



Northlake Elementary

# THE GISD DIFFERENCE

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



# PROJECT OUTLINE

## LOCATION

Northlake Elementary School  
1626 Bosque Drive, Garland, Texas 75040

## INDUSTRY TYPE AND OCCUPANCY

IBC Occupancy Classification  
Group E (Educational)

## FORM GIVERS

Universal Design  
Sensory Design  
Sustainable Design  
User Experience in Learning Environments

## BASELINE STANDARDS

2021 International Building Code  
2021 International Fire Code  
2021 International Mechanical Code  
2021 International Plumbing Code  
2020 National Electrical Code  
2021 International Energy Conservation Code  
2012 Texas Accessibility Standards  
Texas Education Agency Facility Guidelines

## SCOPE:

Partial interior redesign within Northlake Elementary School focused on early childhood learning and shared community spaces. The project includes the library, cafeteria, reception area, conference space, one Pre-K classroom, and one Kindergarten classroom. Priority is given to high-use spaces that directly impact student experience, safety, supervision, and sensory regulation.

## PROFESSIONAL SUPPORT



**Macy Klobertanz**  
Designer  
*Grace Design Studios*



**Moon Cho**  
Project Designer  
*VLK Architects*



**Salina Allen**  
Principal  
*Northlake Elementary School*



**Mark Travis**  
Senior Designer, BIM Coordinator  
*Grace Design Studios*



**Kaitlin Tice**  
Registered Interior Designer  
*VLK Architects*



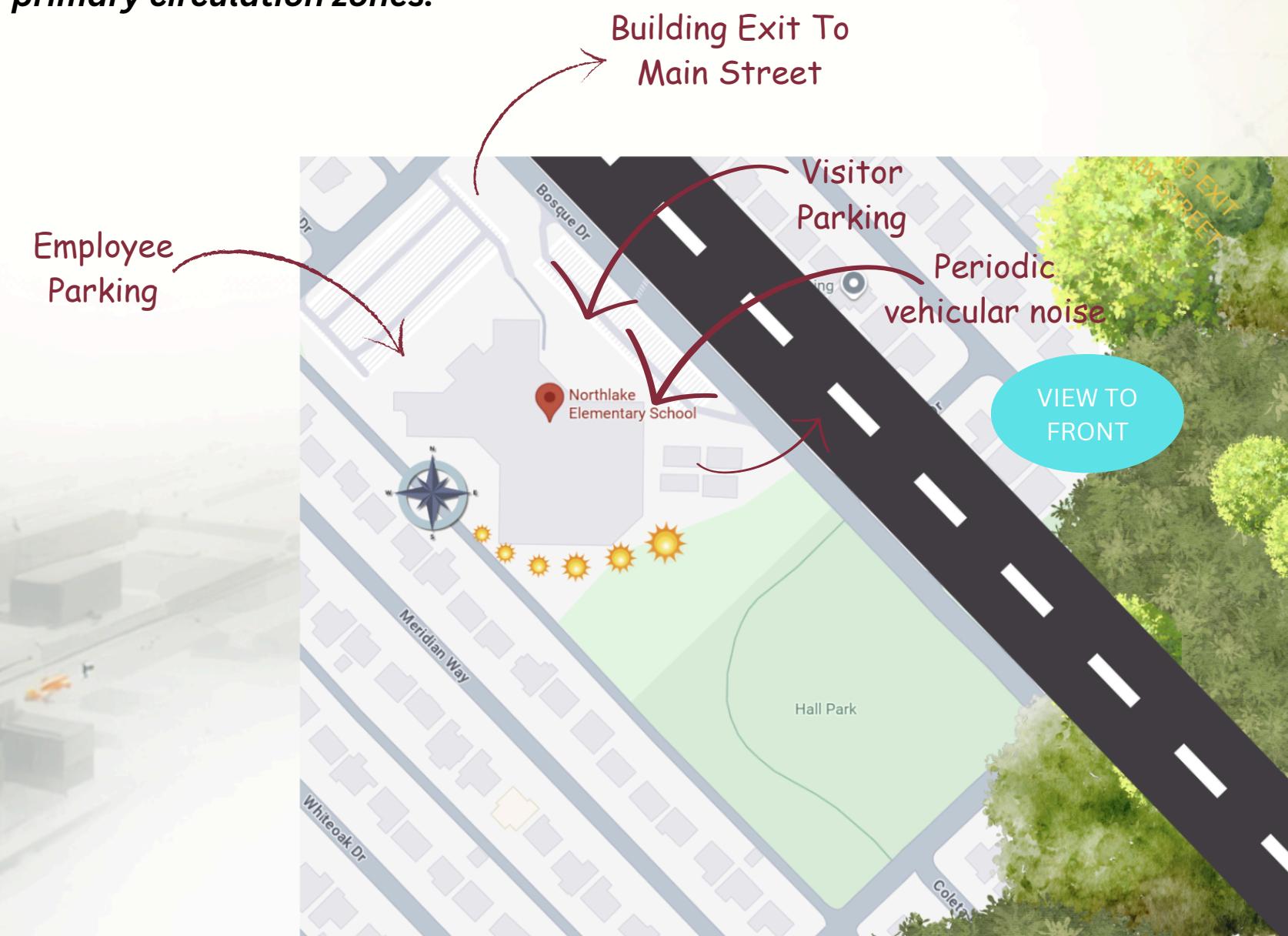
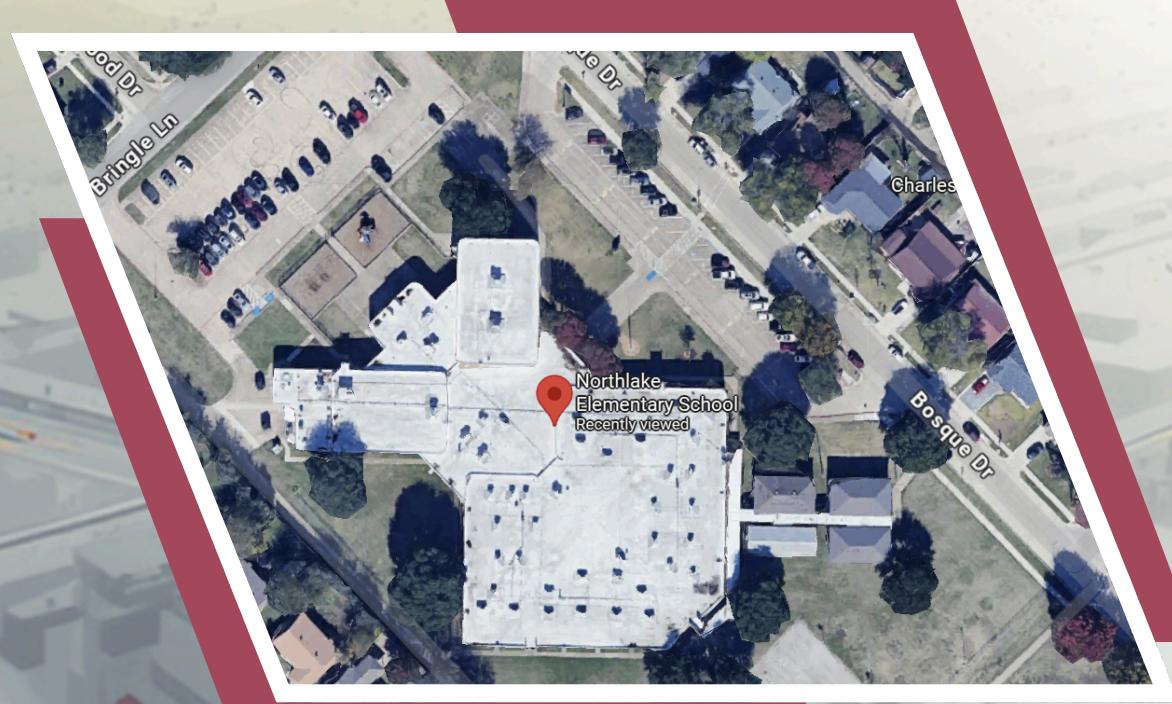
Provides leadership and insight into daily school operations, student needs, and learning environment priorities.

