



Northlake Elementary School: An Inclusive Design Investigation

INVESTIGATIVE RESEARCH & CONCEPT DEVELOPMENT

ADES 4640 - INTD SPACE PLANNING V

FEBRUARY 3, 2026

ALICE NGUYEN





Northlake Elementary

THE GISD DIFFERENCE

OUR FAMILY OF THREE CITIES SHARES A VISION THAT SERVES
TO PROVIDE AN EXCEPTIONAL EDUCATION TO ALL STUDENTS.

This context frames expectations for equity, inclusion, and community responsibility that inform the investigation.



INVESTIGATIVE FRAMEWORK OVERVIEW

PROGRAMMATIC SCOPE OF INVESTIGATION

- **Learning Environments:** (1) Pre-K Classroom and (1) Kindergarten Classroom.
- **Shared Community Spaces:** Library and Cafeteria.
- **Administrative & Support:** Reception Area and Conference Space.
- **Priority Focus:** High-use areas impacting safety, supervision, and neuro-inclusive design.

INDUSTRY TYPE AND OCCUPANCY

- **Industry Type:** Educational
- **Primary Occupancy:** Group E
- **Secondary Occupancy:** Group A-3

FORM GIVERS

- **Universal Design:** Equitable use and flexibility for all student abilities.
- **Sensory Design:** Managing acoustics, lighting, and texture to support neurodiversity.
- **Biophilic Design:** Integrating nature to improve cognitive function and reduce stress.
- **User Experience (UX):** Prioritizing safety, supervision, and intuitive wayfinding.

INTERDISCIPLINARY KEYWORDS

- **Psychology** (Sensory processing)
- **Ecology** (Environmental health)
- **Architecture** (Life safety & egress)
- **Sociology** (Community impact)



LOCATION

Northlake Elementary School
1626 Bosque Drive, Garland, Texas 75040

PROJECT INTRODUCTION:

This is a partial interior investigative study of Northlake Elementary School (Garland ISD). The research focuses on renovating early childhood learning environments and shared community spaces to better support student experience and sensory regulation.

BASELINE STANDARDS

- **Acoustics:** ANSI S12.60-2010
- **Building Codes:** 2021 IBC, IFC, IMC, and IPC
- **Accessibility:** 2012 Texas Accessibility Standards (TAS) and ADA
- **Education Standards:** Texas Education Agency (TEA) Facility Guidelines

These standards were reviewed to identify spatial, acoustic, accessibility, and supervision constraints impacting early childhood learning environments.

PROFESSIONAL SUPPORT



Salina Allen
Principal
Northlake Elementary School



Macy Kloberdanz
Designer
Grace Design Studios



Mark Travis
Senior Designer, BIM Coordinator
Grace Design Studios



Moon Cho
Project Designer
VLK Architects



Kaitlin Tice
Registered Interior Designer
VLK Architects

Provides leadership and insight into daily school operations, student needs, and learning environment priorities.

Offers professional guidance on spatial planning, documentation standards, and technical coordination.

Provides architectural perspective on educational facilities, code considerations, and interdisciplinary coordination.

INVESTIGATIVE QUESTIONS

INCLUSION & BELONGING

- How can design help every child feel welcome?
- How can classrooms support students of all abilities?
- How can classroom design promote equity and belonging?
- How can learning environments feel welcoming to families?

LEARNING STYLES & FLEXIBILITY

- How can classrooms support different learning styles?
- How can spaces balance structure and flexibility?
- How can design support both individual and group work?
- How can classrooms adapt as students grow and develop?

SENSORY COMFORT & SELF-REGULATION

- How can spaces reduce sensory overload?
- How can design support emotional comfort and self-regulation?
- How can quiet and active zones coexist?
- How can visual organization reduce distraction?

FURNITURE, MOVEMENT & CHOICE

- How can flexible furniture support movement and choice?
- How can layouts encourage independence while allowing supervision?
- How can circulation support safe and calm movement?

ENVIRONMENTAL QUALITY

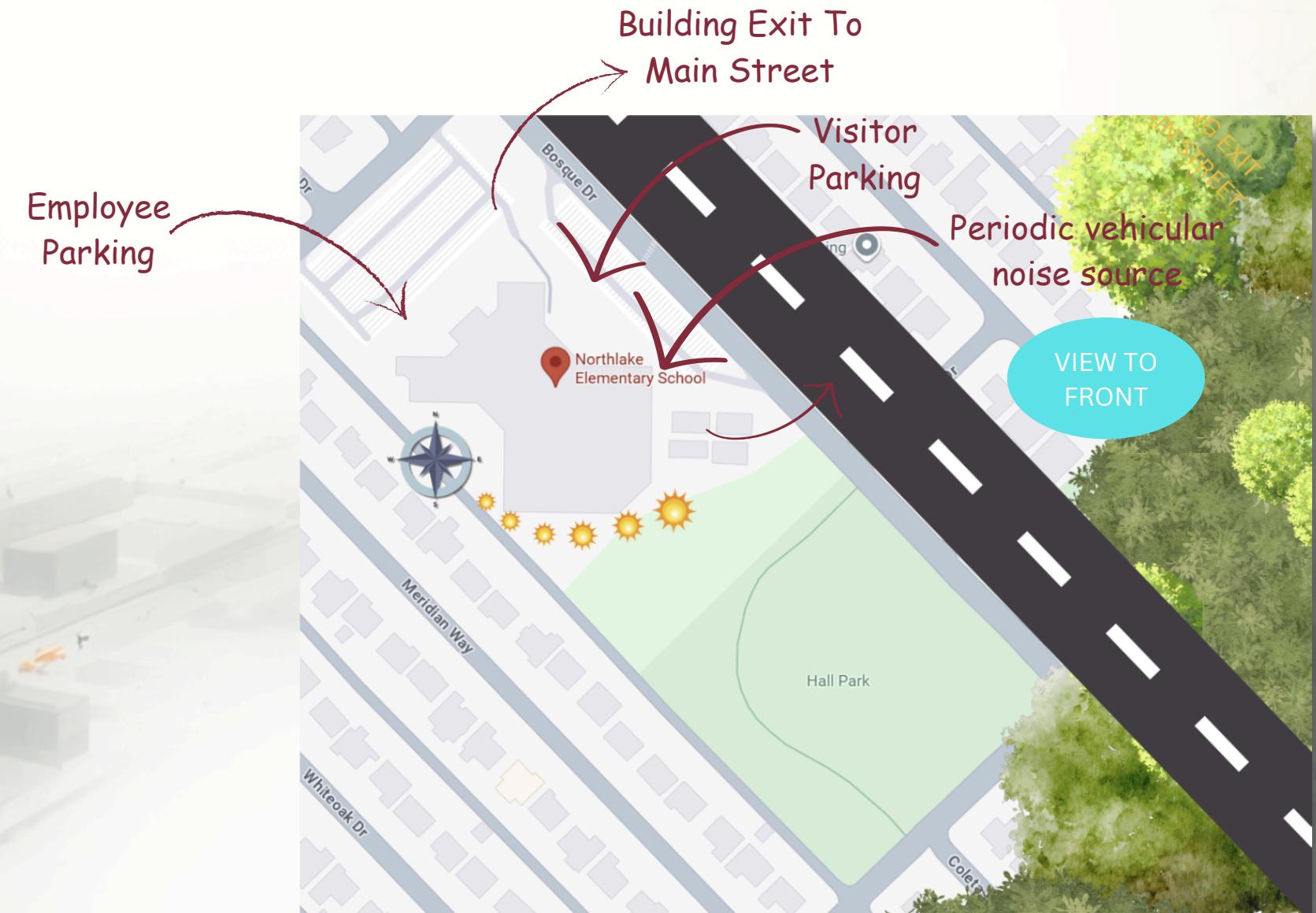
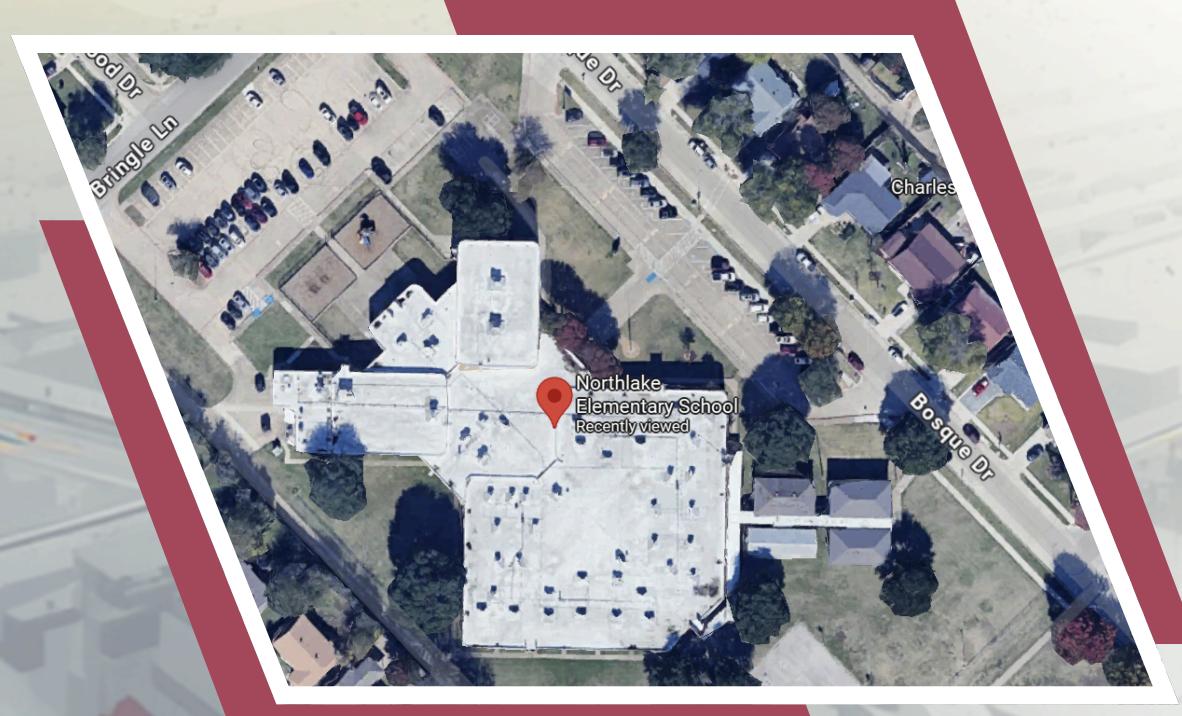
- How can daylight and views improve focus and well-being?
- How can acoustic strategies reduce noise and distraction?
- How can material choices support comfort, durability, and safety?

