

Adaptive Leadership and Organizational Resilience in Early Childhood Education: Lessons from Kindergarten Responses to Systemic School Closure

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ABSTRACT

This study examines how kindergarten administrators enacted adaptive leadership during the nationwide school closure in Taiwan and how these responses contributed to emerging organizational resilience in early childhood education (ECE) settings. While pandemic-era research has documented widespread shifts to remote instruction, less is known about how leaders in routine-dependent and relationship-intensive early childhood organizations navigated systemic disruption.

Using a qualitative multiple-case design, this study draws on in-depth interviews with six administrators from four private kindergartens that implemented online learning during the 2021 closure. Cross-case analysis reveals that leaders' work extended beyond technical implementation to include collective sensemaking, redistribution of professional roles, and sustained relational coordination with teachers and families. Although schools demonstrated considerable flexibility in adopting hybrid instructional formats, participants consistently emphasized the developmental and pedagogical constraints of online learning for young children. Organizational resilience therefore emerged less through technological substitution than through ongoing efforts to stabilize routines, support teacher adaptation, and strengthen family partnerships.

Viewed after the pandemic, the findings highlight the distinctive conditions under which adaptive leadership operates in early childhood settings. The study contributes to educational administration literature by showing that in ECE contexts, resilience is fundamentally relational and developmentally bounded. Implications are discussed for leadership preparation, crisis resilience, and future research on adaptive capacity in early childhood settings.

Keywords: Adaptive leadership, Organizational resilience, Early childhood education, School–family partnerships, Systemic disruption

I. Introduction

Large-scale systemic disruptions test the adaptive capacity of educational organizations and the leadership practices that sustain them. While crises often expose structural vulnerabilities, they also illuminate how educational leaders engage in sensemaking, resource mobilization, and organizational reconfiguration under conditions of uncertainty. The nationwide school closures implemented in 2021 caused by COVID-19 provide a salient context for examining these dynamics, particularly within early childhood education, where institutional routines are closely intertwined with caregiving practices, developmental appropriateness, and family engagement.

In Taiwan, the temporary suspension of in-person learning in May 2021 required all educational institutions, including kindergartens, to reorganize operations within an extremely compressed timeframe (MOE, 2020). Unlike primary and secondary schools, where students can use online classrooms, early childhood settings operate through relationally intensive and routine-based pedagogical models. The abrupt shift away from physical classrooms posed not only technical challenges but also administrative dilemmas regarding curriculum adaptation, staff coordination, and home–school boundary. Kindergarten administrations were required to interpret national policy directives, translate them into institutionally feasible strategies, and

maintain organizational stability while responding to rapidly evolving external conditions. As Mazurkiewicz (2021) suggests, the old world of simplistic formulas no longer works; instead, leadership must be redefined as a collective process that empowers all stakeholders—teachers, administrators, and parents—to achieve shared goals under extreme pressure.

Existing studies have documented variations in remote teaching practices among kindergarten teachers in Taiwan (e.g., Huang, 2021; Lo et al., 2021), highlighting diverse instructional approaches during school closures. Among the respondents in Lo et al. (2021), 48% implemented asynchronous teaching, 12% used synchronous teaching, 20% provided digital materials (not pre-recorded by teachers) to parents, and 10% suspended all teaching activities. However, less attention has been paid to the administrative processes that enabled or constrained these pedagogical responses. How did kindergarten leaders enact adaptive leadership during systemic disruption? What organizational mechanisms supported continuity of learning in early childhood settings? And how did leadership practices shape the restructuring of relationships among administrators, teachers, and families?

The main goal of this study is to identify how kindergarten administrations enact adaptive leadership and foster organizational resilience during a period of nationwide school closure. A comparative qualitative case analysis research method was utilized on four kindergartens to learn how leadership sensemaking, administrative coordination, and organizational adaptation played out in this difficult time. The study seeks to contribute to educational administration theory by conceptualizing early childhood institutions as complex adaptive organizations capable of dynamic reconfiguration under crisis conditions.

II. Literature Review

2.1. Systemic Disruption as an Adaptive Challenge in Education

The widespread school closures initiated by the COVID-19 pandemic represented a global crisis that transcended public health, severely disrupting economic activities and educational systems on an unprecedented scale. With over 150 countries affected and more than 1.5 billion students displaced, the traditional "classical" paradigm of educational management—which relies on established procedures and top-down control—had reached a point of breaking as they proved insufficient for the magnitude of the crisis (Mazurkiewicz, 2021; UNESCO, 2023). In Taiwan, the national school closure from May 18 to July 26, 2021, lasted approximately 10 weeks, while shorter than the global average of 14 weeks, its impact on learning and family dynamics was profound (Li, 2020; UNESCO, 2021). Consequently, kindergarten directors were forced into a rapid administrative shift from "business as usual" toward an adaptive leadership model (Sott & Bender, 2025).

This systemic disruption is best understood as an adaptive challenge, which differs from technical problems by requiring a fundamental change in organizational values and behaviors (Sott & Bender, 2025). AS the Taiwanese Ministry of Education implemented the "Learning never stops" policy to ensure learning continuity during the school closure caused by the pandemic (Lin et al., 2022). In early childhood education, these challenges are exacerbated by developmental needs; as noted in Piaget's theory, children in the sensorimotor and preoperational stages require concrete experiences and sensory activities that are inherently limited in digital environments (Chang, 2007; Chang, 2020). To navigate this gap, kindergarten directors had to move beyond the myth of the solo "charismatic" leader and instead foster an environment of collaboration and distributed agency (Mazurkiewicz, 2021).

Furthermore, the transition to remote learning fundamentally altered the child's ecological systems. Urie Bronfenbrenner's ecological systems theory highlights how child development is shaped by interconnected environmental layers, including the microsystem (family and school), mesosystem (interactions between these settings), exosystem, and macrosystem. (Egan & Pope, 2022). As the home replaced the school as the primary learning microsystem, the interactions within the mesosystem were disrupted, necessitating a new level of "orchestration" from school leadership (Mazurkiewicz, 2021). Directors acted as navigators by establishing a virtuous cycle of excellence, where administrative empathy and transparent communication supported both teachers and parents in their new roles (Sott & Bender, 2025).

