rural	84	Low	1
P13	Male	58	14 years	35 years	Urban	742	Middle	10
P14	Male	44	6 years	19 years	Rural	145	Middle	4
P15	Female	42	4 years	17 years	Urban	521	High	2
P16	Male	61	15 years	39 years	Rural	167	Low	12
P17	Male	50	10 years	25 years	Urban	634	High	6

Note(s): All participants provided informed consent, and pseudonyms (P1–P17) are used to ensure confidentiality

Source(s): Compiled by the authors from participant demographic information collected during interviews

Participant Demographics Note: Notably, female principals ($n = 6$) were younger ($M = 39.2$ years) than their male counterparts ($M = 51.3$; $n = 11$), a pattern that may reflect recent policy and administrative developments expanding women's access to principal roles in Türkiye (MoNE, 2023). This observation is consistent with broader regional patterns of gendered career progression in centralized education systems.

Data collection

Data were collected over a two-month period (March–April 2025) through semi-structured interviews with elementary school principals across Balıkesir province. Seventeen in-depth interviews were conducted with elementary school principals, each lasting between 60 and 90 min and held in the participants' schools at times they selected. Interview scheduling unfolded in two waves, with the first set of interviews conducted in March and the remaining ones in April, including two additional principals purposively selected to confirm data saturation. Conducting all interviews within the same academic semester ensured contextual stability, as staffing levels, resource conditions, and bureaucratic cycles remained consistent across the data collection period.

The interview protocol focused on eliciting principals' lived experiences regarding structural constraints, daily leadership challenges, coping strategies and workarounds, interactions with stakeholders and reflections on autonomy and accountability pressures. Follow-up probes encouraged detailed narrative accounts and meaning-focused elaboration. All interviews were audio-recorded with participants' consent and subsequently transcribed for analysis.

Data analysis

Data were analyzed using an inductive category-driven analytic approach drawing on principles of qualitative content analysis (Elo and Kyngäs, 2008; Schreier, 2012). The process began with repeated readings of the transcripts to gain familiarity with participants' accounts, followed by systematic line-by-line coding conducted independently by both researchers. NVivo 12 was used to organize the 127 initial codes generated from the 17 interviews and to compare patterns across participants.

Through iterative comparison and discussion, codes were grouped into 34 preliminary categories based on conceptual similarity. These categories were subsequently refined into nine higher-order thematic domains organized under three superordinate analytic clusters. While category development proceeded inductively from the data, interpretation involved sustained attention to patterned meanings across cases rather than simple frequency counts, with emerging patterns subsequently informing higher-order conceptual interpretation through iterative comparison with relevant theory.

Inter-coder agreement, assessed through NVivo's comparison function, yielded a Cohen's kappa coefficient of 0.92 (Cohen, 1960), indicating high consistency between coders. The coefficient was calculated on a subset of coded transcript segments during the early coding phase in order to ensure consistency in code application. This statistic was used solely as a procedural transparency check rather than as a positivist validation device, acknowledging that interpretive qualitative analysis ultimately relies on reflexive dialogue and shared interpretive judgement between researchers.

Throughout the analysis, we engaged in negative case analysis to interrogate assumptions and refine interpretations.

Although the study was initially designed to examine leadership under structural constraint, the conceptualization of adaptive resilience was refined through an abductive analytic process. As categories were consolidated, recurring patterns suggested a coherent mode of leadership practice that could not be fully captured by existing frameworks. Rather than applying a predefined theoretical model, we moved iteratively between empirical findings and relevant theoretical perspectives, including street-level bureaucracy and leadership scholarship.

Through this abductive process, adaptive resilience emerged inductively from the data and was subsequently developed as an interpretive construct to explain the patterned practices observed across cases, rather than being imposed as a predetermined analytic template.

Trustworthiness

To ensure the trustworthiness of the findings, we followed [Lincoln and Guba's \(1985\)](#) criteria of credibility, dependability, confirmability and transferability. Credibility was strengthened through prolonged engagement in the field: two months of intensive interviews and iterative analytic engagement with the data allowed us to identify consistent patterns in principals' accounts. We triangulated across participants and across urban and rural school contexts to examine whether similar themes emerged under different institutional conditions. In addition, regular peer debriefing sessions with two qualitative researchers who were not involved in data collection helped us interrogate assumptions and refine the emerging interpretations.