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

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

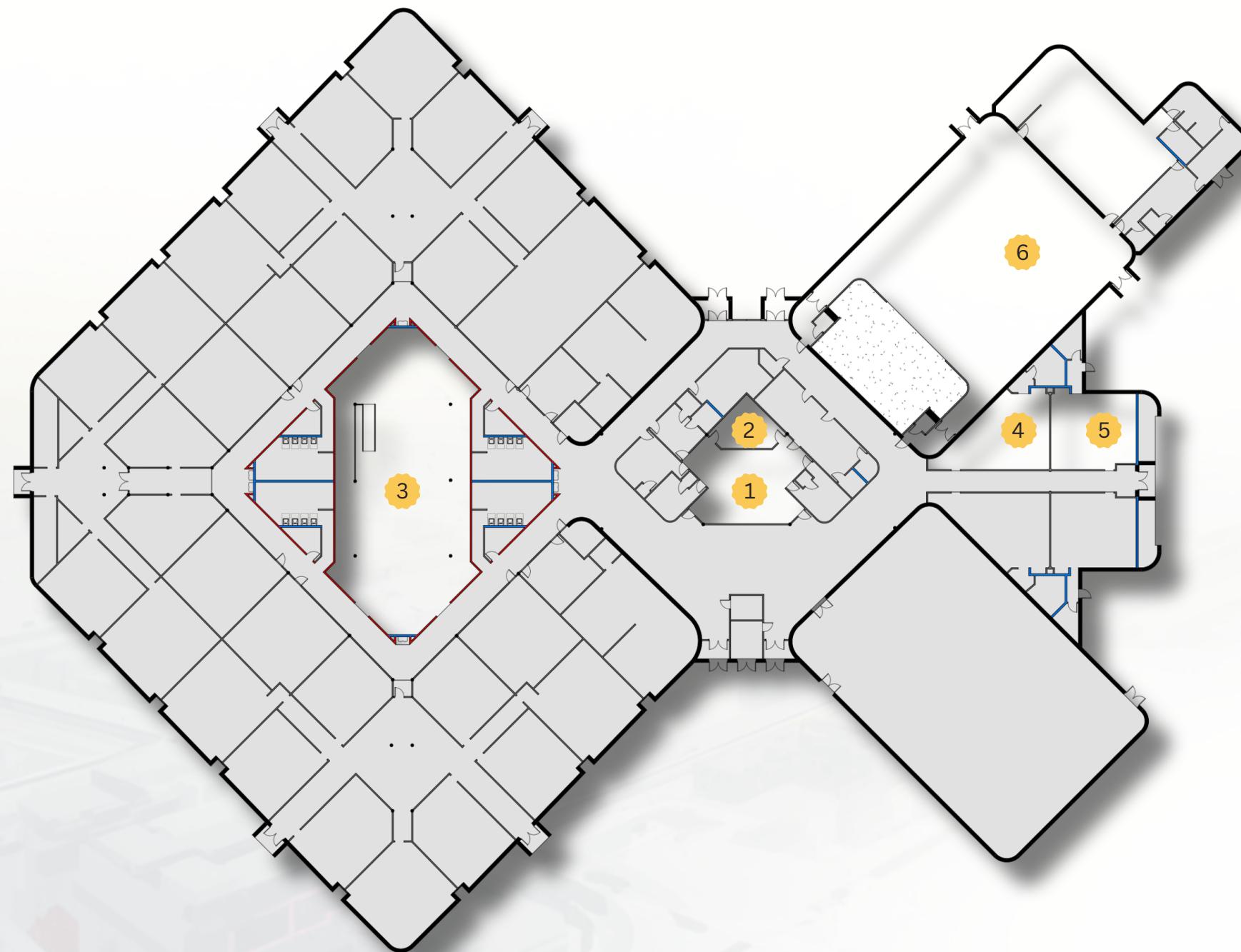
# SITE & LOCAL CONTEXT ANALYSIS

*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



- 1 Reception
- 2 Conference
- 3 Library
- 4 Pre- K
- 5 Kindergarten
- 6 Cafetorium
- Not In Scope