SOCIAL INTERACTION & TRANSITIONS

- How can spaces encourage positive social interaction?
- How can design support the transition from Pre-K to Kindergarten?

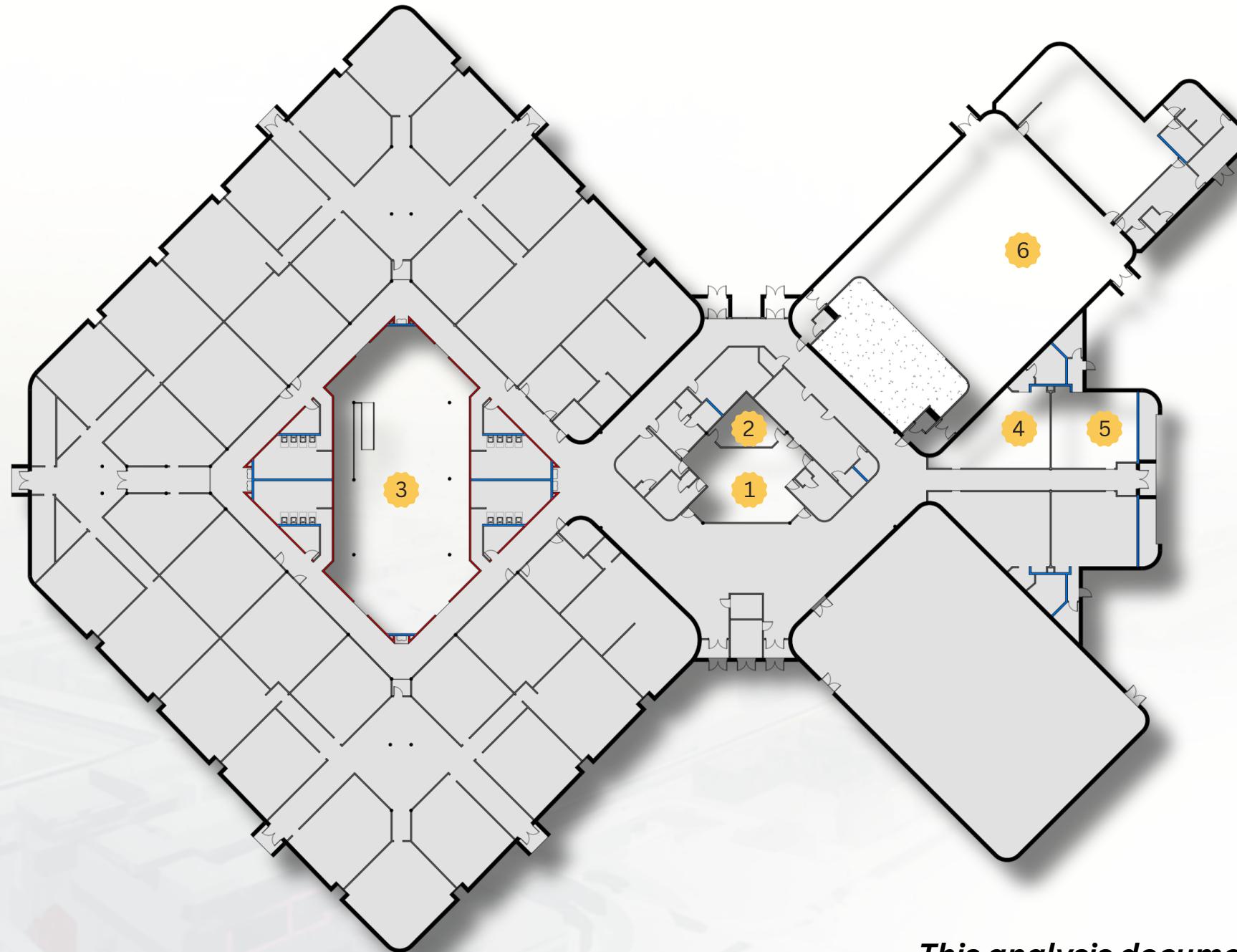
ENVIRONMENTAL & CONTEXTUAL ANALYSIS

These environmental factors inform daylight control, acoustic buffering, and primary circulation zones.



- East → Morning sun
- South → Strongest and longest sun exposure
- West → Harsh afternoon sun
- North → Mostly indirect light

EXISTING CONDITIONS ANALYSIS



This analysis documents spatial, environmental, and sensory conditions impacting early childhood learning spaces.



