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Managing Inclusive Educational Infrastructure for Children with Autism Spectrum Disorder: A Case Study of Adaptive and Child-Centered Facility Governance

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ABSTRACT
Background. This study addresses the need for effective management of inclusive educational infrastructure for children with Autism Spectrum Disorder (ASD). While inclusive education research has largely focused on pedagogy and instructional practices, there has been limited attention paid to infrastructure management as a central component of inclusive educational governance, particularly in early childhood settings. Appropriate infrastructure is essential for supporting both learning and therapeutic processes for children with ASD.
Method. This research employed a qualitative case study design at the EDUfa Autism Therapy Center. Data were collected through systematic observations, in-depth interviews with therapists, parents, and administrative staff, and document analysis. This approach enabled a contextual understanding of how inclusive infrastructure is planned, utilized, and managed within an integrated educational therapeutic environment.
Result. The findings show that EDUfa's infrastructure, such as calming therapy rooms, flexible learning spaces, sensory transition zones, and educational toilets, is intentionally designed to accommodate the sensory, cognitive, and emotional needs of children with ASD. Infrastructure management practices are characterized by responsiveness, adaptability, and collaborative stakeholder involvement in planning and evaluation. Simple innovations, such as daily facility condition reports and low-tech monitoring systems, support the sustainability and functionality of facilities.
Conclusion. The study concludes that inclusive educational infrastructure management extends beyond technical operations to reflect inclusive educational values. Theoretically, it contributes to inclusive educational management by positioning infrastructure as an active managerial element in inclusive early childhood education. Practically, the EDUfa model offers replicable strategies for creating responsive, child-centered learning environments.

1. INTRODUCTION

Early Childhood Education (ECE) represents a critical developmental phase that lays the foundation for children's cognitive, social, emotional, and physical growth. Commonly

referred to as the "golden age," this period is characterized by heightened neuroplasticity, during which learning experiences and environmental stimuli exert enduring influences on children's developmental trajectories (Blewitt et al., 2020). Consequently, the effectiveness of ECE programs is not solely determined by pedagogical practices but is also fundamentally shaped by the quality of supporting systems, including educational infrastructure. In Indonesia, ECE has been consistently prioritized within national education policies, with inclusive education principles increasingly embedded across strategic frameworks. Despite these policy commitments, the practical realization of inclusive education at the early childhood level remains uneven, particularly in addressing the needs of children with Autism Spectrum Disorder (ASD) (Syarifudin, 2025b).

Children with ASD present distinctive profiles in communication, social interaction, behavioral regulation, and sensory processing (Yang, 2024). These characteristics necessitate educational responses that extend beyond curriculum adaptation to include deliberately designed physical environments that support emotional regulation, sensory modulation, and therapeutic engagement. Inclusive education for children with ASD, therefore, requires infrastructure that is intentionally responsive to their developmental and sensory needs. However, many ECE institutions, especially in low and middle-income contexts, continue to operate within environments designed primarily for neurotypical learners. Such spaces frequently neglect the spatial, sensory, and functional requirements associated with autism, thereby constraining the effectiveness of inclusive practices (Ibrahim & Al-Dabbagh, 2023). This condition illustrates a persistent disjunction between inclusive education policy aspirations and their material enactment.

From an institutional perspective, schools occupy a strategic position in translating inclusive principles into operational realities. Inclusive educational infrastructure should not be conceptualized merely as physical facilities but as integrated learning environments that actively promote safety, comfort, emotional well-being, and developmental support for all children, including those with ASD (Dalkilic, 2019). Empirical evidence suggests that calm classroom atmospheres, controlled lighting, reduced sensory distractions, and access to therapy-support spaces are essential for minimizing anxiety and facilitating engagement among children with ASD. When such infrastructural considerations are insufficiently addressed, learning processes risk becoming ineffective and may even exacerbate stress-related behaviors.

Globally, scholarly discourse on inclusive education has predominantly focused on pedagogical strategies, teacher competencies, and curriculum differentiation. Although research has acknowledged the influence of physical learning environments on children with ASD, particularly in relation to sensory sensitivity and behavioral regulation (Gaines et al., 2014), infrastructure is frequently treated as a secondary or technical concern. There remains a

limited body of research that explicitly conceptualizes educational infrastructure management as a central component of inclusive education governance, especially within early childhood settings. As a result, theoretical integration between inclusive education frameworks and educational management theories related to infrastructure remains underdeveloped.

Within the Indonesian context, this gap is further accentuated. Existing empirical studies on inclusive education have largely concentrated on instructional practices, teacher preparedness, and policy implementation, while systematic investigations into the management of inclusive educational infrastructure are scarce (Azizah et al., 2024). In particular, there is limited evidence on how management functions, such as planning, organizing, implementing, and controlling (POAC), are operationalized to support inclusive infrastructure in ECE institutions serving children with ASD. This lack of infrastructure-focused research constrains the development of empirically grounded and contextually relevant models for inclusive educational management in Indonesia.