LIMITED ACCESS TO  
NATURAL DAYLIGHT

LACK OF ENCLOSED CLASSROOMS  
AND ACOUSTIC CONTROL

INSUFFICIENT SENSORY  
COMFORT FOR EARLY LEARNING

# 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

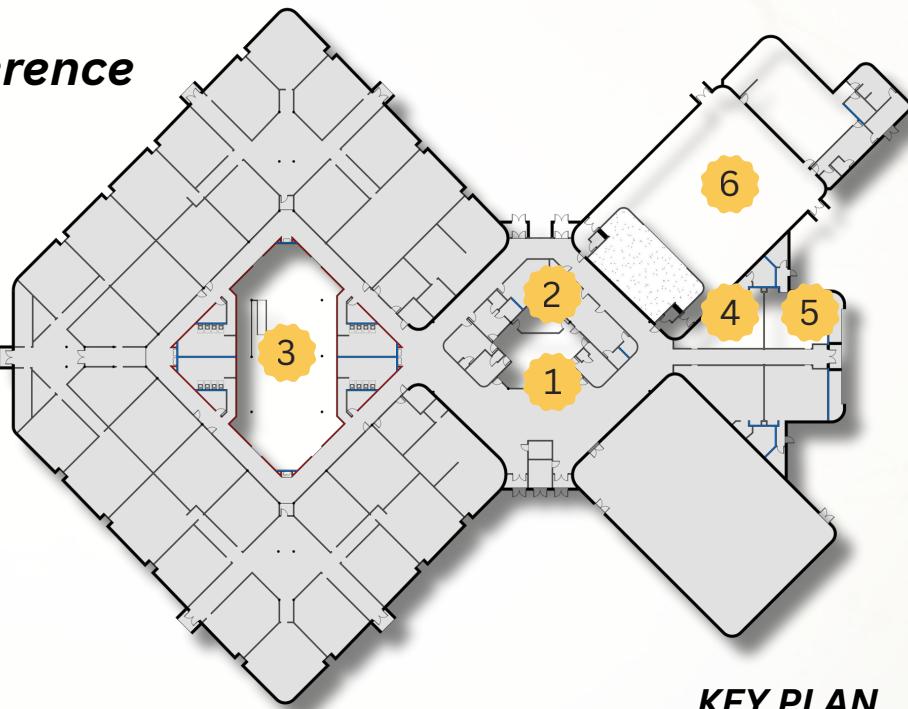
## RECEPTION / ENTRY

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