LIMITED ACCESS TO NATURAL DAYLIGHT OBSERVED IN CLASSROOMS AND SHARED SPACES

LIMITED ENCLOSURE AND ACOUSTIC SEPARATION OBSERVED IN EXISTING CLASSROOMS

SENSORY COMFORT CHALLENGES OBSERVED IN EARLY LEARNING ENVIRONMENTS

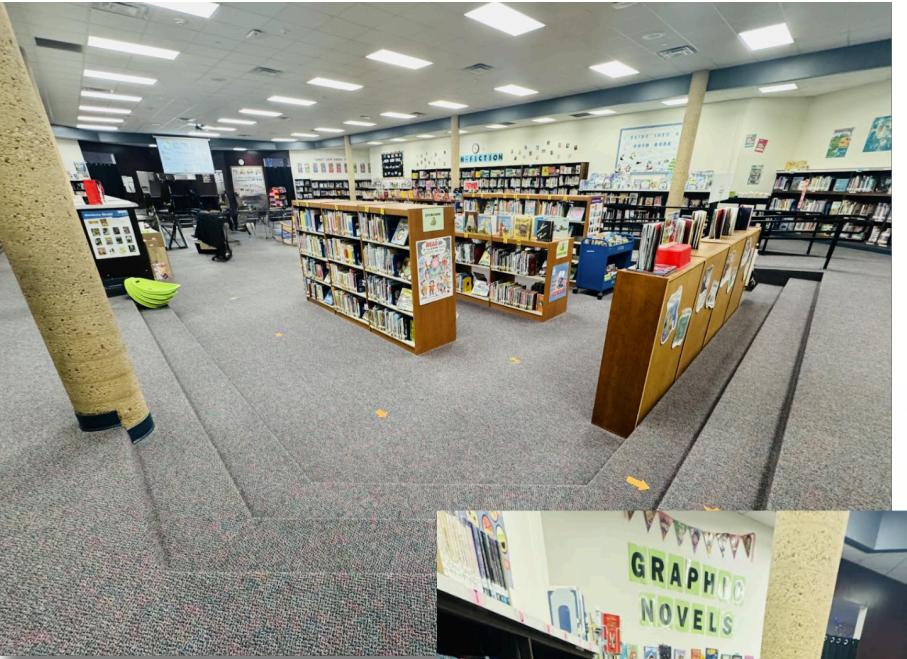
SITE VISIT OBSERVATIONS

On-site observational analysis & post-occupancy inference



CAFETORIUM 6

- Excessive noise
- Sensory overstimulation
- Hard surfaces
- Limited flexibility



LIBRARY / MEDIA CENTER

- Limited daylight 3
- Poor zoning
- Obstructed sightlines
- No refuge spaces



1

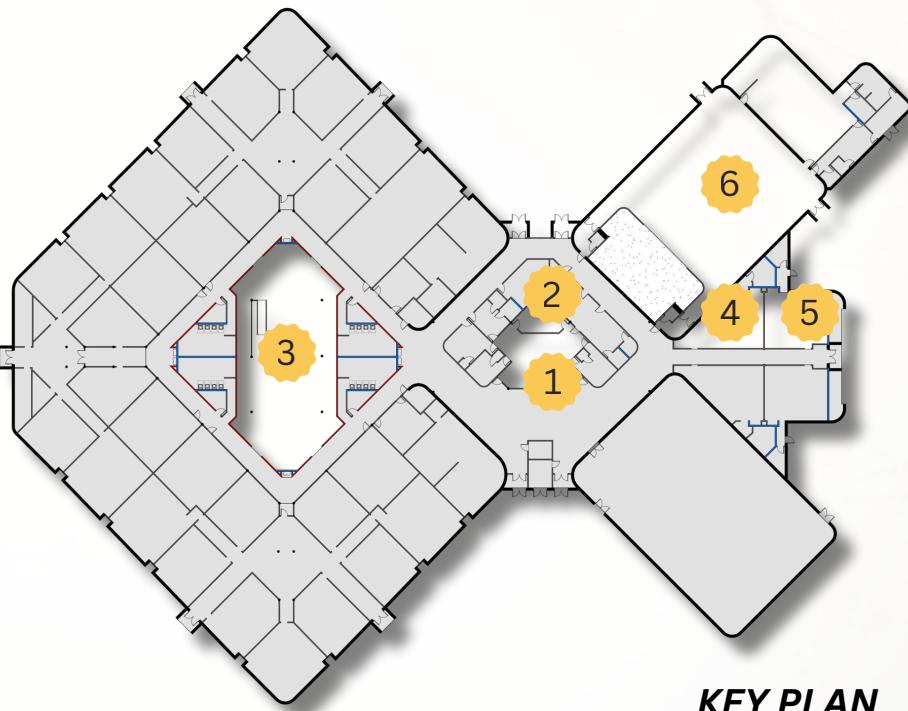
RECEPTION / ENTRY

- Physical barrier
- Limited welcome
- Unclear wayfinding
- Low visibility

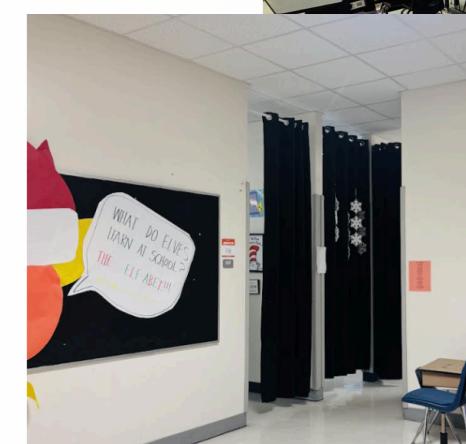
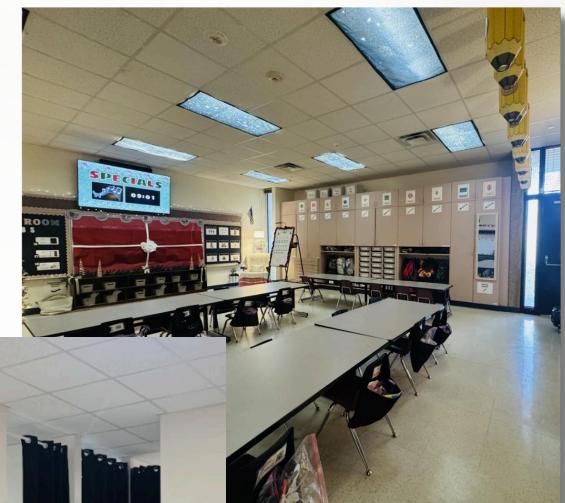