Responding to these global and local gaps, this study offers a novel contribution by repositioning inclusive educational infrastructure as an active managerial and pedagogical agent within early childhood education. Drawing on classical management theory (POAC) and inclusive education principles, this research advances the conceptualization of infrastructure management beyond technical maintenance toward a value-driven practice reflecting institutional commitments to equity, accessibility, and diversity (Syarifudin, 2025a). Through an in-depth case study of the EDUfa Autism Therapy Center, this study contributes to inclusive educational management theory by demonstrating how infrastructure can be systematically planned, utilized, and adapted to integrate educational and therapeutic objectives for children with ASD. The findings extend the inclusive education literature by foregrounding infrastructure management as a critical yet underexamined dimension of inclusive governance.

EDUfa Autism Therapy Center provides a salient context for this investigation. As an institution integrating educational and therapeutic services for young children with ASD, EDUfa has developed purposefully designed facilities, including behavioral therapy rooms, sensory integration spaces, adaptive playgrounds, and inclusive rest areas. Notably, its infrastructure management practices are dynamic and participatory, involving parents, therapists, educators, and administrators in ongoing planning and evaluative processes.

Accordingly, this study aims to examine how EDUfa manages inclusive educational infrastructure to support early childhood education for children with ASD. Specifically, the study seeks to: (1) identify the physical and functional characteristics of infrastructure that support learning and therapeutic processes; (2) analyze management strategies employed in the planning, utilization, and improvement of facilities; and (3) explore challenges and adaptive

strategies in sustaining an inclusive and responsive learning environment. Aligned with national development priorities and Sustainable Development Goal (SDG) 4.2 on equitable access to quality early childhood education (Li & Rao, 2023), this study addresses the following research questions: (1) What infrastructural characteristics support the learning needs of children with ASD at EDUfa? (2) How is inclusive infrastructure managed within the institution? Moreover, (3) What challenges and solutions emerge in developing an adaptive and sustainable inclusive educational environment?

2. METHODS

This research employed a qualitative method, using a single case study to focus on the EDUfa Autism Therapy Center. The methodology selection was informed by the desire to achieve in-depth, contextual insight into the management of educational infrastructure within an integrated early childhood education (ECE) environment for children with Autism Spectrum Disorder (ASD). Case studies enable an in-depth examination of phenomena within real-life contexts, allowing researchers to identify the processes, strategies, and dynamics that naturally emerge in the institution being researched (Tobita, 2025). The research approach seeks not just to illuminate what is being done but also the mechanisms and rationale behind the implementation of specific practices (Hwang et al., 2024).

EDUfa Autism Therapy Center was specifically selected as the location for this research due to its dual role as an educational and therapy center exclusively serving young children with ASD through an integrated service model. The center combines educational and therapeutic functions within a single service framework, explicitly designed to meet the distinctive needs of its pupils. The choice was based on EDUfa's unique characteristics and its innovative approach to managing educational infrastructure, which is both flexible and applicable to inclusive education. The research recruited a range of key informants, including institutional managers, therapists, and the children's parents. The variety of informants was intended to generate a comprehensive picture from different perspectives, thereby enriching the data and analysis (Pahwa et al., 2023).

The data collection methodology employed three major approaches: direct observation, in-depth interviews, and document analysis. An observational study was conducted across several physical environments that form part of EDUfa's educational philosophy, including classrooms, therapy rooms, sensory rooms, and educational playgrounds. Direct observation was intended to describe the dynamics of spatial use in actual contexts, particularly regarding children's interactions with carefully designed physical spaces. Deep, semi-structured interviews were conducted with the participants, utilizing open-ended questions that allowed them to respond in terms of their perceptions and experiences. This interview not only explores perceptions but also concrete practices and strategies

implemented in the management of educational facilities. In addition, the researcher collected important documents, including spatial plans, standard operating procedures (SOPs), activity reports, and visual documentation, that support understanding of the infrastructure's structure and function.

The gathered information was examined using a thematic approach to uncover patterns and meanings arising from the interaction between the informants and the research context (Buser et al., 2023). The analysis began with transcribing interview data, followed by coding to identify meaningful units. These codes were grouped into overarching themes that captured the study's substance, including inclusive design, managerial styles, the integration of educational and therapeutic roles, and the constraints of infrastructure realization. Iterative analysis was conducted with constant reflection of initial findings back into the field setting to produce sharp, detailed, and contextualized meanings (Srivastava & Hopwood, 2009).

To establish the validity and reliability of the data gathered, this study employed source and methodological triangulation by comparing data collected through observations, interviews, and document analysis. This triangulation approach was essential in rendering the data more credible and simultaneously reducing interpretive bias (Puentes Borges et al., 2018). The member checking was also carried out by cross-checking emerging findings with key informants to help ensure that the researcher's interpretation reflected their experience and intended meaning. The entire analysis process is recorded in reflective journals and field notes, which serve as systematic documentation to maintain academic traceability.

With this structured methodological framework, the research is expected to present a comprehensive and contextual picture of the practice of managing inclusive educational facilities and infrastructure at the PAUD level. Taking EDUfa as a case study demonstrates how learning infrastructure can be managed in a creative, adaptive, and needs-based way, providing not just functional but also meaningful learning environments for children with special needs.

3. RESULTS AND DISCUSSION

RESULTS

a. Characteristics of Infrastructure at EDUfa

The physical environment at EDUfa Autism Therapy Center is purposefully crafted to support the developmental profiles of young children diagnosed with Autism Spectrum Disorder (ASD). Rather than being designed solely for aesthetics, every spatial aspect integrates sensory, cognitive, and emotional considerations that reflect the children's unique needs (Canlı, 2025). Field observations and interviews confirmed that nearly all rooms and facilities at EDUfa are designed to serve dual functions—as both learning and therapeutic environments.