2.2. Adaptive Leadership: Origins and Theoretical Foundations

Adaptive leadership emerged from the work of Ronald Heifetz at Harvard University in the 1990s as a response to increasingly complex, value-laden public problems. Heifetz (1994) first articulated the framework in *Leadership Without Easy Answers*, distinguishing between technical problems, which can be solved through existing expertise, and adaptive challenges, which require shifts in beliefs, roles, and relationships. Later, Heifetz and Linsky (2002) expanded the model by emphasizing leadership as the practice of mobilizing people to confront difficult realities and regulate distress during change. Heifetz, Grashow, and Linsky (2009) further refined the framework, defining adaptive leadership as the capacity to help organizations thrive in changing environments by encouraging learning, experimentation, and distributed responsibility. Rather than locating leadership in individual authority or charisma, adaptive leadership conceptualizes it as a relational and systemic process that unfolds within complex social contexts. This reconceptualization aligns with broader critiques of heroic leadership models and calls for more participatory and context-responsive forms of educational leadership (Mazurkiewicz, 2021).

Adaptive leadership has been widely applied in sectors characterized by uncertainty and systemic risk, including healthcare, public administration, and crisis governance. In times of large-scale disruption, leaders are required not merely to manage procedures but to facilitate collective sensemaking and learning (Mazurkiewicz, 2021). Research on crisis leadership highlights the importance of responsiveness, distributed agency, and ethical responsibility in navigating uncertainty—principles closely aligned with adaptive leadership (Dirani et al., 2020). Within education, adaptive leadership has gained attention as schools confront policy reform, accountability pressures, demographic change, and crises such as COVID-19. Rather than focusing solely on instructional management, adaptive leadership in education emphasizes organizational learning, stakeholder engagement, and resilience building. Empirical work suggests that educational leaders who adopt adaptive practices—such as fostering collaborative problem-solving and redefining professional roles—are better positioned to sustain school functioning during disruption (Mazurkiewicz, 2021). These insights are particularly relevant to early childhood settings, where organizational routines, care practices, and family engagement structures require rapid reconfiguration under systemic stress. Adaptive leadership thus provides a conceptual bridge between crisis response and long-term organizational resilience in educational administration.

2.3. Organizational Resilience

Organizational resilience refers to an institution's capacity to anticipate, absorb, adapt to, and recover from disruptions while maintaining core functions and supporting long-term development. Early conceptualizations positioned resilience as a reactive recovery process; however, contemporary scholarship emphasizes proactive adaptation, learning, and transformation under conditions of uncertainty (Duchek, 2020; Lengnick-Hall et al., 2011). In education, resilience extends beyond operational continuity to include the preservation of relational trust, instructional quality, and organizational meaning-making during crises. Mazurkiewicz (2021) argues that the increasing frequency of global disruptions has exposed the limitations of traditional leadership and management approaches in education, highlighting the necessity for institutions to cultivate adaptive capacity, distributed responsibility, and collaborative problem solving. This perspective aligns with resilience theory's emphasis on flexibility, collective learning, and the ability to reconfigure structures in response to emerging challenges.

Within educational organizations, resilience is often enacted through leadership practices that foster psychological safety, distributed expertise, and shared sensemaking. Research suggests that resilient schools demonstrate strong relational networks, reflective learning cultures, and leadership structures capable of balancing stability with innovation (Day & Gu, 2013; Harris & Jones, 2020). A systematic review by Sott and Bender (2023) further indicates that adaptive leadership behaviors—such as iterative decision-making, stakeholder engagement, and feedback-driven adjustment—function as key organizational enablers of resilience, particularly during crisis contexts requiring rapid coordination across professional boundaries. In early childhood settings, resilience carries additional significance due to the sector's reliance on relational continuity, family partnership, and emotional climate. Disruptions, therefore, challenge not only administrative processes but also pedagogical stability and children's sense of security. Consequently, organizational resilience in early childhood administration is best understood as a dynamic, socially constructed process in which leaders mobilize adaptive practices, support collective interpretation of disruption, and sustain pedagogical coherence while navigating uncertainty.

2.4. Sensemaking in Early Childhood Organizational Disruption

Sensemaking refers to the social and cognitive process through which individuals and organizations interpret ambiguous events, construct meaning, and guide action under conditions of uncertainty. Rooted in the work of Weick (1995), sensemaking emphasizes that organizational responses to disruption are not determined solely by structural capacity but by how actors collectively interpret evolving situations. In crisis contexts, sensemaking becomes particularly salient because rapid change often disrupts routines, challenges professional identity, and creates competing interpretations of appropriate action. Maitlis and Christianson (2014) further conceptualize sensemaking as an iterative process involving noticing, interpreting, and enacting responses, highlighting the role of leadership in shaping shared understanding and reducing uncertainty. Within educational organizations, sensemaking supports coordinated responses, facilitates emotional processing, and enables leaders and staff to reframe disruption as a manageable and potentially transformative experience rather than solely a threat.

In early childhood education (ECE), sensemaking is especially important because of the sector's relational, emotionally intensive, and care-centered nature. Empirical research shows that early childhood administrators and educators relied heavily on collaborative interpretation and reflective dialogue to navigate pandemic-related disruptions, particularly when balancing health requirements, pedagogical continuity, and family expectations (Eadie et al., 2021). Studies further indicate that administrators who facilitated open communication, distributed decision-making, and reflective staff conversations were more successful in sustaining educator well-being and maintaining program coherence during uncertainty (Baker et al., 2021). Moreover, early childhood leaders often engaged in relational sensemaking that incorporated family perspectives and community needs into organizational interpretations of disruption, strengthening trust and adaptive capacity (Douglass, 2019). Collectively, these findings suggest that sensemaking in early childhood

administration is a socially embedded process shaped by educator–family relationships and broader ecological interactions. Consequently, sensemaking functions as a critical mechanism linking adaptive leadership practices to the development of organizational resilience, enabling leaders to coordinate meaning, sustain pedagogical identity, and guide collective adaptation during systemic disruption.

Existing research on early childhood education during pandemic-related school closures has primarily focused on pedagogical adaptation, digital technology integration, and the developmental implications of remote learning (Chang, 2021; Chu & Chu, 2022; Huang, 2021; Lo et al., 2021). Studies highlight persistent tensions surrounding ICT use in early childhood settings, including concerns regarding screen exposure and reduced sensory engagement alongside evidence that appropriately designed digital experiences can support creativity and cognitive development (Fang, 2004; Fang & Liao, 2015; Wang, 2018). The rapid transition to synchronous and asynchronous learning further intensified parental concerns about learning loss and children’s limited capacity for self-regulated engagement, reinforcing the central role of family support in sustaining learning continuity (Chang, 2021; Chu & Chu, 2022). Empirical findings also suggest that interactional limitations, teacher digital competence, and variations in pedagogical approaches significantly shaped learning experiences across contexts (Barabási, 2021; Christopoulos & Sprangers, 2021). In Taiwan, emerging evidence indicates diverse kindergarten responses, with many institutions relying on asynchronous materials and parent-mediated learning, while a smaller number implemented synchronous instruction (Huang, 2021; Lo et al., 2021). Despite these insights, limited attention has been given to the administrative processes through which kindergarten leaders interpreted these tensions, coordinated responses, and sustained organizational functioning under systemic disruption. Integrating adaptive leadership, organizational resilience, and sensemaking perspectives provides a theoretical basis for examining how leaders navigated competing developmental, technological, and relational demands. Accordingly, this study conceptualizes kindergarten administrators’ responses not merely as instructional adaptation but as leadership-driven processes of meaning construction and organizational reconfiguration that contributed to emerging forms of resilience in early childhood settings.