Member checking further supported credibility. In May 2025, eight principals (four urban, four rural) reviewed our preliminary thematic structure. They affirmed the relevance of the themes and offered clarifications that enhanced conceptual precision. For example, one principal emphasized that infrastructure constraints produce not only physical limitations but also psychological strain within school communities, prompting us to sharpen the analytic distinction between material and emotional dimensions of constraint.

Dependability and confirmability were addressed by maintaining an audit trail that documented decisions related to coding, theme development and revisions following peer debriefing and member feedback. NVivo memos, analytic notes and versioned codebooks provided transparent records of how interpretations evolved. Transferability was supported through thick description of the research context, participant characteristics and structural conditions shaping school-level work.

Findings

Our analysis identified nine recurring themes, grouped into three interrelated domains that shaped principals' daily leadership work: resource challenges, human-centered challenges and systemic challenges. Resource challenges encompassed deficiencies in physical infrastructure, technology gaps, constrained budgets and overcrowded classrooms. These constraints were widely reported across participants and were described as shaping leadership work through continuous prioritization and day-to-day trade-offs, rather than as isolated incidents. Budget and overcrowding pressures further constrained principals' capacity to implement strategic improvements, reinforcing a reactive, crisis-driven approach to school management.

However, principals did not describe these material constraints merely as static barriers. Rather, they framed them as operational conditions requiring continuous reorganization of existing resources. Across interviews, resource scarcity functioned less as a point of paralysis and more as a structuring context within which strategic prioritization, improvisation and incremental adjustment became central leadership practices ([OECD, 2019](#); [UNESCO, 2021](#)). This pattern suggests that, in resource-constrained settings, leadership is constituted through ongoing allocation decisions and micro-level reconfiguration of available resources.

Human-centered challenges emerged as a second domain, highlighting staffing shortages, student behavioral difficulties and limited parental engagement. Principals emphasized that gaps in specialized personnel, particularly in special education-required general teachers to assume responsibilities without formal training. Behavioral challenges among students, often rooted in family or socioemotional stressors, demanded time and attention beyond available resources.

Importantly, principals did not approach these human-centered difficulties as isolated technical problems. Instead, they interpreted them as relational leadership demands requiring

role expansion, emotional labor and flexible redistribution of responsibilities. In this sense, leadership extended beyond formal administrative duties to encompass counseling, mediation and community engagement, illustrating how constraint reshaped not only resource allocation but the very scope of the principal's role. This suggests that structural constraint may not only limit action; it can also expand the role expectations principals must absorb and manage (Leithwood and Riehl, 2003; Spillane, 2006).

The third domain, systemic challenges, encompassed bureaucratic burdens and barriers to innovation. Principals reported that centralized documentation and approval processes consumed substantial portions of their workday. Regulatory constraints restricted local autonomy, limiting their capacity to implement creative solutions.

Yet even within these tightly regulated conditions, principals described exercising bounded forms of discretion. While formal authority was limited, they adjusted schedules, interpreted policies flexibly where possible and pursued incremental initiatives that remained compliant while locally responsive. Bureaucracy thus functioned simultaneously as constraint and boundary – restricting action while defining the parameters within which discretionary maneuvering could occur. In practice, this positioned leadership as “bounded” work: navigating compliance demands while searching for limited spaces of locally responsive action (Lipsky, 2010).

Across these domains, principals described a range of strategic practices reflecting adaptive resilience. They combined scarce resources creatively, cultivated relationships beyond the school community and pursued incremental improvements aligned with bureaucratic expectations. To make these practices more concrete, principals' accounts consistently pointed to four recurring micro-practices aligned with adaptive resilience: (1) bounded discretion through flexible interpretation of procedures where rules allowed discretion, (2) resource recombination by repurposing existing materials and sharing resources across classrooms or activities, (3) relational mobilization by drawing on parent/community support and inter-school collaboration to address gaps and (4) compliant incrementalism by implementing small-scale changes that could be justified within existing accountability and reporting requirements.