For example, individual therapy rooms are intentionally structured to foster calmness and reduce sensory overload. Natural lighting is maximized, while wall colors are kept to soft, neutral pastels, and ambient noise is minimized. Furniture is designed with safety and comfort in mind, featuring rounded edges and ergonomic designs. As one therapist (Therapist A) explained,

"We try to create a calming environment. These children are sensitive to sound, light, and color. So, the room must be soothing, not overly stimulating."

Small-group learning rooms further embody flexibility. The furniture layout is adaptable, allowing educators to rearrange setups according to each child's preferences, learning style, and mobility needs. Activities are personalized, not standardized, allowing space for the child to follow rather than forcing the child to adjust to the space. As another therapist (Therapist B) shared,

"Each child has their learning rhythm. Some need to move around frequently, and others can only focus for brief periods. So the space must adapt to them, not the other way around."

This foundational attention to spatial inclusivity sets the tone for the institution's broader management practices (Birkhead & Hand, 2024).

Table 1. EDUfa Infrastructure Features by Room Function and Purpose

Room Type	Special Features	Educational Purpose	Therapeutic Purpose
Individual Therapy Room	Soft pastel colors, natural lighting, sound-minimizing design	Supports individual focus and concentration	Reduces sensory overload
Small-Group Learning Room	Flexible layout, ergonomic chairs, movable furniture	Enables interactive and adaptive learning	Adjusts to mobility and sensory needs
Sensory Transition Area	Calm lighting, a ventilated space between the main rooms	Prepares students for upcoming activities	Supports emotional regulation and calming
Educational Toilet	Visual guides, color-coded fixtures, and child-height sinks	Promotes independent daily living skills	Trains routine hygiene and autonomy

b. Management Principles and Strategies

The infrastructure management at EDUfa is grounded in a key principle: Spaces must respond to children's needs rather than merely conform to standardized norms. In practice, this principle is translated into flexible, adaptive, and collaborative management strategies.

Detailed adjustments to accommodate children's sensory needs are provided. Lighting, sound, textures, and even smells are carefully selected to avoid overstimulation (Bright & Egger (is-design GmbH), 2008). For example, classrooms use warm-toned, non-flickering, quiet LED lights. Wall and floor textures are soft and non-reverberating. As the institution's manager explained,

"Many of our children are frightened by loud noises or reflected light. If the room is not adjusted, they cannot focus at all."

EDUfa also adopts a cross-functional collaborative management strategy. Teachers, therapists, parents, and administrators are all involved in planning and evaluating facilities. A semesterly evaluation forum is held, during which all stakeholders provide feedback on space development. One parent expressed appreciation:

"I feel valued because I can give input on my child's classroom. EDUfa is very open."

Participation extends to implementation. Teachers regularly submit reports on classroom conditions to management, including requests for minor improvements or additional learning aids. This suggests that EDUfa's management strategy is not top-down but instead emerges from day-to-day interactions with children and their evolving needs (Carbines et al., 2017).

Table 2. Inclusive Management Strategies and Their Implementation at EDUfa

Management Principle	EDUfa's Practices	Stakeholder
Responsive to children's needs	Adjustments in lighting, sound, and spatial textures	Therapists, Parents
Collaborative	Semester-based evaluation forums	Therapists, Parents, Management
Adaptive and Flexible	Dynamic classroom layouts, regular facility condition reports	Management, Therapist

c. Innovations in Inclusive Educational Infrastructure

One of EDUfa's standout strengths is its ability to develop functional, developmental, and context-sensitive innovations. These go beyond spatial design to integrate therapy and education within cohesive, adaptable environments (Nurazelina et al., 2024).

A notable example is the introduction of sensory transition areas—compact rooms placed between classrooms and therapy spaces. These transitional zones provide children with a buffer space to self-regulate, prepare emotionally, and transition smoothly into the next activity.

"Children with ASD often struggle with transitions between activities. This space helps them manage their emotions before entering the next session," explained Therapist C.

Equally innovative is the concept of the educational toilet, which merges hygiene training with life skills development (Adenya, 2009). Features such as visual usage guides, color-coded fixtures, and appropriately sized sinks help children navigate toilet routines with increasing independence.

"We want children to develop independence. So we start early, even with something as simple as going to the toilet," said Therapist A.

Beyond physical spaces, EDUfa also developed a form-based reporting system for tracking classroom and facility conditions. Staff complete these simple forms daily, feeding into a preventive maintenance workflow. This system exemplifies that meaningful innovation does not always require high-end technology—contextual, low-tech solutions can be just as impactful when thoughtfully implemented.

d. Challenges and Constraints

Despite its achievements, EDUfa faces considerable structural and operational hurdles that threaten the sustainability of its inclusive education services. The most pressing challenges revolve around funding constraints and human resource limitations (Matjošaityte, 2024).