Therefore, this study conceptualizes nationwide school closure as a form of systemic disruption that simultaneously altered pedagogical delivery, educator–family relationships, and the technological expectations placed upon early childhood organizations. Within this context, kindergarten administrators engaged in sensemaking processes to interpret uncertainty surrounding children’s developmental needs, appropriate ICT use, parental expectations, and institutional responsibilities. These interpretations shaped the enactment of adaptive leadership practices, including distributed decision-making, emotional and instructional support for teachers, flexible curriculum redesign, and the development of new communication structures with families. Through these leadership responses, organizations cultivated organizational resilience, reflected in instructional continuity, strengthened parent–school partnerships, staff adaptability, and the emergence of hybrid pedagogical capacities. Importantly, the early childhood context positions family partnership and ICT mediation as cross-cutting conditions, influencing how disruption is interpreted, how leadership is enacted, and how resilience develops. Resilience is therefore understood not as a fixed organizational trait but as an emergent outcome of leadership interpretation and relationally embedded adaptive action during prolonged uncertainty.

III. Research Methods

3.1. Qualitative Research Approach

This study employed a qualitative case study design to examine how kindergarten administrators enacted adaptive leadership and fostered organizational resilience during the nationwide school closure in Taiwan during the pandemic. A qualitative case study is utilized for investigating complex leadership processes situated within real-world organizational contexts characterized by uncertainty, relational interdependence, and rapidly evolving demands. The abrupt and unprecedented nature of the nationwide closure created a systemic disruption for which established administrative responses were limited, making an in-depth qualitative approach necessary to capture leaders’ interpretations, decision-making processes, and adaptive actions.

In this study, the case was defined as the leadership response of early childhood organizations to a system-wide educational disruption. Multiple kindergarten sites were included, not as independent cases but as contextual lenses through which the focal phenomenon could be examined. This design enabled the identification of shared leadership processes while preserving sensitivity to organizational variation. Through this approach, the study sought to generate analytic insights into how administrative sensemaking, relational coordination, and adaptive practices contributed to the emergence of organizational resilience during crisis conditions.

3.2. Participants

Participants consisted of six administrators from four private kindergartens located in northern and central Taiwan. These individuals occupied key leadership roles—including chief executive officer, principal, director, and head teacher—and were directly responsible for decision-making, teacher coordination, family communication, and instructional adaptation during the closure period. Their positions placed them as central actors in organizational sensemaking and adaptive leadership processes.

The participating kindergartens (pseudonyms: Zhen-Zhen Kindergarten, Tong-Tong Kindergarten, Dian-Dian Kindergarten, and Sheng-Sheng Kindergarten) were selected through purposeful sampling to capture variation in organizational structure and remote learning implementation while maintaining a shared contextual experience of nationwide closure. Among the participants, five were female, and one was male, with ages ranging from 37 to 50 years ($M = 44.3$). Participants reported an average of 10.5 years in their current leadership roles and 21.3 years of professional experience in early childhood education, indicating substantial administrative and pedagogical expertise relevant to crisis leadership.

Table 1 Demographic of Kindergartens and Participants

Kindergarten Name (Pseudonym)	Number of Children and Staff	Class Distribution	Teaching Model	Participant(s)
Dian-Dian Kindergarten (DD)	Over 400 children, 40+ staff	Pre-K 2-year-old classes: 2 Pre-K 3-year-old: 4 Pre-K 3 to 4-year-old: 1 Pre-K 4-year-old: 5 K Classes: 5	Montessori	Participant A: Academic Director, Female, 50 years old, 22 years as academic director, 30 years of experience in early childhood education Participant B: Deputy Academic Director, Female, 40 years old, 8 years as deputy, 15 years of experience in early childhood education
Sheng-Sheng Kindergarten (SS)	Over 400 children, 50+ staff	Pre-K 2-year-old classes: 2 Pre-K 3-year-old: 4 Pre-K 4-year-old: 5 K Classes: 6	Thematic	Participant A: CEO, Male, 47 years old, 24 years as CEO, 24 years of experience in early childhood education Participant B: Principal, Female, 47 years old, 6 years as principal, 24 years of experience in early childhood education
Tong-Tong Kindergarten (TT)	Approximately 50 children, 5 staff	Pre-K 2-year-old class: 1 Pre-K 3 to 4-year-old: 1 Pre-K 4 to 5-year-old: 1	Thematic and Learning Centers	Participant A: Principal, Female, 45 years old, 2 years as principal, 21 years of experience in early childhood education
Zhen-Zhen Kindergarten (ZZ)	Approximately 50 children, 9 staff	Pre-K 2-year-old class: 1 Pre-K 3 to 4-year-old: 1 K Classes: 1	Thematic and Learning Centers	Participant A: Principal, Female, 37 years old, 1.5 years as principal, 14 years of experience in early childhood education

3.3. Data Collection and Research Instruments

This study employed qualitative research instruments, including informed consent documentation, audio-recording equipment, and a semi-structured interview protocol. The interview guide was designed to elicit participants' interpretations of the school closure, leadership decision-making processes, curriculum adaptation, teacher support strategies, and communication with families. While several guiding questions were prepared to ensure coverage of key leadership dimensions, for example, their views on the systematic disruption, sensemaking, adaptive leadership, and organizational resilience. The semi-structured format allowed participants to elaborate on emergent experiences and reflect on unfolding organizational challenges.

3.4. Research Procedure and Data Analysis

Kindergartens were purposefully selected to represent variation in instructional approaches while sharing the common experience of nationwide school closure. After initial contact through phone calls, interviews were scheduled at mutually convenient times. Data collection took place at the end of 2021, the time when schools resumed in-person, allowing participants to reflect on both immediate responses and subsequent organizational learning.