Taken together, these patterned responses suggest a coherent leadership orientation characterized by (1) interpreting structural limits as actionable boundaries rather than immovable obstacles, (2) exercising bounded discretion within centralized rules, (3) strategically recombining scarce resources and (4) mobilizing relational networks to stabilize school functioning. These patterns are interpreted as indicative of what we term adaptive resilience. Rather than representing episodic coping, these strategies formed an ongoing mode of leadership enacted within, rather than outside of, structural constraint.

Prevalence numbers reported in the sample are provided in Table 2 for descriptive purposes; these are not intended to generalize beyond the study participants but serve to illustrate the patterns of meaning-making observed.

Almost every principal we interviewed (sixteen out of seventeen) highlighted the inadequacy of physical infrastructure as a major constraint shaping daily principals' work. Many schools lacked functional laboratories, libraries, and specialized learning areas, with some facilities entirely absent. As reflected in Table 2 (Physical Infrastructure Inadequacies), principals described facility limitations as constraining instructional possibilities and requiring continuous prioritization of basic needs. Environmental deficiencies – such as heating failures, poor ventilation and inadequate lighting – were particularly pronounced in rural schools, and only six schools maintained dedicated library spaces. Technology gaps compounded these challenges. Twelve principals expressed frustration over frequent Internet outages and malfunctioning hardware, which undermined digital equity. Consistent with the Technology Gaps theme in Table 2, principals emphasized that assessment and instruction could be disrupted by connectivity and maintenance limitations, despite the availability of devices through national initiatives (e.g. FATIH). Although national initiatives like the FATIH Project provided devices, a lack of technical support and maintenance left equipment underutilized.

Table 2. Emergent themes: definitions, illustrative quotes and prevalence

Theme	Operational definition	Illustrative quote	Prevalence
<i>Resource Challenges</i>			
Physical Infrastructure Inadequacies	Deficiencies in educational spaces (labs, libraries) and environmental conditions (heating, lighting, ventilation) limit instructional quality	"We're delivering 21st-century curriculum in 20th-century facilities. No science lab, no functional computer room, no art workshop." (P7)	16/17 (94%)
Technology Gaps	Internet connectivity failures, hardware malfunctions, and absent technical support are preventing effective digital resource use	"Digital equity remains elusive when the Internet fails during assessments. Students lose opportunities not from inability but from technology failure." (P3)	12/17 (71%)
Budget Constraints	Insufficient operational and capital funding is forcing reactive crisis management rather than strategic improvement	"We operate on starvation budgets. Every lira requires careful allocation. Innovation remains ideas because implementation requires unavailable resources." (P5)	14/17 (82%)
Overcrowded Classrooms	Class sizes exceeding 35–40 students limit differentiated instruction and individual support	"With 38 per class, teachers can't provide individual attention. Students with difficulties get lost. Classroom management becomes impossible." (P1)	11/17 (65%)
<i>Human Challenges</i>			
Teacher Shortages	Critical gaps in specialized positions (special education, counselling) are forcing non-specialists to assume responsibilities without training	"We haven't had qualified special education teachers for years. Special needs students suffer because general teachers, despite good intentions, lack the specialized training." (P3)	15/17 (88%)
Student Behavioral Challenges	Family-related problems, attention difficulties and peer conflicts requiring intervention beyond available resources	"Children arrive carrying home stress. They can't focus when survival needs dominate. We become counsellors but lack training and resources." (P16)	13/17 (76%)
Parent Engagement Difficulties	Work schedules, transportation barriers and communication challenges are preventing effective school-home collaboration	"Parent meetings conflict with work schedules. Evening meetings are too late for families living far. We can't find times working for everyone." (P2)	13/17 (76%)
<i>Systemic Challenges</i>			
Bureaucratic Burden	Excessive documentation, redundant procedures and centralized approval processes consuming 60–70% of work time	"I became principal to lead improvement, but bureaucracy consumes my days. The system buries us in meaningless documentation." (P13)	17/17 (100%)
Innovation Barriers	Regulatory constraints and limited local authority preventing creative solution implementation	"We identify effective solutions but lack authority. Curriculum modifications require central approval. We see needs but can't act." (P11)	12/17 (71%)

Note(s): Prevalence indicates the number of participants reporting each theme (e.g. 16/17 = 94%). These are descriptive counts within this sample, not inferential statistics