The cost of delivering a comprehensive range of therapies, including speech, occupational, behavioral, and sensory programs, is substantial. These services require specialized equipment, personalized spaces, and qualified professionals. As the institution's manager reflected,

> *"We are very cautious in structuring service fees. We want them to be affordable, but therapy operations are expensive, and cutting costs could mean sacrificing quality."*

This tension between maintaining quality and ensuring affordability creates a persistent dilemma. For families, the burden is equally real. One parent shared candidly:

> *"We have had to reorganize our household budget. This therapy is essential, but it is expensive and takes years."*

The financial burden has practical consequences. Several children have had to reduce or discontinue therapy due to affordability issues despite a continued need for intensive support. Although EDUfa has pursued creative financing strategies such as cross-subsidization, crowdfunding, and CSR partnerships, these have yet to bridge the funding gap fully. The experience suggests that equitable infrastructure management cannot succeed without a sustainable, inclusive financing model (Popescu et al., 2023).

Simultaneously, the center grapples with a shortage of professionally trained therapists. Ideally, staff should have academic backgrounds in Special Education, Child Psychology, or Occupational Therapy. However, such professionals remain scarce, and many prefer working in larger urban institutions with better career prospects and compensation.

> *"We often struggle to find truly qualified therapists. Many come from general education backgrounds, so we have to provide intensive training before they can work effectively with the children,"* said the Therapy Coordinator.

While EDUfa offers internal training and supervision, this onboarding process requires significant time and resources, and cannot fully substitute for formal academic preparation. Staff turnover exacerbates the problem, impacting both the quality and continuity of care. Children with ASD often form strong bonds with their therapists and rely on stable routines. Sudden personnel changes can lead to confusion, anxiety, or behavioral regressions.

These two challenges—cost and human capital—are closely intertwined. Limited funding constrains recruitment and professional development, while the lack of qualified personnel necessitates further investment. EDUfa's experience makes it clear that managing inclusive educational infrastructure cannot be reduced to architectural or technical considerations alone. Instead, it is an interdependent system that requires sustainable

strategies in financing, staffing, and stakeholder engagement to meet the evolving needs of children with ASD effectively (Harkin & Efron, 2022).

DISCUSSION

a. Interpretation of Findings through Theoretical Lenses

The findings of this study reveal that the management of educational infrastructure at EDUfa Autism Therapy Center goes beyond mere administrative compliance; it reflects a deep commitment to the dignified implementation of inclusive early childhood education. In the context of educational management, this approach embodies the principles of infrastructure administration that encompass not only physical aspects but also pedagogical and psychosocial dimensions, especially for children on the autism spectrum (Khougar et al., 2023).

According to George R. Terry (1972), management in education includes planning, organizing, directing, and controlling resources to achieve educational goals effectively (Pd Purwadhi, 2019). The present study illustrates how these four functions are carried out simultaneously and contextually at EDUfa. Planning involves collaborative input from teachers, therapists, and parents; organization is based on children's sensory needs; direction is achieved through a culture of professional collaboration; and monitoring occurs through participatory, routine evaluations.

Viewed through the lens of Universal Design for Learning (UDL), EDUfa's physical environment represents a conscious effort to accommodate learner variability from the outset. UDL emphasizes that learning environments must not be tailored for the "average" student but rather must include a broad range of learner variability, including children with ASD (Connor & Wheat, 2023). By providing sensory rooms, educational gardens, transition areas, and life-skills-oriented restrooms, EDUfa has physically embodied UDL principles, effectively bridging educational and therapeutic spaces.

EDUfa's approach also aligns with Peter Drucker's human-centered management philosophy, which posits that the success of educational organizations depends on sensitivity to human needs. Within this framework, space is not treated as a static entity but as part of a larger system of intervention that supports holistic child development (Siemsen & Reschke, 2012). Therefore, infrastructure management at EDUfa reflects not only managerial competence but also an "ethics of care" for children with special needs.

b. Practical Relevance for Inclusive Early Childhood Education

The findings of this study are particularly relevant for demonstrating how inclusive principles can be concretely translated into infrastructure governance in early childhood education settings, especially in Indonesia's evolving educational landscape. EDUfa shows that even with limited resources, institutions can design functional, safe, and humane environments for learners.

Other early childhood institutions can draw on EDUfa's example, which suggests that inclusive infrastructure does not require luxurious facilities but rather depends on purposeful design, a child-centered orientation, and sustainable maintenance. As Squires (2023) asserts, inclusion is not merely about allowing children to attend school—it is about how well the system adapts to the diversity of learners. EDUfa demonstrates that spatial and facility adjustments can serve as tangible, measurable, and inclusive strategies for enhancing educational experiences.

The study also highlights the importance of cross-professional collaboration and parental involvement in space design and facility management. Empowered, inclusive education environments foster an open ecosystem of mutual learning and support (Černiševs et al., 2024). EDUfa has successfully built this ecosystem through regular evaluation forums, internal capacity-building initiatives, and partnerships with external stakeholders, including universities and professional volunteers. This model is particularly adaptable for early childhood institutions in rural or resource-constrained areas.

Additionally, innovative practices such as educational toilets, sensory transition areas, and inclusive play zones offer inspiration for integrating cognitive, motor, and social development into everyday spatial design (Parker et al., 2022). This underscores that infrastructure should be seen not as passive support but as an active part of the learning process.

c. Contributions to Policy Development

The research also exposes regulatory and policy gaps that hinder the development of an inclusive educational infrastructure in Indonesia. To date, there are no clear national guidelines that define minimum standards for inclusive ECE spaces, leaving many institutions without direction in designing environments that cater to children with special needs.