With participants' consent, all interviews were audio-recorded and transcribed verbatim. Each participant was interviewed one to two times, with sessions lasting approximately 60 to 120 minutes. Initial interviews explored administrators' immediate responses to remote learning implementation, including instructional planning, technological adjustments, teacher support, and perceived organizational challenges. Follow-up interviews were conducted to clarify emerging interpretations, confirm preliminary understandings, and capture reflective insights regarding leadership learning and organizational adaptation after the reopening of schools. Interview recordings were transcribed verbatim by trained research assistants and reviewed by the researcher for accuracy. Data analysis followed an iterative thematic process. First, transcripts were read repeatedly and coded line-by-line to capture participants' interpretations of disruption, leadership reasoning, and organizational responses. Second, related codes were clustered into preliminary themes reflecting sensemaking processes, adaptive leadership practices, and emerging organizational resilience. The coding framework was refined through collaborative discussions among the research team to enhance analytic consistency and conceptual alignment.

Finally, themes were continuously compared against the data to ensure interpretive coherence. To support analytic transparency, excerpts were cited using a structured format indicating kindergarten, participant, interview date, and transcript location (e.g., TT-A-211116-p.7). When institutional information from publicly accessible platforms was referenced, sources were identified using a corresponding format (e.g., TT-FB-211116). All translated interview excerpts are presented in bold quotation marks to clearly distinguish participant voice from analytic interpretation.

3.5. Trustworthiness and Ethical Considerations

Several strategies were employed to enhance research rigor. Credibility was supported through iterative interviewing, collaborative coding, and the use of rich participant quotations to substantiate interpretations. Triangulation was achieved by comparing interview accounts with institutional communications available on kindergarten websites and social media platforms. Reflexive memo writing was conducted throughout the analysis to document analytic decisions and reduce interpretive bias.

Participation was voluntary, and informed consent was obtained prior to data collection. Pseudonyms were used for both participants and institutions to protect confidentiality. All recordings and transcripts were securely stored and used solely for research purposes.

IV. Research Findings

The findings illustrate that kindergarten administrators' responses to the nationwide school closure extended beyond the technical implementation of online teaching. Rather, leaders engaged in an ongoing adaptive process characterized by collective sensemaking, iterative leadership enactment, and the gradual cultivation of organizational resilience. Participants' accounts revealed leadership as a dynamic effort to interpret uncertainty, restructure organizational routines, mobilize teachers and families, and negotiate the developmental constraints inherent in early childhood online learning environments. Viewed through an adaptive leadership lens, the pandemic did not simply require instructional substitution but exposed deeper organizational and relational challenges that demanded continuous adjustment. Six interrelated themes emerged from the data.

Theme 1: Disruption and the Loss of Organizational Stability

The nationwide school closure was widely experienced by participating kindergartens not merely as an operational interruption but as a significant disruption to established organizational routines. Upon receiving the closure notice, most kindergartens immediately convened emergency meetings to make sense of the rapidly evolving situation and to identify feasible response strategies. Administrators consistently described the announcement as highly abrupt, generating considerable uncertainty among parents, teachers, and the broader community. As one participant recalled, "*On May 18, the news about the closure came suddenly, and not only parents but also the entire community was in a state of panic*" (ZZ-A-211116-05).

In response to this instability, leadership teams prioritized timely communication with families and the rapid reorganization of instructional materials. One kindergarten reported that administrators moved quickly to notify parents and prepare home-based learning resources (DD-A-211129-01), reflecting an early effort to restore predictability and maintain family trust. These actions indicate that the initial leadership work extended beyond technical arrangements and involved important interpretive and stabilizing functions.

At the policy level, kindergartens implemented online learning in accordance with the Ministry of Education's Learning Never Stops directive. However, institutional responses varied, with some schools adopting asynchronous prerecorded lessons (SS-A-211115-15) while others experimented with synchronous formats (DD-B-211129-05; TT-A-211116-11; ZZ-A-211116-11; ZZ-FB-210519). On the other hand, administrators emphasized that policy compliance did not eliminate uncertainty. The requirement to continue providing care for children lacking home supervision introduced additional ambiguity, particularly because eligibility criteria (parents working for the hospital and/or government, or parents had to work) were not always clearly defined. As one administrator explained, some parents continued to send their children to school for personal reasons, and kindergartens found it difficult to refuse them (TT-A-211116-11). This situation created ongoing staffing

and safety pressures (SS-A-211115-01), illustrating how formal policy guidance translated into adaptive challenges at the organizational level.

Moreover, the disruption extended beyond the formal closure period. Although in-person schooling resumed after about 10 weeks of closure, many routines remained modified due to continuing health concerns. Schools reported scaling down activities and implementing enhanced cleaning protocols even after reopening (TT-A-211116-10). This extended adjustment period suggests that the pandemic functioned not as a short-term interruption but as a sustained condition requiring ongoing organizational adaptation.

The findings indicate that the initial phase of pandemic response in early childhood settings was characterized less by the immediate rollout of online instruction and more by leaders' efforts to interpret uncertainty, respond to stakeholder concerns, and stabilize day-to-day operations. From an adaptive leadership perspective, the closure exposed underlying vulnerabilities in routine-dependent early childhood programs and required administrators to engage in continuous sensemaking before solutions could be effectively implemented.

Theme 2: Teachers Navigating Professional and Pedagogical Disruption

During the nationwide school closures, teachers experienced substantial shifts in their professional roles and daily work routines. With children unable to attend in person, instruction moved rapidly to online formats, requiring teachers to reorganize both teaching practices and patterns of collaboration. Many teachers worked from home and participated in frequent online meetings, marking a significant departure from the highly routine-based nature of early childhood settings (TT-A-211116-08; ZZ-A-211116-08).

One of the most visible adjustments was the introduction of staggered staffing arrangements, an unprecedented measure designed to reduce on-site density (distancing) and maintain health precautions. All participating kindergartens implemented rotating schedules in which only a small number of staff remained on campus while others worked remotely. As one administrator described, "*Everyone tried to work from home as much as possible, with only two or three staff members rotating on-site... they also filled out something like a work log to track their progress*" (TT-A-211116-07). While these arrangements enabled operational continuity, they also disrupted familiar patterns of collegial interaction and classroom-based teamwork that typically characterize early childhood programs.

Teachers reported considerable anxiety and uncertainty during the initial transition, particularly given their limited prior experience with online instruction (DD-B-211116-07). Online meetings quickly became a routine component of teachers' work, serving administrative coordination, peer collaboration, and class interaction purposes. This shift required teachers to exercise increased self-taught skills, self-management, and flexibility in responding to rapidly changing expectations. As one participant noted, teachers needed to continually adjust their work organization and instructional planning in response to evolving circumstances (ZZ-A-211116-08). Despite these pressures, most teachers demonstrated a strong willingness to engage with the new work arrangements. Although many initially felt apprehensive about unfamiliar technologies and online teaching formats, they maintained a generally positive and cooperative stance. One participant reflected that teachers initially assumed the closure would be brief and approached the situation with short-term improvisation in mind. However, as the disruption continued, teachers intensified their efforts. As another administrator observed, "*...when we switched to online teaching, the teachers really put in a lot of effort because they hoped that, even if the children returned to school months later, the connection between them and their teachers would still be intact*" (DD-A, B-211129-07).