CONFERENCE 2

- Inflexible layout
- Limited daylight
- Dated environment
- Underutilized space



KEY PLAN



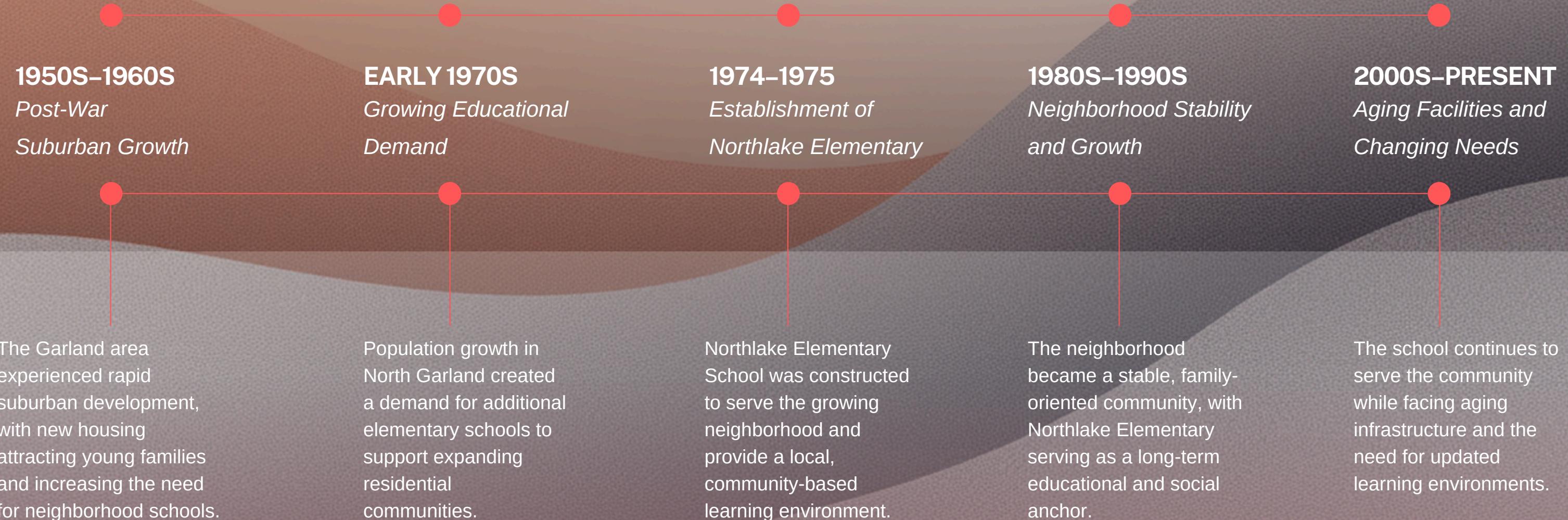
PRE-K / K CLASSROOM

- Sensory overload
- Visual clutter
- Noise intrusion
- Inflexible layout

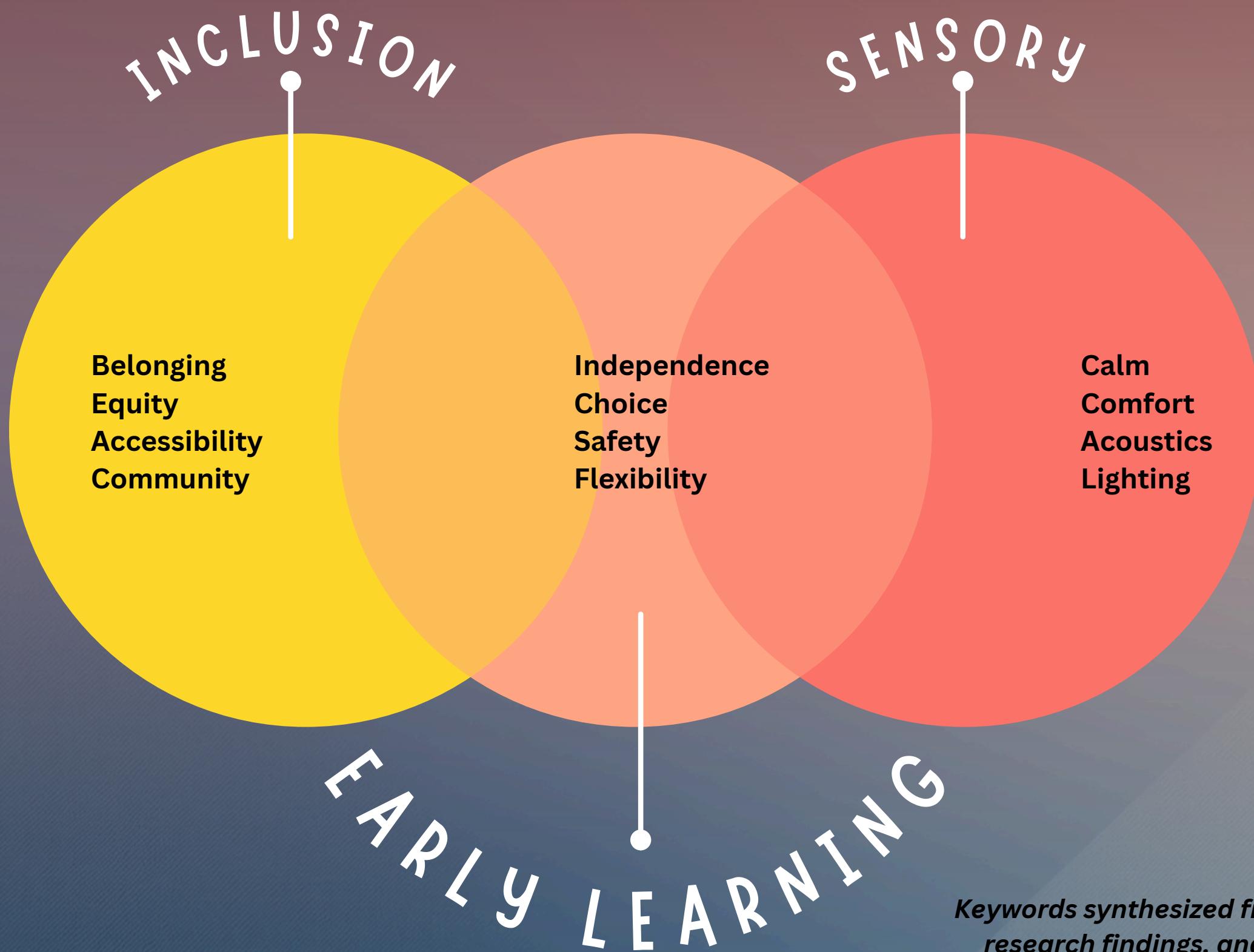
HISTORICAL & COMMUNITY CONTEXT ANALYSIS

HISTORICAL & COMMUNITY ANALYSIS

Understanding neighborhood growth and stability informs long-term community use, equity considerations, and the role of the school as a social anchor.



PROJECT KEYWORDS



*Keywords synthesized from site observation,
research findings, and case study analysis*

CLIENT & STUDENT PROFILE

User profile informed by district data, site observations, and administrative insight.