This research advocates for the creation of technical national guidelines that specify inclusive spatial standards encompassing lighting, acoustics, and visual supports, as well as therapeutic and sensory zones (Parker et al., 2022). These guidelines must be informed by both universal design principles and local sociocultural realities, developed in collaboration with practitioners, parents, and scholars.

This study recommends the formulation of national technical regulations for inclusive early childhood infrastructure, including spatial dimensions, lighting, acoustics, visual aids, and therapeutic zones (Bartolo et al., 2021). These standards should be grounded in universal design principles, informed by the experiences of practitioners, scholars, and parent communities, and reflect Indonesia's diverse sociocultural contexts. Such guidelines would help institutions build not just physically adequate but pedagogically meaningful facilities.

Another policy implication concerns funding. There is a pressing need for direct government support, including infrastructure subsidies and incentive programs, for private,

inclusive ECE institutions that fulfill public service roles (Siller et al., 2021). Funding schemes, such as Special Allocation Funds (SAF) or targeted corporate social responsibility (CSR) initiatives, should be expanded to support these efforts. Inclusive infrastructure financing cannot rely solely on market mechanisms or parental contributions (Kapesa, 2024).

Furthermore, this study underscores the importance of certification and training programs in inclusive facility management. By equipping school leaders, teachers, and therapists with the skills to design and optimize learning environments, infrastructure can be managed more systematically. Such training could be integrated into teacher education programs, tiered professional development, or the Merdeka Campus initiative.

4. CONCLUSION

This study confirms that managing educational infrastructure for inclusive early childhood education—especially for children with Autism Spectrum Disorder—is a multifaceted challenge that extends beyond technical concerns. Instead, it is a profound pedagogical and managerial commitment to building safe, responsive, and empowering environments where every child can grow, learn, and thrive. The case of the EDUfa Autism Therapy Center exemplifies how thoughtfully designed spaces, when attuned to children's sensory profiles and developmental needs, transcend their physical functions to become sites of healing, belonging, and holistic education.

At the heart of EDUfa's approach lies a firm adherence to inclusive values—embodied not only in its policies but in the spatial and managerial decisions that shape everyday learning experiences. The center's commitment to inter-professional collaboration and sensitivity to sociocultural contexts enriches its infrastructure management practices. The incorporation of Universal Design for Learning (UDL) principles allows all children, regardless of ability, to engage meaningfully in the educational process. Such a model demonstrates that inclusive design is not about adding special features for a few but about creating an environment where diversity is anticipated and welcomed from the outset.

However, the study also surfaces persistent challenges that merit critical attention. Chief among these are the high costs of therapeutic services and the limited availability of professionals with specialized training in inclusive and autism-specific education. These constraints are interwoven, and they pose tangible threats to service quality and sustainability. While EDUfa has adopted adaptive strategies—such as internal capacity building, community engagement, and cross-subsidization—such innovations, though admirable, cannot substitute for the structural support that only robust public policy can provide. There is an urgent need for the state to provide clear technical guidelines for inclusive infrastructure, as well as equitable funding mechanisms, to ensure that such initiatives can thrive beyond the goodwill of a few committed institutions.

The broader implications of this study are multi-layered. On a practical level, EDUfa offers a replicable model for other early childhood institutions seeking to develop inclusive, child-centered facilities. Theoretically, it contributes to the evolving discourse on educational infrastructure by framing it as both a managerial challenge and a moral imperative in the context of inclusive education. From a policy perspective, the findings make a compelling case for national standardization efforts and capacity-building programs that equip institutions to deliver high-quality, inclusive learning environments.

It is essential to recognize the contextual limitations of this case study; EDUfa's experience may not be universally applicable. However, these limitations offer fertile ground for future inquiry—particularly comparative and mixed-method research that can test the generalizability of these insights. There is also a critical opportunity to develop a national framework for inclusive infrastructure management grounded in evidence and best practices from pioneering centers like EDUfa.

Ultimately, this study invites us to rethink infrastructure as more than walls and furniture. When managed with vision, care, and collaboration, educational spaces become bridges—connecting children not only to learning but to a more just and inclusive society that recognizes their worth from the very beginning.

5. REFERENCES

Adenya, E. A. (2009). Integrated water and sanitation life skills approaches: The Zambian case study. *Water, Sanitation and Hygiene: Sustainable Development and Multisectoral Approaches - Proceedings of the 34th WEDC International Conference*, 44706.

Azizah, N., Mumpuniarti, Rudiyati, S., & Evans, D. (2024). Elementary teachers' pedagogical competencies in supporting students with learning difficulties. *International Journal of Evaluation and Research in Education*, *13*(2), 723–730. https://doi.org/10.11591/ijere.v13i2.26345

Bartolo, P. A., Kyriazopoulou, M., Björck-Åkesson, E., & Giné, C. (2021). An adapted ecosystem model for inclusive early childhood education: a qualitative cross-European study. *International Journal of School and Educational Psychology*, 9(1), 3–15. https://doi.org/10.1080/21683603.2019.1637311

Birkhead, C., & Hand, M. C. (2024). Follow which leader? Spatial mimicry and broad-based equity- and profit-sharing plans. *Human Resource Management Journal*, 12578. https://doi.org/10.1111/1748-8583.12578

Blewitt, C., Morris, H., Nolan, A., Jackson, K., Barrett, H., & Skouteris, H. (2020). Strengthening the quality of educator-child interactions in early childhood education and care settings: a conceptual model to improve mental health outcomes for preschoolers. *Early Child Development and Care*, *190*(7), 991–1004.