Over time, and with ongoing administrative support, teachers gradually developed greater confidence in conducting online lessons. Their strong sense of professional responsibility toward young children served as an important motivational resource during this period of adjustment. Participants emphasized that teachers viewed continued engagement with children as essential, even under constrained conditions. As a result, many educators made sustained efforts to maintain interaction and instructional continuity through online platforms (DD-B-211116-07; ZZ-A-211116-08).

These findings suggest that the shift to remote teaching in early childhood settings involved more than a technical change in delivery mode. Instead, teachers were required to renegotiate professional routines, pedagogical expectations, and collaborative practices under conditions of uncertainty. From an adaptive leadership perspective, administrators' role in structuring work arrangements and supporting teacher adjustment was critical in enabling educators to remain engaged while navigating this period of professional and pedagogical disruption.

Theme 3: Redistributing Roles and Supporting Collective Adaptation

Across participating kindergartens, administrative support played a central role in enabling teachers to adjust to the rapid shift in instructional delivery. Rather than focusing solely on technological fixes, administrators engaged in coordinated efforts to redistribute work, clarify expectations, and provide both technical and emotional scaffolding for staff. These actions were particularly important given the uncertainty surrounding the pandemic and the unfamiliar demands of online teaching in early childhood contexts.

1. Structuring Work and Building Confidence: To reduce teachers' anxiety and provide clearer direction, administrative teams took an active role in curriculum planning, task allocation, and operational coordination. Leaders developed instructional guidelines, organized daily workflows, and integrated COVID-19 prevention

procedures into school routines (SS-B-211215-12). They also prepared standardized forms and teaching templates to streamline teachers' workload and support instructional consistency (ZZ-A-211116-29).

Recognizing that many teachers had limited experience with video production and live streaming, administrators provided hands-on demonstrations and technical coaching (DD-A-211129-09). One administrator explained: "*We held emergency meetings... then provided teachers with ready-to-use forms and curriculum content to give them a clear direction. I also demonstrated how to film videos. It was a new challenge for me too, but I had to show them that it wasn't difficult, and once they saw that, they did even better than me*" (ZZ-A-211116-29).

These efforts suggest that leadership work during this period involved not only providing resources but also modeling learning and reducing psychological barriers to technological adoption. In some cases, prior preparation further supported teacher readiness. For example, both Zhen-Zhen and Tong-Tong Kindergartens had previously conducted internal drills related to the Learning Never Stops policy, which helped teachers feel more prepared when closures were formally implemented (TT-A-211116-06; ZZ-A-211116-05).

2. Managing Financial Pressures to Sustain Operations: In addition to instructional adjustments, administrators were required to address significant financial strain caused by reduced enrollment income and uncertainty regarding government subsidies. Participants reported actively seeking cost-control strategies, including negotiating rent reductions with landlords (ZZ-A-211116-31). Despite these efforts and the availability of some public support, many kindergartens continued to face substantial budget pressure, particularly in meeting fixed expenses such as rent, utilities, and teacher salaries (SS-A-211215-02). This financial work was critical in maintaining organizational stability and preserving staffing continuity during a period of heightened uncertainty.

3. Attending to Teachers' Emotional and Professional Needs: Beyond logistical and financial adjustments, administrators placed strong emphasis on understanding and responding to teachers' concerns. Participants reported that teachers were simultaneously managing worries about financial security, health risks, and changing instructional expectations. Even in settings where full salaries were maintained, uncertainty remained a significant source of stress (DD-B-211129-07; TT-A-211116-07).

The transition to online teaching also increased workload demands and required teachers to modify interaction strategies with young children and families. In this context, administrative responsiveness—through regular communication, reassurance, and practical support—was viewed as essential for sustaining teacher engagement. Participants consistently indicated that such support helped stabilize staff morale and enabled the continued implementation of remote learning.

The findings above indicate that adaptive leadership during the pandemic involved more than introducing new instructional tools. Instead, administrators worked to reconfigure organizational roles, redistribute expertise, and provide multi-layered support that enabled collective adjustment. By simultaneously addressing technical capacity, financial viability, and teacher well-being, leaders created the conditions under which early childhood programs could continue functioning despite significant disruption.

Theme 4: Strengthening Relationships with Families During Remote Learning

Across participating kindergartens, the shift to home-based learning significantly intensified the importance of school-family relationships. With young children remaining at home throughout the day, parents assumed increased caregiving and instructional responsibilities. Administrators widely recognized that sustaining learning continuity in early childhood settings depended not only on technological arrangements but also on maintaining close, trust-based communication with families.

1. Proactive and transparent communication: In the early phase of school closure, kindergartens prioritized timely and transparent communication to reduce parents' anxiety. Schools promptly issued notices and regularly updated families regarding instructional arrangements and policy changes. As one administrator described, "*When Zhen-Zhen Kindergarten suspended classes... we immediately notified the parents from all four schools to ease their concerns and inform them about the upcoming policies*" (ZZ-A-211116-09; ZZ-FB-210519). These proactive communication efforts helped stabilize family expectations during a period of rapid change.

2. Maintaining regular relational contact: Beyond one-way information delivery, many kindergartens emphasized sustained two-way interaction with families. Weekly phone calls, synchronous sessions, and ongoing messaging were used to maintain emotional connection with both parents and children. One participant explained: "*Every week, we made sure to call at least once... to understand if the child or parents had any issues or anxieties. It was also about maintaining emotional connections. Even though we didn't know when we could return to the classroom, the continuous interaction made it easier for the children to adapt when they returned*" (TT-A-211116-10). These practices suggest that communication served not only an informational function but also an important relational and regulatory role in supporting family stability.

3. Supporting parents as learning partners: As remote learning progressed, parents increasingly took on the role of co-educators. To facilitate this shift, kindergartens provided technical guidance on platforms such as Google Meet and shared suggestions for home-based learning activities (ZZ-FB-210519). Social media and school websites (e.g., Facebook, YouTube, school webpages) became key channels for distributing resources and maintaining ongoing contact with families (ZZ-FB-210519; SS-FB-210528).

Evidence from participants indicated that parental engagement became a critical factor in children's participation. Some families created designated learning spaces at home to support routine formation (TT-A-211116-15), and many parents responded positively to the online materials provided by schools (DD-A-211129-12-13; SS-B-211215-08). These patterns highlight how early childhood learning during the pandemic was co-constructed across home and school contexts.