CLIENT CONTEXT

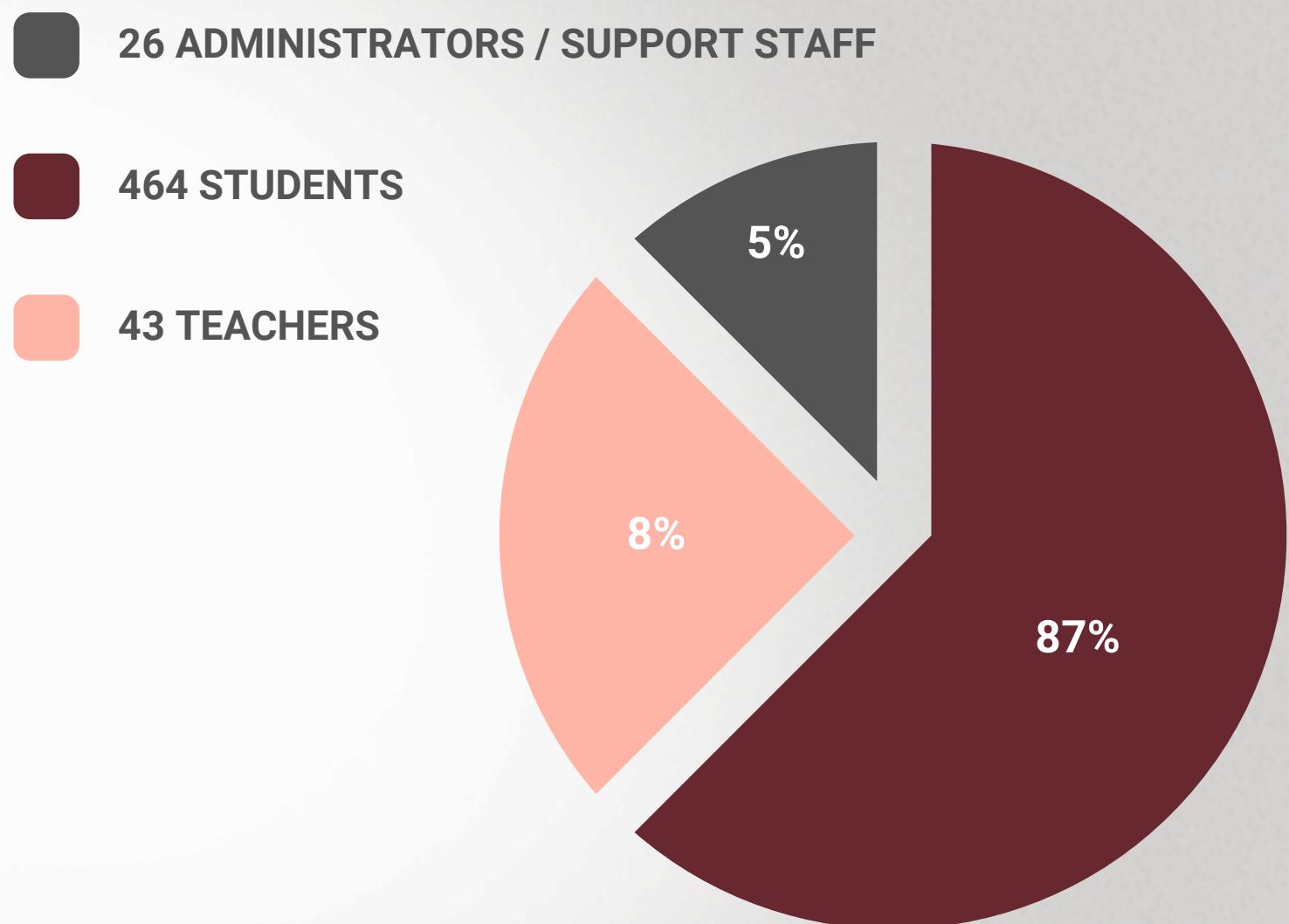
- Public elementary school (Garland ISD)
- Neighborhood-based K-5 campus
- Early childhood learning focus

STUDENT POPULATION

- Diverse learning abilities
- Early learners requiring support
- Extended daily campus use

COMMUNITY CHARACTER

- Family-oriented neighborhood
- Culturally diverse households
- School as community resource



Campus population distribution

ACADEMIC PERFORMANCE & LEARNING NEEDS

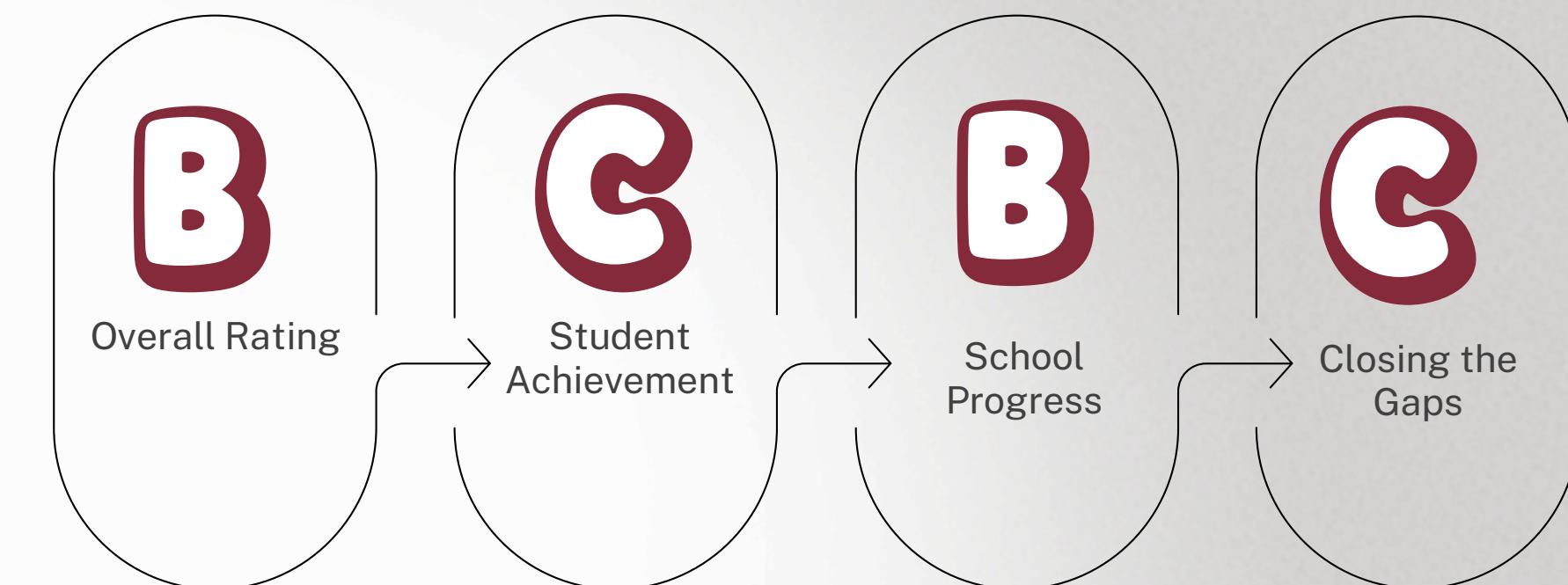
Academic performance data reviewed to identify learning support needs and environmental factors impacting early learners.

● **ACADEMIC CONTEXT**

- Overall school performance rated B
- Student achievement shows room for growth
- Early literacy and math are key focus areas
- Learning gaps remain for some student groups

LEARNING IMPLICATIONS

- Early grades require additional academic support
- Classroom environment plays a role in focus and engagement
- Environmental factors may influence consistency, clarity, and comfort in learning spaces