Source(s): Authors' synthesis based on participant interviews within the sampled schools

Budgetary limitations emerged as another persistent constraint. P5 summarized the sentiment of fourteen participants: *"We operate on starvation budgets. Every lira requires careful allocation. Innovation remains theoretical because implementation requires resources we simply don't have."* Rural schools were disproportionately affected, receiving identical per-student funding despite higher transportation, maintenance and staffing costs, prompting one principal to note, *"The formula treats us as if context doesn't matter. But context is everything"* (P16). Overcrowded classrooms further restricted instructional quality. Eleven principals reported class sizes exceeding 35 students, with some urban classrooms surpassing 40. P1 reflected, *"With 38 students per class, individualized instruction becomes impossible. Teachers can't provide the attention struggling students desperately need. Classroom management becomes the entire job. Everyone suffers. High achievers aren't challenged, struggling students fall further behind, and teachers burn out trying to do the impossible."*

Human-centered challenges were also evident, particularly in relation to teacher shortages and student behavioral issues. Fifteen principals reported critical gaps in specialized staff, such as special education teachers, which forced general educators to assume responsibilities without adequate training. As P3 noted, *"We haven't had a qualified, permanent special education teacher for years. Special needs students suffer because general teachers, despite good intentions, lack the specialized training these children require. It's heartbreaking and entirely preventable with proper resource allocation."* Policy constraints compounded these shortages: P10 observed that laws mandating inclusive education provided no implementation resources, making the expectations effectively impossible. Guidance and counseling shortages affected eleven schools, with post-pandemic increases in anxiety, depression and behavioral issues, leaving principals improvising responses to urgent student mental health needs (P15). Student behavioral challenges extended beyond individual classrooms, often reflecting family instability and socio-economic stressors. P16 explained, *"Children arrive at school carrying profound home stress – parents fighting – economic worries, sometimes abuse or neglect. They can't focus on learning when survival needs dominate. We become counselors, social workers, surrogate parents – roles we're neither trained for nor resourced to perform. But what's the alternative? These are children who need help."* Nevertheless, some participants highlighted the protective potential of community cohesion in rural settings. P6 noted that rural isolation had fostered strong school-community bonds, which provided crucial support when students faced difficulties.

Parental engagement was frequently limited by logistical and economic constraints. Thirteen principals described difficulties in scheduling meetings and communicating effectively with families. P2 reflected, *"Parent meetings inevitably conflict with work schedules. Evening meetings are too late for families living far away without reliable transportation. We can't find times that work for everyone. So we're educating children in partnership with families we rarely see and that fundamentally limits what we can accomplish."* P13 added that literacy challenges, inconsistent phone access and lack of Internet connectivity further complicated outreach efforts, necessitating constant improvisation.

Systemic challenges, including bureaucratic burdens and barriers to innovation, amplified resource and human-centered constraints. All principals noted that excessive documentation and centralized approval processes consumed significant portions of their workday. P13 explained, *"I became a principal to lead educational improvement. But bureaucracy consumes my days. I'm a paperwork processor, not an educational principal."* While some acknowledged that documentation could be useful for accountability and tracking complex decisions (P7, P9), the overwhelming volume was perceived as detracting from instructional leadership. Twelve participants reported obstacles to innovation, including restrictive curriculum requirements, rigid timetables and tightly controlled budgets. P11 captured the frustration: *"We spot problems and figure out solutions that would work in our specific context – but then we can't act on them. Curriculum modifications require central approval. We see precisely what our students need but can't act independently. It's professionally demoralizing."* Despite these limitations, principals demonstrated adaptive resilience, piloting small-scale

innovations, developing creative groupwork strategies and leveraging informal flexibility to improve outcomes (P15, P11, P17).

Finally, analysis of urban–rural disparities revealed systematic patterns of inequity. Rural schools faced more severe infrastructure deficiencies, limited technology access, critical teacher shortages, minimal parental resources, weaker community support, reduced professional networking opportunities and restricted access to counseling services (see Table 3). These findings highlight the compounded disadvantage faced by rural schools, underscoring the need for context-sensitive interventions beyond uniform policy measures.