4. Emerging mutual understanding and unexpected benefits: Interestingly, the shift to home-based learning also generated new forms of mutual understanding between families and schools. Teachers reported gaining deeper insight into children's home environments (ZZ-A-211116-05), while some parents developed greater appreciation for teachers' professional work. As one participant described a parent's reflection: "*I realized what my child has been learning at school—it's not just playtime but actual skill-building and learning strategies*" (TT-A-211116-31). Another participant described parents expressed increased respect for teachers after observing online classroom interactions (DD-A-211129-30, 32).

5. Ongoing challenges for families and children: Despite these positive developments, participants emphasized that the shift toward home-based learning also introduced significant challenges. Many parents experienced role strain as they moved into quasi-teaching roles. Common difficulties included managing sibling distractions, limited digital literacy among grandparents, and shortages of appropriate devices (ZZ-A-211116-06, 30; DD-A-211129-03). Parents also expressed concern about excessive screen time and its potential effects on young children's eyesight and attention span (TT-A-211116-06-07).

Kindergartens attempted to mitigate these pressures by lending devices, providing printed materials, offering Google Meet training, and maintaining active communication through social media platforms such as Facebook and LINE (DD-A-211129-04; SS-A-211215-14). As one administrator observed: "*We taught parents how to use Google Meet... but parents also need to prepare a learning space. When parents and children are ready, the interaction is much better*" (TT-A-211116-29). At the same time, teachers noted developmental constraints among young children during online sessions. Children frequently moved off-screen or experimented with microphone controls out of curiosity, reinforcing the importance of prioritizing emotional connection over extended academic instruction (ZZ-A-211116-04-05; TT-A-211116-29).

Remote learning in early childhood settings required a substantial reconfiguration of school-family relationships. Rather than serving solely as recipients of instructional materials, parents became active partners in supporting children's learning at home. From an adaptive leadership perspective, administrators' efforts to maintain frequent communication, provide practical guidance, and respond to family concerns were central to sustaining program continuity. However, the persistence of role strain, technological barriers, and developmental limitations also indicates that family engagement functioned as an ongoing adaptive tension rather than a fully resolved solution.

Theme 5: Navigating Developmental and Pedagogical Constraints in ECE Online Learning

Although participating kindergartens moved quickly to implement remote instruction, administrators and teachers consistently emphasized that early childhood online learning was shaped by significant developmental and pedagogical constraints. Rather than representing a straightforward technological substitution, the shift to online formats required ongoing adjustment to align digital delivery with the learning characteristics of young children. Here are the collective descriptive sub-themes:

1. Multiple instructional formats under constraint: Across the four kindergartens, leaders adopted varied instructional configurations to balance flexibility and engagement. Three schools implemented hybrid models combining synchronous livestream sessions with prerecorded videos, allowing families to access materials according to their schedules. As one administrator explained, "*We provided both live-streamed lessons and pre-recorded videos. Parents could follow along at their convenience if they couldn't join live*" (ZZ-A-211116-02). Similarly, another school noted adopting "*a hybrid approach with both live-streams and a video archive*" to address uneven internet access (TT-A-211116-20). One kindergarten relied primarily on prerecorded lessons supplemented by parent-guided activities (SS-A-211215-05). These varied arrangements reflected leaders' attempts to accommodate children's limited attention spans and the diverse technological readiness of families, particularly households where grandparents served as primary caregivers.

2. Reconfiguring lesson structure for young learners: Participants reported that online lesson design required substantial modification from typical classroom routines. Synchronous sessions were generally shortened to approximately 30-40 minutes to match children's developmental capacities. As one administrator described: "*We conduct online teaching every day... each session... lasts 40 minutes... including routine activities such as learning the date and roll call integrated with thematic content*" (ZZ-A-211116-02). Prerecorded videos were typically limited to 10-15 minutes (SS-A-211215-07). Teachers also reported deliberately slowing instructional pacing to maintain children's engagement and comprehension (TT-A-211116-26; DD-B-211129-23). These adjustments highlight how pedagogical decision-making remained closely tied to developmental considerations despite the shift to digital delivery.

3. Extending hands-on learning into the home: Because online environments constrain tactile and play-based learning, many kindergartens developed supplementary material strategies. Schools distributed printable worksheets, take-home learning kits, or adapted Montessori materials for home use (TT-A-211116-03; DD-A-211129-12). In some cases, teachers encouraged families to substitute household objects for classroom

manipulatives. As one participant noted: “*We invented paper-based teaching aids... for 3D geometry, we advised parents to use boxes from their homes*” (DD-A-211129-23). These practices illustrate how early childhood educators attempted to preserve experiential learning principles under materially constrained conditions.

4. Persistent instructional and assessment limitations: Despite these adaptations, participants widely acknowledged ongoing limitations in online teaching effectiveness. Monitoring children’s engagement and learning progress through screens proved particularly difficult. Teachers frequently relied on parental photo uploads or informal encouragement rather than formal assessment procedures (ZZ-A-211116-25; TT-A-211116-23; DD-B-211129-17, 29). As one administrator reflected: “*At the beginning... it was more about emotional connections... and creating activities that fit their age and encouraged parent-child interaction*” (TT-A-211116-23). Teachers also observed that while older kindergarteners could sometimes log in independently (ZZ-A-211116-27), children’s sustained attention remained uneven, and post-return recall of online content was limited (DD-A-211129-31).

The above findings suggest that early childhood online learning functioned within a set of enduring developmental, relational, and material constraints. School leaders were therefore not merely implementing digital instruction but continuously negotiating the boundaries of what was pedagogically feasible for young children and also acceptable to parents or caregivers. From an adaptive leadership perspective, the work of sustaining program continuity required ongoing alignment among technological possibilities, child development needs, and family capacity. These tensions help explain why relational connection, rather than academic coverage alone, became a central organizing priority during the closure period.

Theme 6: Emerging Organizational Learning and Resilience

Although the initial transition to remote learning was marked by uncertainty and improvisation, evidence across cases suggests that kindergarten leaders and teachers gradually developed new organizational capacities that extended beyond short-term crisis response. Participants’ accounts indicate that the pandemic functioned as an intensive learning period during which instructional practices, collaboration patterns, and leadership routines were progressively recalibrated.

1. From improvisation to more coordinated practice: In the early weeks of school closure, many teachers assumed the disruption would be brief and therefore focused primarily on maintaining emotional connection rather than formal academic coverage (TT-A-211116-06). However, as remote learning continued, schools moved toward more structured forms of coordination. Collaborative teaching arrangements became more systematic, with teachers working in specialized teams responsible for video production, instructional materials, online interaction, and student care. As one participant described, “*At first, we divided teachers into... a video production team, a teaching aids team, an online testing team, and a caregiving team*” (DD-A-211129-05). These emerging divisions of responsibilities suggest a shift from ad hoc responses toward more organized collective adaptation.