**TEA ACCOUNTABILITY
SUMMARY GRAPHIC**

EARLY CHILDHOOD LEARNING & SENSORY NEEDS

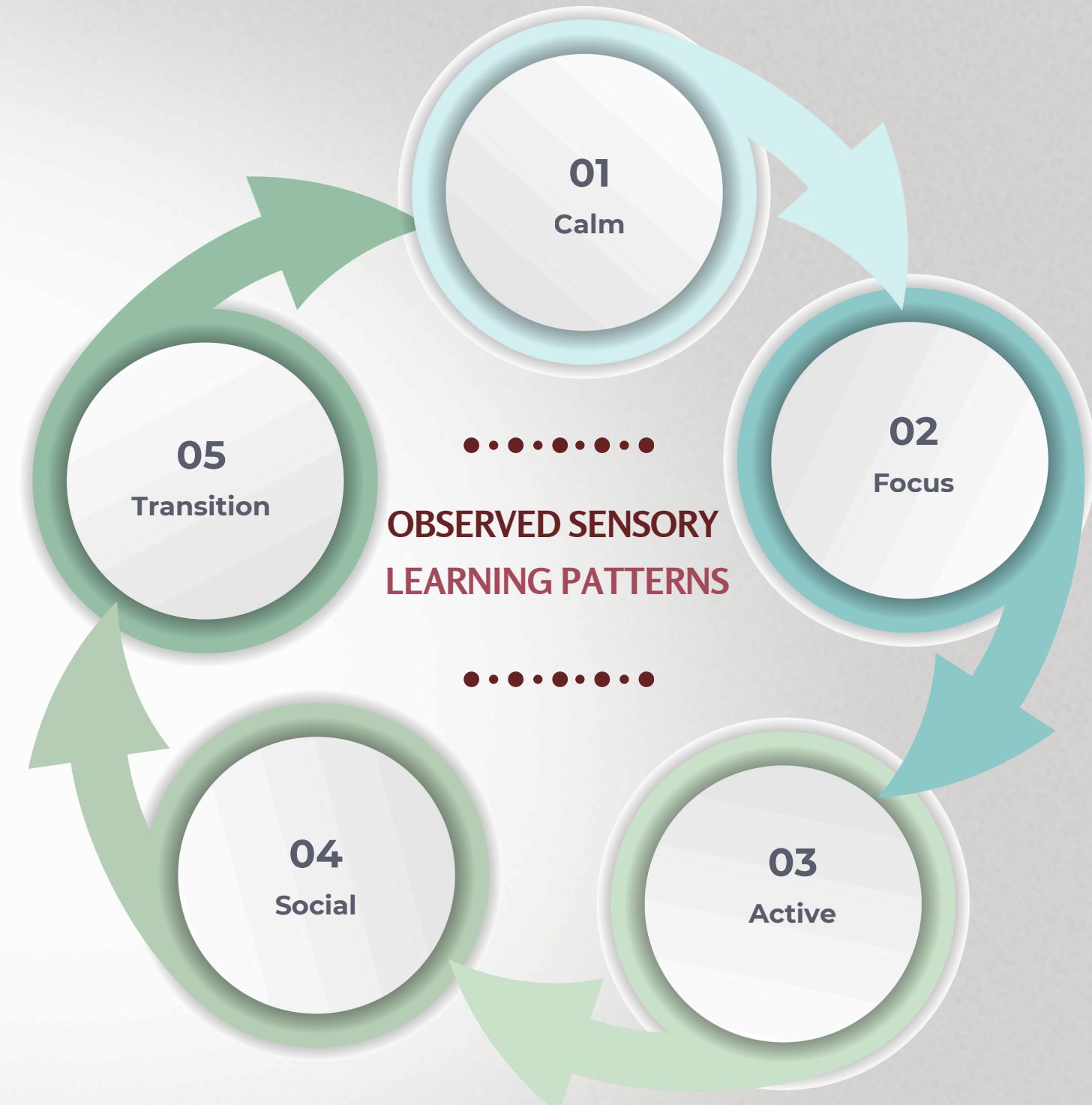
Developmental and sensory research reviewed to identify environmental needs and patterns of regulation in early childhood learning.

DEVELOPMENTAL CONSIDERATIONS

- Developing self-regulation skills
- High sensitivity to sound, light, and visual stimuli
- Need for routine and predictability
- Learning through movement and exploration

ENVIRONMENTAL NEEDS

- Clear spatial organization
- Defined quiet and active zones
- Reduced visual and acoustic clutter
- Spaces that support choice and independence

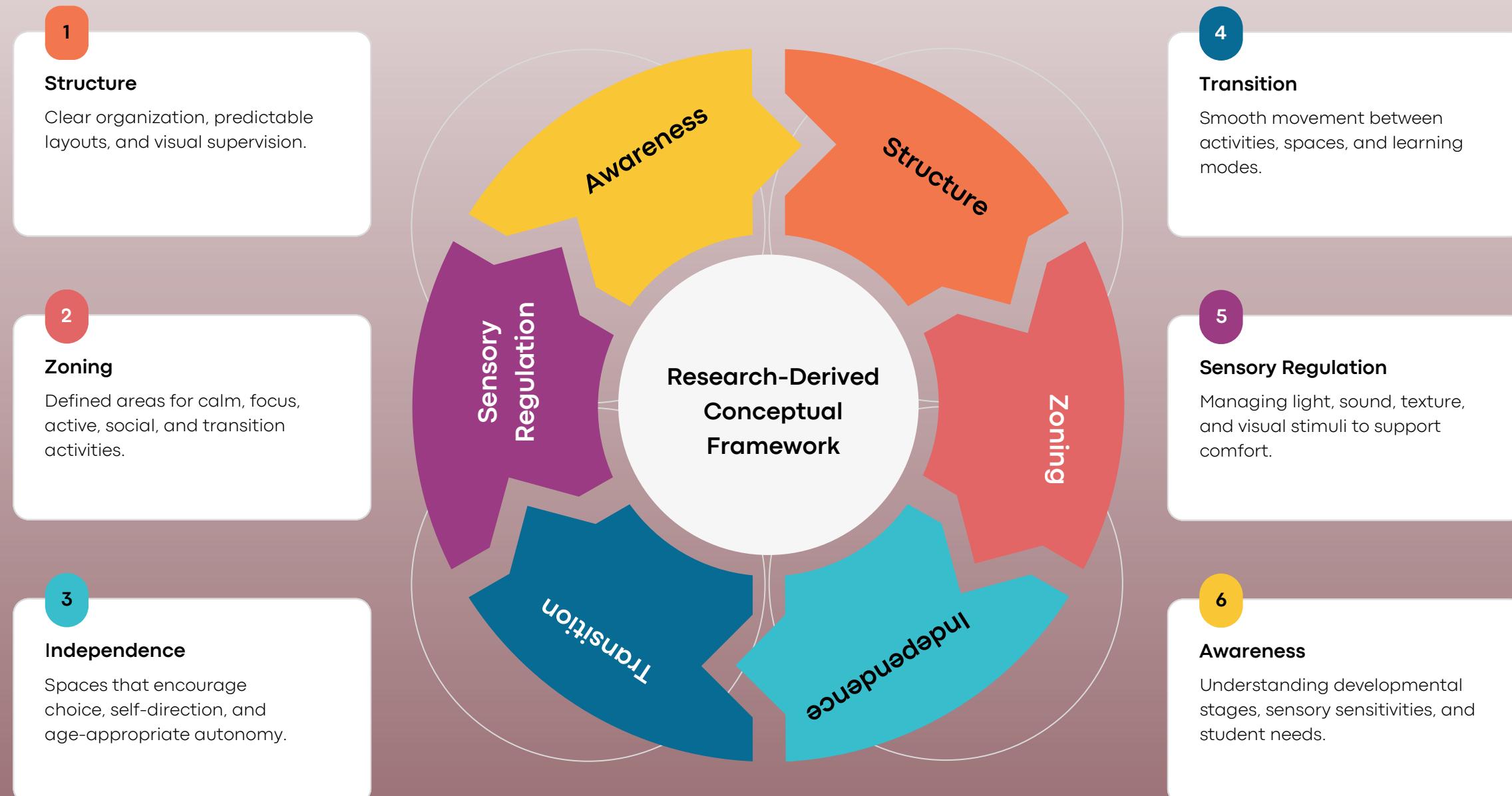


DESIGN THEORETICAL FRAMEWORK INFORMED BY RESEARCH

Primary Design Theory: Evidence-Based Design informed by Sensory Processing Theory

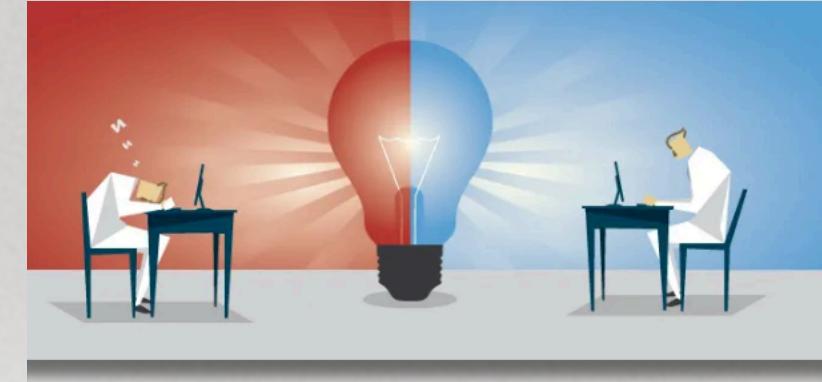
INVESTIGATIVE FOCUS

This investigation explores how early childhood learning environments can support sensory regulation, emotional comfort, and independence while maintaining clear structure and visual supervision.