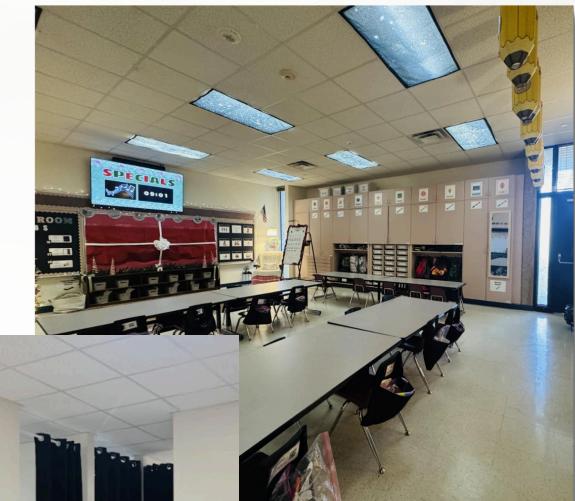


## CONFERENCE 2

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



**KEY PLAN**



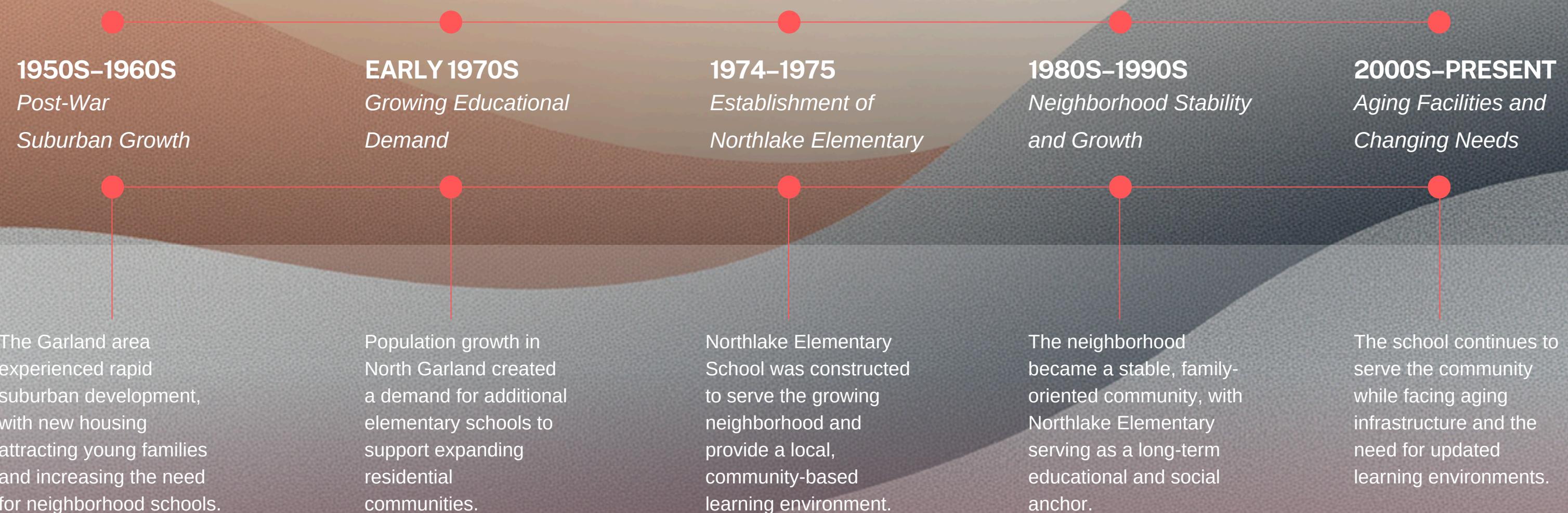
## PRE-K / K CLASSROOM

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

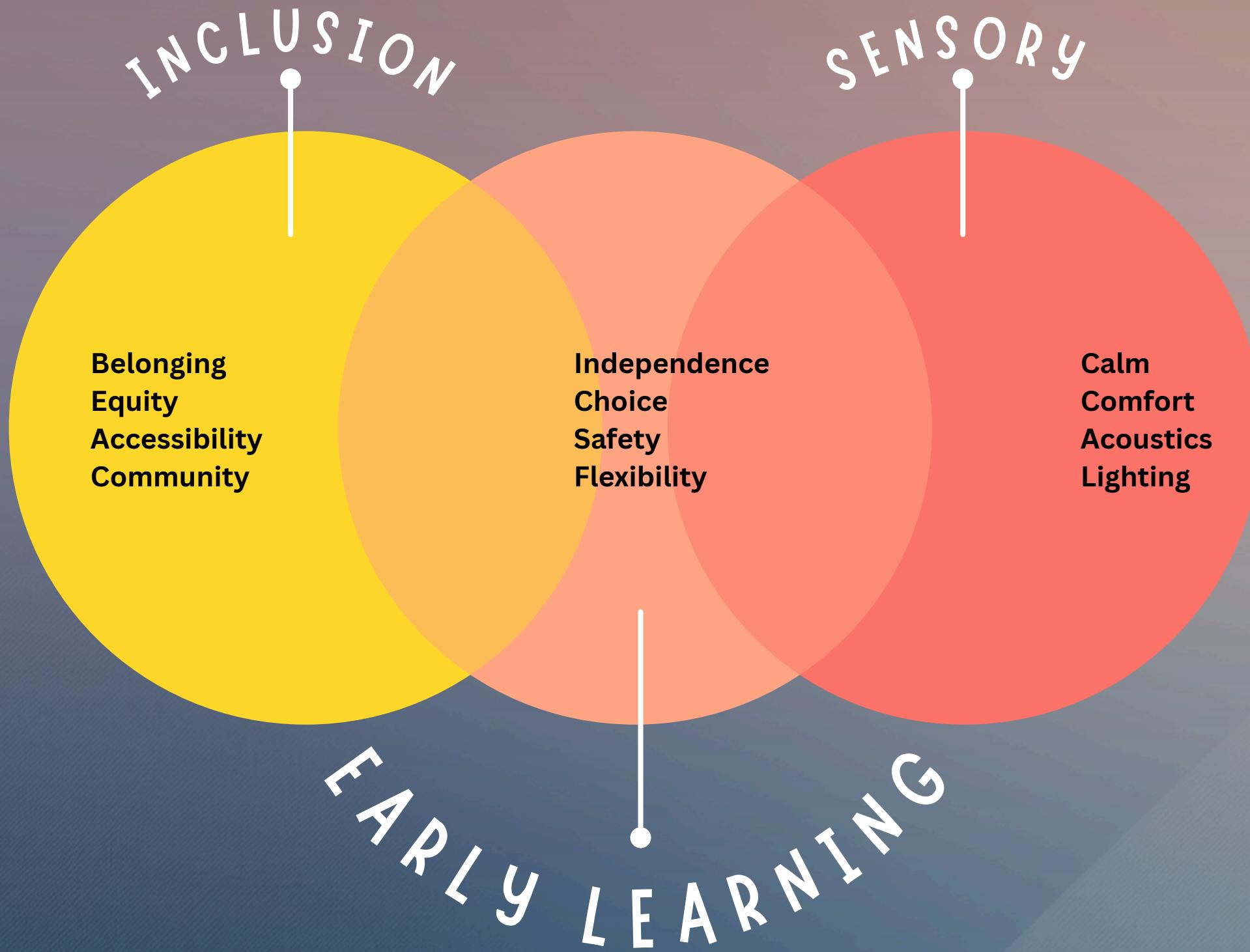