2. Uneven but meaningful pedagogical adjustment: Participants also reported that schools learned to differentiate the extent to which existing pedagogical models could be transferred online. Programs using thematic or learning-center approaches were generally able to preserve core routines such as storytelling and group discussion, albeit in modified form (DD-A-211129-12; ZZ-A-211116-14). In contrast, settings grounded in Montessori principles experienced deeper tensions, as individualized pacing and hands-on learning proved difficult to replicate digitally. As one administrator reflected, online delivery required all children to follow a common schedule, which “*contradicted Montessori principles*” (DD-A-211129-08). Rather than fully resolving these tensions, DD Kindergarten reframed their online offerings as “activities” rather than direct equivalents of classroom instruction (DD-AB-211129-78, 22). This reframing reflects an important form of adaptive learning—recognizing the limits of technical substitution and adjusting expectations accordingly.

3. Building new teacher capacities: Across sites, teachers reported substantial growth in digital competence and cross-role collaboration. Many educators became proficient in video production, editing, and livestream facilitation (DD-A-211129-11, 33), and new patterns of peer support emerged as teachers assisted one another with filming and online delivery (DD-A-211129-04). At the same time, participants emphasized the significant labor intensification associated with these new practices. As one teacher noted, “*online teaching was more demanding than in-person teaching*” (DD-A-211129-04; ZZ-A-211116-23). This combination of skill development and workload strain highlights the dual nature of organizational learning under crisis conditions.

4. Persistent limits and forward-looking adjustments: Despite these gains, administrators remained cautious about the instructional limits of early childhood online learning. Monitoring children’s engagement, recreating classroom learning areas, and conducting meaningful assessments all remained challenging (TT-A-211116-26, 29; ZZ-A-211116-03). Many participants, therefore, emphasized that future online provision would continue to prioritize emotional connection over narrow academic targets. As one administrator stated, “*If we encounter a similar situation again... the main goal... will be to prioritize building emotional connections*” (TT-A-211116-29).

At the same time, several kindergartens reported concrete forward planning. Schools expressed intentions to retain hybrid delivery models, develop reusable video libraries (DD-A-211129-18, 32), and strengthen future

assessment approaches when more time and stability were available. These anticipatory actions suggest that pandemic experiences were being translated into longer-term organizational preparation.

Taken together, the cross-case evidence indicates that kindergarten responses to the nationwide school closure evolved from immediate crisis management toward more durable forms of organizational learning. Importantly, this learning did not take the form of full technical mastery of online early childhood education. Instead, leaders and teachers developed a more nuanced understanding of the developmental, relational, and material boundaries within which remote provision could operate.

From an adaptive leadership perspective, resilience in these early childhood settings emerged not through the elimination of constraints but through the capacity to continuously recalibrate practices, redistribute expertise, and sustain relational continuity under shifting conditions. These findings offer distinctive insight into how leadership in routine-dependent early childhood organizations responds to systemic disruption. They highlight that in ECE contexts, adaptive capacity is closely tied to relational work, pedagogical flexibility, and realistic boundary-setting rather than to technological adoption alone.

V. Research Conclusions and Discussion

5.1. Reframing kindergarten responses through adaptive leadership

This study set out to examine how kindergarten administrators navigated the nationwide school closure through processes of sensemaking, adaptive leadership enactment, and emerging organizational resilience. The findings suggest that the rapid shift to remote learning in early childhood settings was not primarily a technical transition but an adaptive organizational challenge that required continuous interpretation, relational coordination, and structural adjustment.

Consistent with adaptive leadership theory (Heifetz et al., 2009), administrators were required to mobilize teachers and families in the face of conditions that could not be resolved through existing routines alone. The closure disrupted the highly routinized, relationship-intensive nature of early childhood programs, exposing vulnerabilities that extended beyond instructional delivery. Rather than relying solely on technological solutions, leaders engaged in ongoing sensemaking work, clarifying expectations, redistributing responsibilities, and stabilizing staff and family confidence. These patterns extend prior research on educational leadership during COVID-19 by demonstrating how adaptive work unfolds in organizational contexts where care, routine, and relational continuity are central to program functioning.

Organizational support as adaptive infrastructure

The findings also reinforce and extend prior scholarship emphasizing the importance of administrative support during pandemic disruptions (e.g., Douglass, 2019; Harris & Jones, 2020). In the present study, leadership support operated as a form of adaptive infrastructure that enabled teachers to remain engaged despite high levels of uncertainty and workload intensification. Importantly, administrative actions were not limited to the provision of hardware or technical guidance. Instead, leaders simultaneously addressed emotional reassurance, workload structuring, and financial stabilization.

This multi-layered support aligns with resilience research suggesting that organizational continuity depends on both technical and relational capacities. In early childhood contexts, where professional collaboration and emotional labor are particularly salient, the ability of leaders to reduce anxiety and maintain collective focus appeared especially consequential. These findings therefore contribute to the growing literature on crisis leadership by illustrating how adaptive leadership in ECE settings is enacted through the orchestration of people, routines, and relationships rather than through technology adoption alone.

Reconfiguring school–family partnerships in early childhood settings

A particularly distinctive contribution of this study lies in documenting how school–family relationships were reconfigured during the closure period. Consistent with ecological perspectives on child development by Bronfenbrenner, learning continuity in early childhood education proved highly dependent on the alignment between home and school environments (Egan & Pope, 2022). Parents did not function merely as support figures but became active co-educators who mediated children’s access to online learning.

This intensified reliance on families both enabled and constrained program continuity. On one hand, proactive communication and technical guidance from schools helped sustain engagement, echoing prior findings on the importance of family–school communication during COVID-19 (Egan & Pope, 2022; Keengwe & Onchwari, 2022). On the other hand, variability in parental capacity, digital access, and home learning conditions introduced new forms of inequity and role strain. These tensions underscore that adaptive leadership in ECE must extend beyond internal school management to include ongoing relational work with families operating under uneven conditions.

5.2. Developmental constraints and the limits of technical substitution

Another key insight emerging from this study concerns the developmental boundaries of online learning in early childhood contexts. While the participating kindergartens demonstrated considerable ingenuity in modifying lesson length, pacing, and materials, educators consistently emphasized that remote instruction could not fully replicate the interaction-rich, play-based nature of in-person early childhood education.