https://doi.org/10.1080/03004430.2018.1507028

Bright, K., & Egger (is-design GmbH), V. (2008). Using visual contrast for effective, inclusive environments. *Information Design Journal*, *16*(3), 178–189. https://doi.org/10.1075/idj.16.3.02bri

Buser, J. K., Cheng, Y. J., & McLaughlin Parkins, R. A. (2023). Thematic Analysis. *Reimagining Research: Engaging Data, Research, and Program Evaluation in Social Justice Counseling*, 153–178. https://doi.org/10.4324/9781003196273-8

Canlı, M. (2025). Observational Methods and Assessment Criteria in Interior Design for Children with Autism Spectrum Disorder in Kindergartens: Developing Interpretative Frameworks for Sensory-Sensitive Educational Environments. *International Journal of Design in Society*, *19*(2), 105–123. https://doi.org/10.18848/2325-1328/CGP/v19i02/105-123

Carbines, M., Dickinson, A., & McKenzie-Green, B. (2017). The Parenting Journey: Daily Parental Management in Families with Young Children. *Comprehensive Child and Adolescent Nursing*, *40*(4), 223–239. https://doi.org/10.1080/24694193.2017.1373161

Černiševs, A., Medne, A., & Lapiņa, I. (2024). Promoting the Quality in Higher Education Institutions: Aspects of an Inclusive Environment. *Proceedings of the 28th World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI 2024*, 117–123. https://doi.org/10.54808/wmsci2024.01.117

Connor, C., & Wheat, V. (2023). The use of universal design for learning (udl) to enhance the learning of students of all abilities. *The Impact and Importance of Instructional Design in the Educational Landscape*, 207–227. https://doi.org/10.4018/978-1-6684-8208-7.ch008

Dalkilic, M. (2019). A capability-oriented lens: Reframing the early years education of children with disabilities. *Disrupting and Countering Deficits in Early Childhood Education*, 67–82. https://doi.org/10.4324/9781315102696-5

Gaines, K. S., Curry, Z., Shroyer, J. A., Amor, C., & Lock, R. H. (2014). The perceived effects of visual design and features on students with autism spectrum disorder. *Journal of Architectural and Planning Research*, *31*(4), 282–298.

Harkin, B., & Efron, D. (2022). Children with autism spectrum disorder: Consultation tips for GPs. *Medicine Today*, *23*(3), 59–62.

Hwang, S., Birken, S. A., & Nilsen, P. (2024). Implementation science research methods. *Implementation Science: Theory and Application*, 127–134. https://doi.org/10.4324/9781003318125-13

Ibrahim, H., & Al-Dabbagh, S. (2023). Designing Sensory Integration Spaces in Autism Centers (A Descriptive Approach). *The Iraqi Journal of Architecture and Planning*, *22*(1), 48–62. https://doi.org/10.36041/iqjap.2022.134207.1044

Kapesa, T. (2024). Infrastructure Financing and Financial Sustainability of Local Governments. *Financial Sustainability of Local Governments in Southern Africa*, 168–197.

https://doi.org/10.4324/9781003498230-10

Khougar, A., Baba Ahmadi, P., Ranjbar, H., Ahadi, M., & Ahadi, P. (2023). Exploring the varied manifestations of structural violence in the lives of children on the autism spectrum and their families: a qualitative longitudinal study in Kurdistan, Iran. *International Journal for Equity in Health*, *22*(1), 12939. https://doi.org/10.1186/s12939-023-02078-z

Li, Z., & Rao, N. (2023). Advancing Equity in Early Childhood Development in China: Progress in Meeting Sustainable Development Goal Target 4.2. *International Journal of Chinese Education*, *12*(2), 2212585. https://doi.org/10.1177/2212585X231175499

Matjošaityte, L. (2024). Legal Challenges in Managing Human Resources in the Public Sector. *Economic Innovations and Technological Developments in HRM*, 161–200. https://doi.org/10.4018/979-8-3693-4412-5.ch008

Nurazelina, A., Aryanti, T., & Kusuma, Y. (2024). Making school home: A therapeutic design for students with intellectual disabilities. *IOP Conference Series: Earth and Environmental Science*, *1404*(1), 12024. https://doi.org/10.1088/1755-1315/1404/1/012024

Pahwa, M., Cavanagh, A., & Vanstone, M. (2023). Key Informants in Applied Qualitative Health Research. *Qualitative Health Research*, *33*(14), 1251–1261. https://doi.org/10.1177/10497323231198796

Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning Through Play at School – A Framework for Policy and Practice. *Frontiers in Education*, *7*, 751801. https://doi.org/10.3389/feduc.2022.751801

Pd Purwadhi, M. (2019). The role of education management, learning, teaching, and institutional climate on quality of education: Evidence from Indonesia. *Management Science Letters*, *9*(9), 1507–1518. https://doi.org/10.5267/j.msl.2019.5.002

Popescu, C. R. G., Yu, P., & Wei, Y. (2023). Achieving the Sustainable Development Goals through infrastructure development. *Achieving the Sustainable Development Goals Through Infrastructure Development*, 1–303. https://doi.org/10.4018/979-8-3693-0794-6

Puentes Borges, A. E., Beatriz, D., Bencomo, P., & Rangel, E. (2018). Objetividad en la triangulación del diagnóstico Objectivity in diagnosis triangulation. *Revista Cubana de Investigaciones Biomédicas*, *37*(1), 6860.