# NEIGHBORHOOD HISTORY

## 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



# 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?

# CLIENT & STUDENT PROFILE

## CLIENT CONTEXT

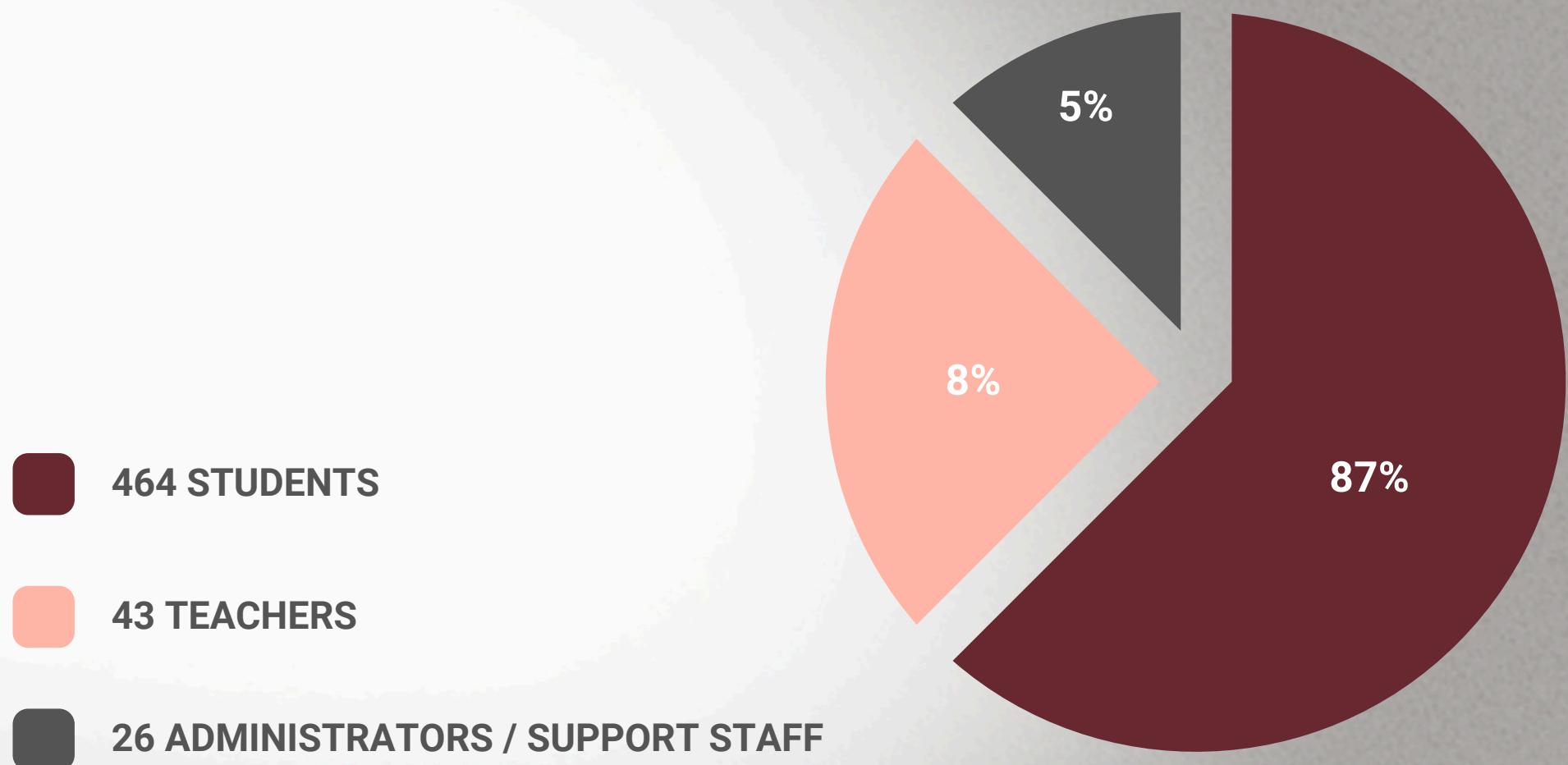
- Public elementary school (Garland ISD)
- Neighborhood-based K-5 campus
- Early childhood learning focus