These disparities intensified the need for adaptive resilience in rural settings, where compounded structural limitations required principals to rely even more heavily on relational mobilization, resource recombination and discretionary interpretation of policy.

Discussion

Adaptive resilience emerged as an abductively derived conceptualization grounded in the empirical analysis of principals’ lived experiences and iterative engagement with relevant theoretical perspectives during analysis. It refers to a context-embedded leadership orientation through which principals interpret structural constraint as the organizing condition of practice and respond through bounded discretion, strategic resource recombination and relational mobilization.

Principals in this study exhibited patterns of leadership practice that align with this conceptualization. Rather than perceiving constraints as insurmountable barriers, they interpreted them as structuring conditions requiring prioritization, flexibility and incremental adjustment. They strategically leveraged existing resources through sharing and multi-purpose use, mobilized stakeholders beyond formal school structures and pursued small-scale improvements that accumulated over time. These findings extend existing leadership scholarship by showing that resilience in constrained systems is not solely psychological or reactive but is also strategically enacted and collectively distributed (Day and Gu, 2014; Weick, 1998). Unlike adaptive leadership models that often assume discretionary authority (Heifetz *et al.*, 2009) or distributed leadership approaches that rely on pre-existing

Table 3. Urban–rural disparity patterns

Challenge category	Urban schools (n = 9)	Rural schools (n = 8)	Key disparities
Infrastructure	Moderate challenges	Severe challenges	Rural schools reported older buildings and greater maintenance needs
Technology Access	Generally adequate	Severely limited	Rural principals reported lower connectivity reliability and limited technical support
Teacher Recruitment	Manageable	Critical shortage	Rural schools reported higher turnover and fewer specialized teachers
Parent Resources	More active parent–teacher associations	Limited parental capacity	Urban schools reported stronger parent organizational support
Community Support	Business partnerships	Limited options	Rural communities reported fewer external partners
Professional Networking	Accessible	Isolated	Geographic distance limits rural collaboration
Counseling Access	Partial	Minimal	Rural schools often shared counselors across multiple schools

Note(s): Descriptions summarize patterns reported by participants within this sample and are presented to illustrate contextual differences rather than to provide statistical generalizations

Source(s): Authors’ synthesis based on participant interview data

collaborative structures (Spillane, 2006), the principals in this study operated in highly centralized and resource-constrained environments, highlighting forms of leadership practice that are less visible in conventional theoretical models. In this study, adaptive resilience is understood not merely as an individual coping mechanism but as a contextually embedded mode of leadership practice that emerges when formal authority, resources and institutional flexibility are structurally limited.

This conceptualization also refines Lipsky's (2010) theory of street-level bureaucracy. While Lipsky's frontline bureaucrats primarily exercised discretion to cope with immediate pressures, often by rationing services or improvising quick fixes – the principals studied here used discretion in ways that were oriented toward stabilizing and gradually improving school functioning within bureaucratic limits. These efforts were embedded in a collective framework: principals actively engaged parents, local communities, and other schools to address structural gaps, illustrating how bounded discretion may contribute not only to coping but also to incremental organizational development.

The study's findings have significant implications for educational equity. Uniform policy implementation often fails to account for contextual disparities between urban and rural schools, producing what Shoho *et al.* (2005) describe as the equality–equity paradox. Rural schools in this study faced compounded disadvantages, including aging infrastructure, unreliable technology access, critical teacher shortages and limited parental engagement, yet were subject to the same accountability standards as better-resourced urban counterparts. These conditions reinforce structural inequities, echoing international evidence that equal treatment in unequally resourced contexts can exacerbate educational disparities (Lubienski and Lubienski, 2006; Darling-Hammond, 2010). While principals' adaptive strategies contributed to maintaining school functioning, they could not fully offset these systemic inequities, underscoring the limits of individual agency within centralized policy frameworks.

Practical implications for leadership are clear. Administrators can adopt strategies such as resource pooling, community engagement and incremental innovation within existing policy parameters. Policy-level interventions are equally necessary: funding formulas should reflect contextual needs, accountability systems should incorporate student progress and contextual improvement measures rather than uniform compliance alone, infrastructure investments should prioritize disadvantaged schools, and selective decentralization should grant meaningful local authority. Leadership preparation programs may also benefit from equipping future principals with skills to navigate resource-scarce environments and make context-sensitive decisions.