This finding complicates more technologically optimistic narratives of pandemic-era online learning. Consistent with prior research noting young children’s limited self-regulation and need for embodied

interaction (e.g., Timmons et al., 2022), participants in this study repeatedly prioritized emotional connection and relational continuity over formal academic coverage. From an adaptive leadership perspective, this shift reflects not a failure of implementation but an important form of boundary recognition—an acknowledgement of what can and cannot be achieved through digital mediation in early childhood settings.

5.3. Contemporary relevance after the pandemic

Although this study examines responses to the 2021 school closure, its contributions extend beyond the immediate COVID-19 context. The findings highlight structural features of early childhood organizations—namely, their reliance on routine stability, relational density, and family co-regulation—that make them uniquely sensitive to systemic disruption. These characteristics are not pandemic-specific and are likely to shape leadership responses to future crises, whether public health-related, environmental, or demographic. Viewed through this broader lens, the study offers timely insight into how adaptive leadership operates in routine-dependent educational settings. It demonstrates that resilience in ECE is less about rapid technological substitution and more about leaders' capacity to:

- □ sustain relational trust,
- □ redistribute work under uncertainty, and
- □ recalibrate pedagogical expectations in developmentally appropriate ways.

These insights contribute to the educational administration literature by foregrounding early childhood education as a distinct organizational context in which adaptive leadership takes on particular relational and developmental dimensions.

5.4. Implications

1. Theoretical implications: This study contributes to the educational administration literature by extending adaptive leadership and organizational resilience frameworks into the early childhood education (ECE) sector, a context that has been comparatively underexamined in pandemic-related leadership research. While prior studies have documented school leaders' technological and managerial responses to COVID-19, the present findings highlight the distinctive relational and developmental conditions that shape adaptive work in kindergarten settings.

First, the study demonstrates that adaptive leadership in ECE operates within highly routine-dependent and relationship-intensive organizational environments. Disruption did not simply require instructional substitution but triggered system-wide recalibration involving teachers, families, and organizational routines. This finding refines adaptive leadership theory by illustrating how the balance between technical and adaptive work is mediated by the developmental characteristics of the learner population.

Second, the findings contribute to resilience scholarship by showing that organizational resilience in early childhood settings is strongly relational in nature. Rather than emerging primarily through technological capacity, resilience was enacted through sustained communication, emotional stabilization, and the redistribution of professional roles. This suggests that prevailing resilience models in educational administration may benefit from greater attention to relational infrastructure, particularly in care-centered educational contexts.

Third, by foregrounding the role of families as co-regulators of learning continuity, the study advances ecological perspectives on educational leadership. The results indicate that in ECE settings, adaptive capacity extends beyond the school boundary and is co-produced through home-school alignment. This insight has broader relevance for leadership research in other educational sectors serving young or highly dependent learners.

This study extends adaptive leadership scholarship by demonstrating that in early childhood settings, adaptive work is fundamentally mediated by developmental and relational constraints that are less visible in studies of K-12 contexts.

2. Practical implications for early childhood leaders: The findings also offer several implications for practitioners in early childhood administration. First, crisis preparedness in ECE should extend beyond technological readiness to include relational and organizational planning. The experiences documented in this study suggest that maintaining frequent, transparent communication with families and staff is central to stabilizing programs during periods of disruption.

Second, administrators should anticipate the need to actively redistribute work and provide structured scaffolding when instructional modes shift. The rapid formation of teacher support teams, technical coaching, and workload coordination observed in this study illustrates how leadership can reduce uncertainty and sustain staff engagement under rapidly changing conditions.

Third, leaders should approach online or hybrid provision in early childhood settings with developmentally grounded expectations. The findings indicate that emotional connection, routine continuity, and family partnership remain core priorities even when digital tools are employed. Efforts to expand technology use in ECE should therefore be accompanied by careful attention to pedagogical pacing, hands-on learning opportunities, and parent capacity.

Finally, the study highlights the importance of building organizational slack and anticipatory capacity. Practices such as developing reusable digital resources, strengthening cross-role collaboration, and

maintaining flexible communication channels may enhance readiness for future disruptions beyond the pandemic context. While situated in Taiwan, the findings speak to broader challenges faced by routine-dependent early childhood systems responding to systemic disruption.

VI. Directions for future research

Several directions for future research emerge from this study. First, the present analysis focuses on administrators' perspectives; future studies could incorporate teachers', parents', and children's voices to provide a more fully triangulated account of adaptive processes in early childhood settings. Second, comparative research across different policy environments or cultural contexts would help clarify how system-level conditions shape adaptive leadership in ECE.

Last but not least, as digital technologies continue to expand in early childhood education, further research should investigate how leaders balance innovation with developmental appropriateness. Understanding this boundary work will be critical for advancing both theory and practice in early childhood educational leadership.

VII. Research Limitations

This study should be interpreted in light of several limitations. First, the analysis draws primarily on interviews with administrators from four private kindergartens in Taiwan. While this design enabled in-depth examination of leadership processes during systemic disruption, the findings are contextually bounded and are not intended to represent all early childhood settings. Future research incorporating a broader range of institutional types and policy environments would help strengthen the transferability of these insights.

Second, the study centers on leadership perspectives. Although administrators provided rich accounts of organizational adaptation, the absence of systematic data from teachers, parents, and children limits the ability to fully triangulate the relational dynamics documented here. Multi-perspective studies would provide a more comprehensive understanding of adaptive processes in early childhood contexts.

Finally, this study focused on kindergartens that chose to implement online learning. Programs that fully suspended instruction during the closure period were not included, and their decision-making processes remain an important area for future investigation. Examining variation in organizational responses would deepen understanding of adaptive capacity across the early childhood sector.

VIII. Conclusion

The nationwide school closure represented an unprecedented disruption for early childhood education. As one participant vividly reflected, the experience felt "*like a magical journey... you never knew what was ahead*" (DD-A-211129-05). Yet beyond the uncertainty, the findings of this study reveal how kindergarten leaders, teachers, and families engaged in sustained adaptive work to maintain relational continuity and organizational functioning under highly constrained conditions.

Viewed years after the pandemic, the significance of these experiences lies not in the rapid adoption of online teaching alone, but in the deeper organizational learning that emerged. The cases demonstrate that in early childhood settings—where routines, relationships, and developmental responsiveness are tightly interwoven—adaptive leadership depends less on technological substitution and more on the capacity to interpret uncertainty, mobilize collective effort, and recalibrate expectations in developmentally appropriate ways.

As early childhood systems continue to face evolving forms of disruption, the lessons documented here underscore the importance of relationally grounded and context-sensitive leadership. Preparing for future uncertainty in ECE will require not only technical readiness but also the cultivation of organizational conditions that support ongoing sensemaking, flexible coordination, and sustained family partnership.

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