Siemsen, H., & Reschke, C. H. (2012). Can one learn to think like Drucker? Lessons in personality and management education. *Management Research Review*, *36*(8), 767–787. https://doi.org/10.1108/MRR-12-2012-0259

Siller, M., Morgan, L., Wedderburn, Q., Fuhrmeister, S., & Rudrabhatla, A. (2021). Inclusive Early Childhood Education for Children With and Without Autism: Progress, Barriers, and Future Directions. *Frontiers in Psychiatry*, *12*, 754648. https://doi.org/10.3389/fpsyt.2021.754648

Squires, G. (2023). INCLUSION: Responding to diversity and ideological confusion. *Inclusion and Diversity: Communities and Practices Across the World*, 260–278.

https://doi.org/10.4324/9781003379034-20

Srivastava, P., & Hopwood, N. (2009). A Practical Iterative Framework for Qualitative Data Analysis. *International Journal of Qualitative Methods*, *8*(1), 76–84. https://doi.org/10.1177/160940690900800107

Syarifudin, F. (2025a). *DISPARITIES IN ACCESS AND SUSTAINABILITY IN INCLUSIVE*. *August*, 33–42.

Syarifudin, F. (2025b). *Managing Inclusive Educational Infrastructure for Children with Autism Spectrum Disorder : A Qualitative Case Study in Early Childhood Education*. *6*(2), 165–180.

Tobita, I. (2025). The Value of Case Study Methodology in Nursing Research. *Creative Nursing*, *31*(1), 8–12. https://doi.org/10.1177/10784535251321017

Yang, F. (2024). Communication disorders in children with autism spectrum disorder from a speech-language pathology perspective. *Zhongguo Ertong Baojian Zazhi*, *32*(3), 233–247. https://doi.org/10.11852/zgetbjzz2024-0114

Adenya, E. A. (2009). Integrated water and sanitation life skills approaches: The Zambian case study. *Water, Sanitation and Hygiene: Sustainable Development and Multisectoral Approaches - Proceedings of the 34th WEDC International Conference*, 44706.

Azizah, N., Mumpuniarti, Rudiyati, S., & Evans, D. (2024). Elementary teachers' pedagogical competencies in supporting students with learning difficulties. *International Journal of Evaluation and Research in Education*, *13*(2), 723–730. https://doi.org/10.11591/ijere.v13i2.26345

Bartolo, P. A., Kyriazopoulou, M., Björck-Åkesson, E., & Giné, C. (2021). An adapted ecosystem model for inclusive early childhood education: a qualitative cross-European study. *International Journal of School and Educational Psychology*, *9*(1), 3–15. https://doi.org/10.1080/21683603.2019.1637311

Birkhead, C., & Hand, M. C. (2024). Follow which leader? Spatial mimicry and broad-based equity- and profit-sharing plans. *Human Resource Management Journal*, 12578. https://doi.org/10.1111/1748-8583.12578

Blewitt, C., Morris, H., Nolan, A., Jackson, K., Barrett, H., & Skouteris, H. (2020). Strengthening the quality of educator-child interactions in early childhood education and care settings: a conceptual model to improve mental health outcomes for preschoolers. *Early Child Development and Care*, *190*(7), 991–1004. https://doi.org/10.1080/03004430.2018.1507028

Bright, K., & Egger (is-design GmbH), V. (2008). Using visual contrast for effective, inclusive environments. *Information Design Journal*, *16*(3), 178–189. https://doi.org/10.1075/idj.16.3.02bri

Buser, J. K., Cheng, Y. J., & McLaughlin Parkins, R. A. (2023). Thematic Analysis. *Reimagining Research: Engaging Data, Research, and Program Evaluation in Social Justice*

Counseling, 153–178. https://doi.org/10.4324/9781003196273-8

Canlı, M. (2025). Observational Methods and Assessment Criteria in Interior Design for Children with Autism Spectrum Disorder in Kindergartens: Developing Interpretative Frameworks for Sensory-Sensitive Educational Environments. *International Journal of Design in Society*, *19*(2), 105–123. https://doi.org/10.18848/2325-1328/CGP/v19i02/105-123

Carbines, M., Dickinson, A., & McKenzie-Green, B. (2017). The Parenting Journey: Daily Parental Management in Families with Young Children. *Comprehensive Child and Adolescent Nursing*, *40*(4), 223–239. https://doi.org/10.1080/24694193.2017.1373161

Černiševs, A., Medne, A., & Lapiņa, I. (2024). Promoting the Quality in Higher Education Institutions: Aspects of an Inclusive Environment. *Proceedings of the 28th World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI 2024*, 117–123. https://doi.org/10.54808/wmsci2024.01.117

Connor, C., & Wheat, V. (2023). The use of universal design for learning (udl) to enhance the learning of students of all abilities. *The Impact and Importance of Instructional Design in the Educational Landscape*, 207–227. https://doi.org/10.4018/978-1-6684-8208-7.ch008

Dalkilic, M. (2019). A capability-oriented lens: Reframing the early years education of children with disabilities. *Disrupting and Countering Deficits in Early Childhood Education*, 67–82. https://doi.org/10.4324/9781315102696-5

Gaines, K. S., Curry, Z., Shroyer, J. A., Amor, C., & Lock, R. H. (2014). The perceived effects of visual design and features on students with autism spectrum disorder. *Journal of Architectural and Planning Research*, *31*(4), 282–298.