FRAMEWORK INFORMED BY: EVIDENCE-BASED DESIGN LITERATURE, DEVELOPMENTAL PSYCHOLOGY
RESEARCH, SITE OBSERVATIONS, AND PRECEDENT CASE STUDIES.

CASE STUDIES: ENVIRONMENTAL IMPACT ON LEARNING



Case Study 1 (Acoustics)

CASE STUDY 01: CLASSROOM ACOUSTICS

- Noise negatively impacts early reading and language development
- Younger children are more sensitive to sound distractions
- Open classrooms increase cognitive load

KEY RESEARCH TAKEAWAYS:

Research indicates that acoustic separation, sound absorption, and controlled transitions play a critical role in early learning environments.

Mealings, K. T. (2023). The effect of classroom acoustic treatment on listening, learning, and well-being: A scoping review. *Acoustics Australia*, 51(2), 279–291.
<https://doi.org/10.1007/s40857-023-00291-y>



Case Study 2 (Lighting)

CASE STUDY 02: CLASSROOM LIGHTING

- Daylight improves focus and engagement in elementary students
- Poor lighting increases fatigue and reduces attention
- Balanced natural and artificial lighting supports visual comfort

KEY RESEARCH TAKEAWAYS:

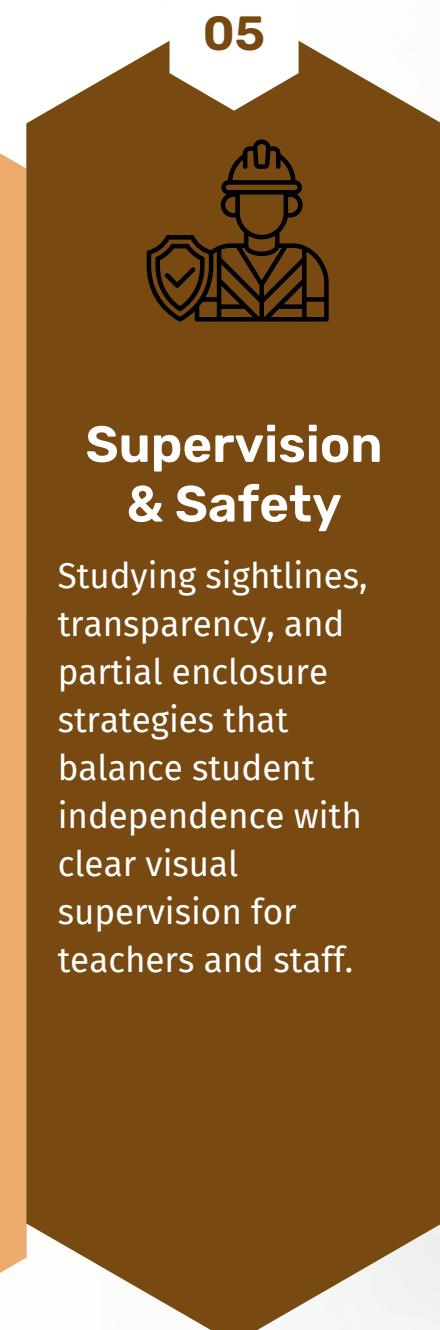
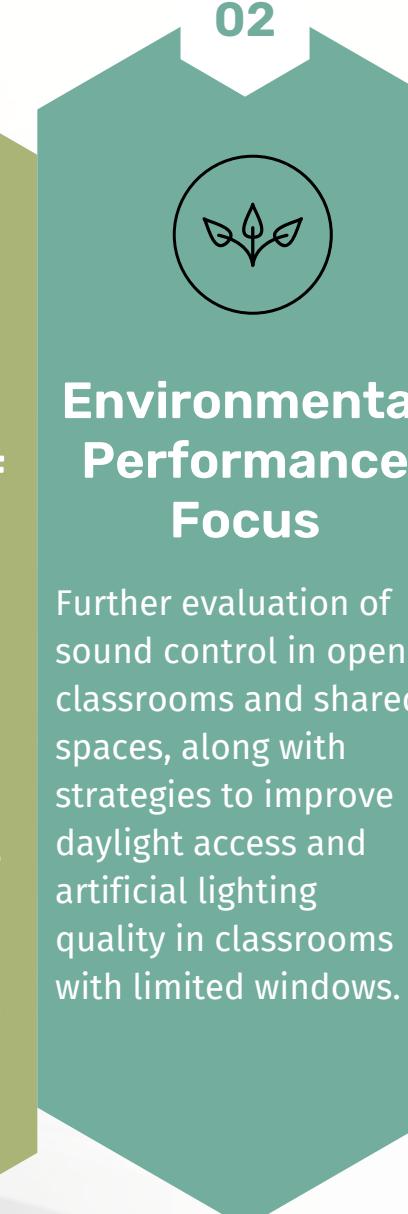
Research indicates that access to daylight and balanced lighting conditions support focus and visual comfort in early childhood classrooms.

Sleegers, P. J. C., Moolenaar, N. M., Galetzka, M., Pruyn, A., Sarroukh, B. E., & van der Zande, B. (2013). Lighting affects students' concentration positively: Findings from three Dutch studies. *Lighting Research & Technology*, 45(2), 159–175.
<https://doi.org/10.1177/1477153512446099>

WHAT IS MISSING & FURTHER INVESTIGATION NEEDED

RESEARCH GAPS IDENTIFIED

- Quantitative acoustic measurements in classrooms and shared spaces
- Daylight performance analysis and glare assessment
- Direct interviews with teachers, staff, and families
- Behavioral observation comparing Pre-K and Kindergarten environments
- Evaluation of long-term maintenance and durability impacts



CONCEPTUAL DESIGN INSPIRATION

These precedents illustrate spatial strategies that support sensory regulation, independence, visual supervision, and flexible learning in early childhood environments.