Overall, this study highlights the interplay between structural limitation and leadership practice. The findings suggest that principals can exercise bounded agency within constraints, yet meaningful progress toward equity ultimately requires systemic reform alongside local initiative. By integrating empirical findings with contemporary leadership and policy scholarship, this research contributes a contextualized account of adaptive resilience, emphasizing both the potential and limits of principal agency in centralized, resource-limited educational systems.

Conclusion

This study examined how 17 elementary principals working within Türkiye's highly centralized education system navigated overlapping structural constraints. Across diverse school contexts, a shared leadership pattern became evident – adaptive resilience – which captures how principals sought to sustain school functioning and learning continuity despite limited autonomy, chronic resource shortages and persistent bureaucratic pressures. Rather than reacting to constraints, they engaged in proactive, incremental and collective strategies that enabled sustained improvement within non-ideal conditions.

The findings challenge assumptions embedded in dominant leadership models. Transformational and instructional leadership theories often presuppose adequate resources,

professional autonomy and organizational stability – conditions rarely present in under-resourced schools. Adaptive resilience, by contrast, begins from the reality of constraint. This perspective resonates with global evidence showing that a substantial portion of the world’s educators work in contexts shaped by scarcity, centralization and uneven capacity. As such, the framework developed here offers a more context-sensitive lens and contributes to ongoing scholarly calls to broaden leadership theory so that it better reflects the environments in which most practitioners operate.

The study also demonstrates how policies grounded in formal equality can inadvertently reproduce substantive inequalities. Rural schools in particular face compounded disadvantages – aging infrastructure, unstable connectivity, difficulties in teacher recruitment and limited local fundraising capacity – yet they remain subject to the same accountability standards as better-resourced counterparts. This dynamic illustrates the equality–equity paradox, in which identical treatment of unequally situated schools reinforces rather than reduces inequity. Unless policymakers adopt measures such as weighted funding formulas, differentiated accountability structures, targeted infrastructure investment, rural incentives and selective decentralization, centralized systems risk continuing to disadvantage the students they claim to protect.

At the school level, the findings offer actionable guidance for administrators. Approaching constraints as opportunities for creative problem-solving, pooling resources across schools, cultivating broad stakeholder engagement and pursuing small-scale innovations that accumulate over time were central to the principals’ success. Importantly, these strategies do not necessarily depend on immediate structural reform; they operate within existing systems and highlight the agency principals can exercise even under restrictive conditions. Yet adaptive practices must be applied with critical awareness, as innovation and stakeholder engagement may inadvertently privilege schools with stronger social capital unless equity is made an explicit priority.

Implications also extend to leadership preparation. Most preparation programs continue to emphasize frameworks developed in well-resourced Western contexts, leaving aspiring administrators underprepared for the constraints they will likely encounter. Programs must therefore shift toward equipping future principals with the skills needed for constraint navigation, stakeholder mobilization under scarcity, context-sensitive decision-making and ongoing learning through documentation and evidence-building. Without such a reorientation, new administrators may be trained for idealized school environments that bear little resemblance to the realities they will face.

Globally, education systems continue to struggle with resource shortages, bureaucratic complexity and intensifying accountability pressures. Understanding how principals sustain quality under these conditions has therefore become a matter of urgency. By introducing and theorizing adaptive resilience, this study contributes both conceptual clarity and empirical grounding to a question that has been underexamined despite its widespread relevance. More broadly, the findings underscore that educational leadership does not always depend on ideal conditions; rather, leadership can emerge and adapt within systemic limitations – provided that constraints are approached not as barriers but as contexts for purposeful, collective and resilient action.

Ethical considerations

This study received ethical approval from Balikesir University Social and Human Sciences Research Ethics Committee (Decision No: 2024/12-36, approved on 30 December 2024). All participants provided written informed consent after receiving detailed information about study purposes, procedures, voluntary participation rights and data confidentiality protections. Participants were informed of their right to withdraw at any time without consequence and to decline answering specific questions. School and participant identities were anonymized through pseudonym codes (P1–P17), and identifying contextual details were modified where necessary to prevent recognition.

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