Harkin, B., & Efron, D. (2022). Children with autism spectrum disorder: Consultation tips for GPs. *Medicine Today*, *23*(3), 59–62.

Hwang, S., Birken, S. A., & Nilsen, P. (2024). Implementation science research methods. *Implementation Science: Theory and Application*, 127–134. https://doi.org/10.4324/9781003318125-13

Ibrahim, H., & Al-Dabbagh, S. (2023). Designing Sensory Integration Spaces in Autism Centers (A Descriptive Approach). *The Iraqi Journal of Architecture and Planning*, *22*(1), 48–62. https://doi.org/10.36041/iqjap.2022.134207.1044

Kapesa, T. (2024). Infrastructure Financing and Financial Sustainability of Local Governments. *Financial Sustainability of Local Governments in Southern Africa*, 168–197. https://doi.org/10.4324/9781003498230-10

Khougar, A., Baba Ahmadi, P., Ranjbar, H., Ahadi, M., & Ahadi, P. (2023). Exploring the varied manifestations of structural violence in the lives of children on the autism spectrum and their families: a qualitative longitudinal study in Kurdistan, Iran. *International Journal for Equity in Health*, *22*(1), 12939. https://doi.org/10.1186/s12939-023-02078-z

Li, Z., & Rao, N. (2023). Advancing Equity in Early Childhood Development in China: Progress in

Meeting Sustainable Development Goal Target 4.2. *International Journal of Chinese Education*, *12*(2), 2212585. https://doi.org/10.1177/2212585X231175499

Matjošaityte, L. (2024). Legal Challenges in Managing Human Resources in the Public Sector. *Economic Innovations and Technological Developments in HRM*, 161–200. https://doi.org/10.4018/979-8-3693-4412-5.ch008

Nurazelina, A., Aryanti, T., & Kusuma, Y. (2024). Making school home: A therapeutic design for students with intellectual disabilities. *IOP Conference Series: Earth and Environmental Science*, *1404*(1), 12024. https://doi.org/10.1088/1755-1315/1404/1/012024

Pahwa, M., Cavanagh, A., & Vanstone, M. (2023). Key Informants in Applied Qualitative Health Research. *Qualitative Health Research*, *33*(14), 1251–1261. https://doi.org/10.1177/10497323231198796

Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning Through Play at School – A Framework for Policy and Practice. *Frontiers in Education*, *7*, 751801. https://doi.org/10.3389/feduc.2022.751801

Pd Purwadhi, M. (2019). The role of educational management, learning and teaching, and institutional climate on the quality of education: Evidence from Indonesia. *Management Science Letters*, *9*(9), 1507–1518. https://doi.org/10.5267/j.msl.2019.5.002

Popescu, C. R. G., Yu, P., & Wei, Y. (2023). Achieving the Sustainable Development Goals through infrastructure development. *Achieving the Sustainable Development Goals Through Infrastructure Development*, 1–303. https://doi.org/10.4018/979-8-3693-0794-6

Puentes Borges, A. E., Beatriz, D., Bencomo, P., & Rangel, E. (2018). Objetividad en la triangulación del diagnóstico Objectivity in diagnosis triangulation. *Revista Cubana de Investigaciones Biomédicas*, *37*(1), 6860.

Siemsen, H., & Reschke, C. H. (2012). Can one learn to think like Drucker? Lessons in personality and management education. *Management Research Review*, *36*(8), 767–787. https://doi.org/10.1108/MRR-12-2012-0259

Siller, M., Morgan, L., Wedderburn, Q., Fuhrmeister, S., & Rudrabhatla, A. (2021). Inclusive Early Childhood Education for Children With and Without Autism: Progress, Barriers, and Future Directions. *Frontiers in Psychiatry*, *12*, 754648. https://doi.org/10.3389/fpsyt.2021.754648

Squires, G. (2023). INCLUSION: Responding to diversity and ideological confusion. *Inclusion and Diversity: Communities and Practices Across the World*, 260–278. https://doi.org/10.4324/9781003379034-20

Srivastava, P., & Hopwood, N. (2009). A Practical Iterative Framework for Qualitative Data Analysis. *International Journal of Qualitative Methods*, *8*(1), 76–84. https://doi.org/10.1177/160940690900800107

Syarifudin, F. (2025a). *DISPARITIES IN ACCESS AND SUSTAINABILITY IN INCLUSIVE*. *August*, 33–42.

Syarifudin, F. (2025b). *Managing Inclusive Educational Infrastructure for Children with Autism*

Spectrum Disorder : A Qualitative Case Study in Early Childhood Education. 6(2), 165–180.

Tobita, I. (2025). The Value of Case Study Methodology in Nursing Research. *Creative Nursing*, *31*(1), 8–12. https://doi.org/10.1177/10784535251321017

Yang, F. (2024). Communication disorders in children with autism spectrum disorder from a speech-language pathology perspective. *Zhongguo Ertong Baojian Zazhi*, *32*(3), 233–247. https://doi.org/10.11852/zgetbjzz2024-0114