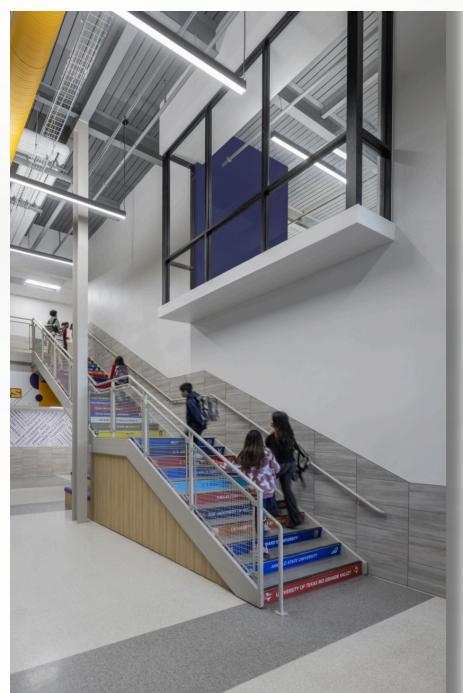
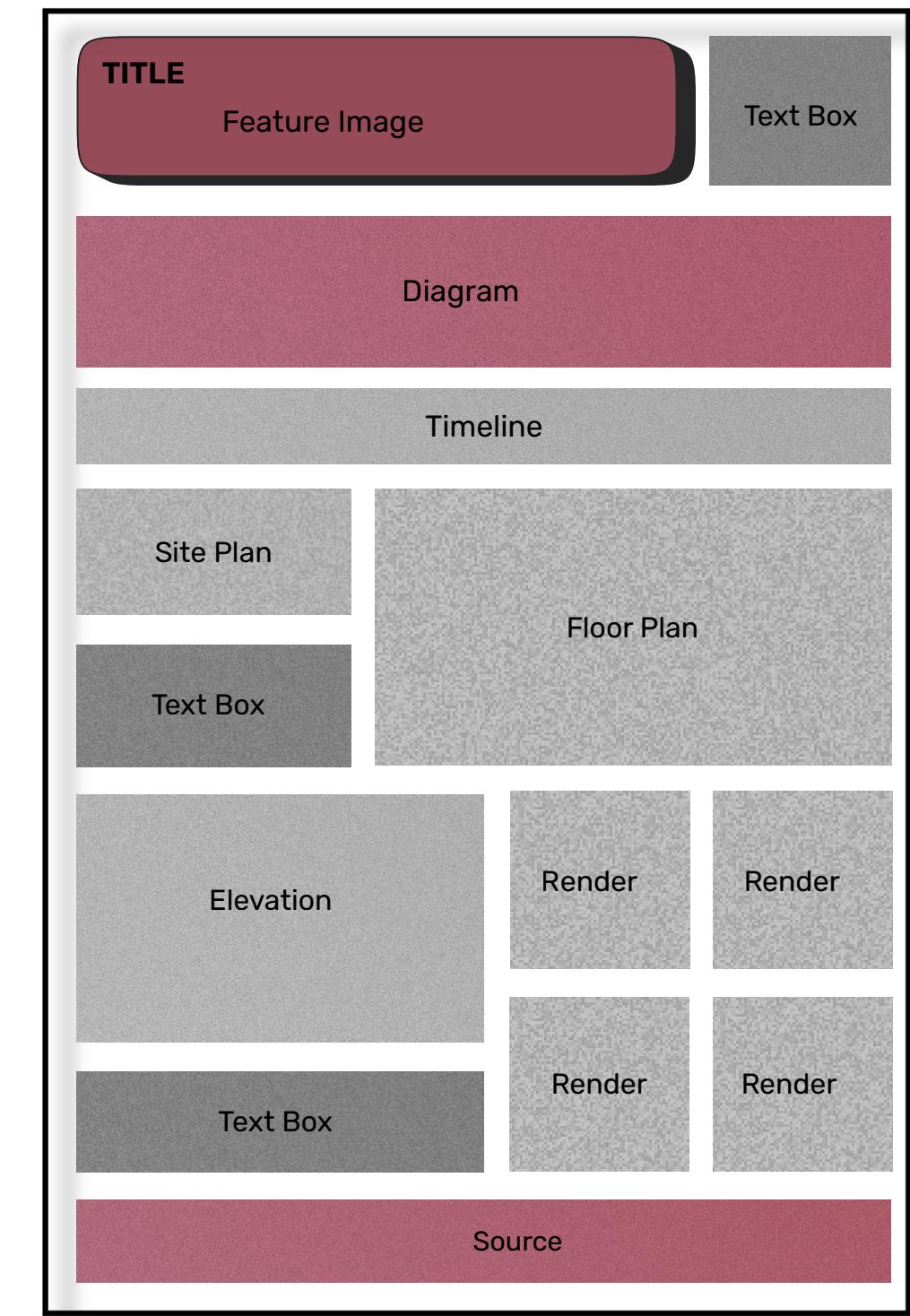
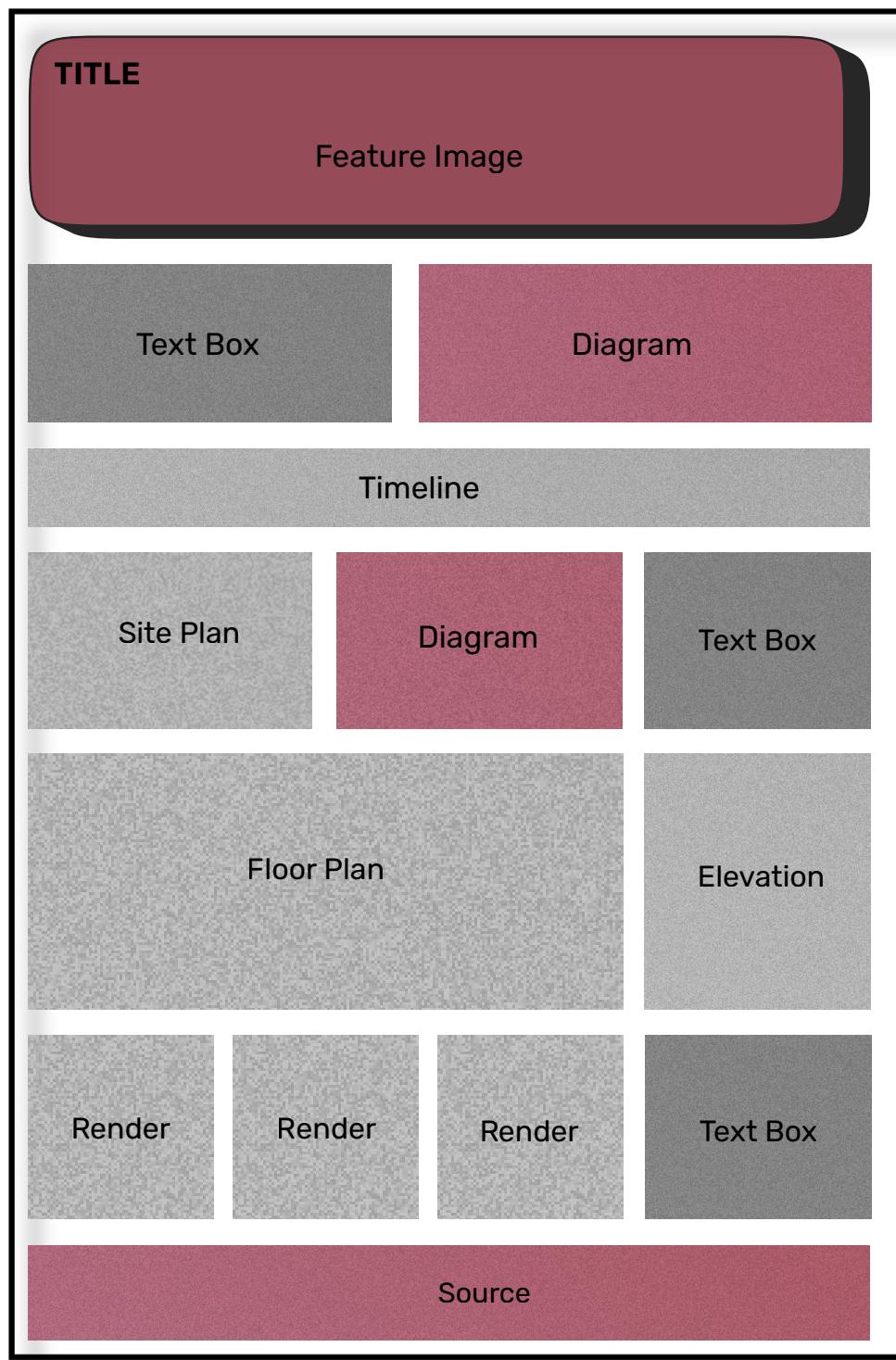


Image sources: Education Snapshots (n.d.).
Elementary school photo collection.
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POSTER LAYOUT IDEATION



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THANK YOU