## 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



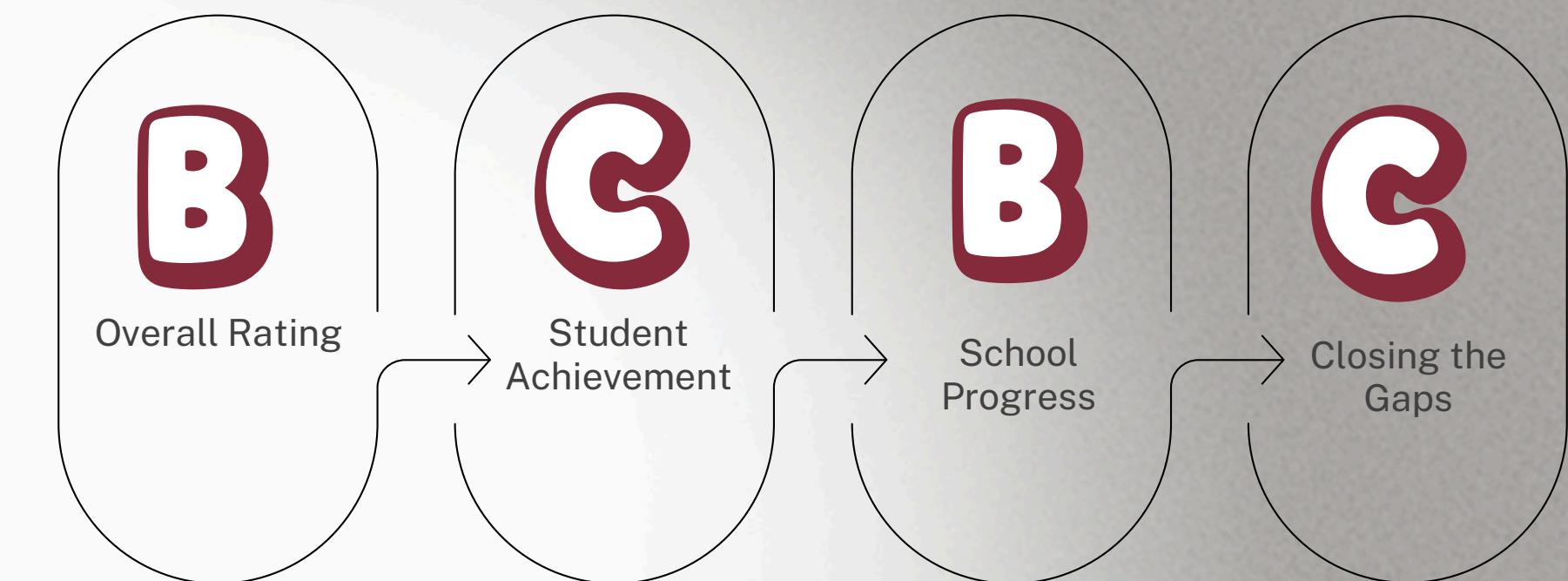
# ACADEMIC PERFORMANCE & LEARNING NEEDS

## 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
- Design can support consistency, clarity, and comfort



TEA ACCOUNTABILITY  
SUMMARY GRAPHIC

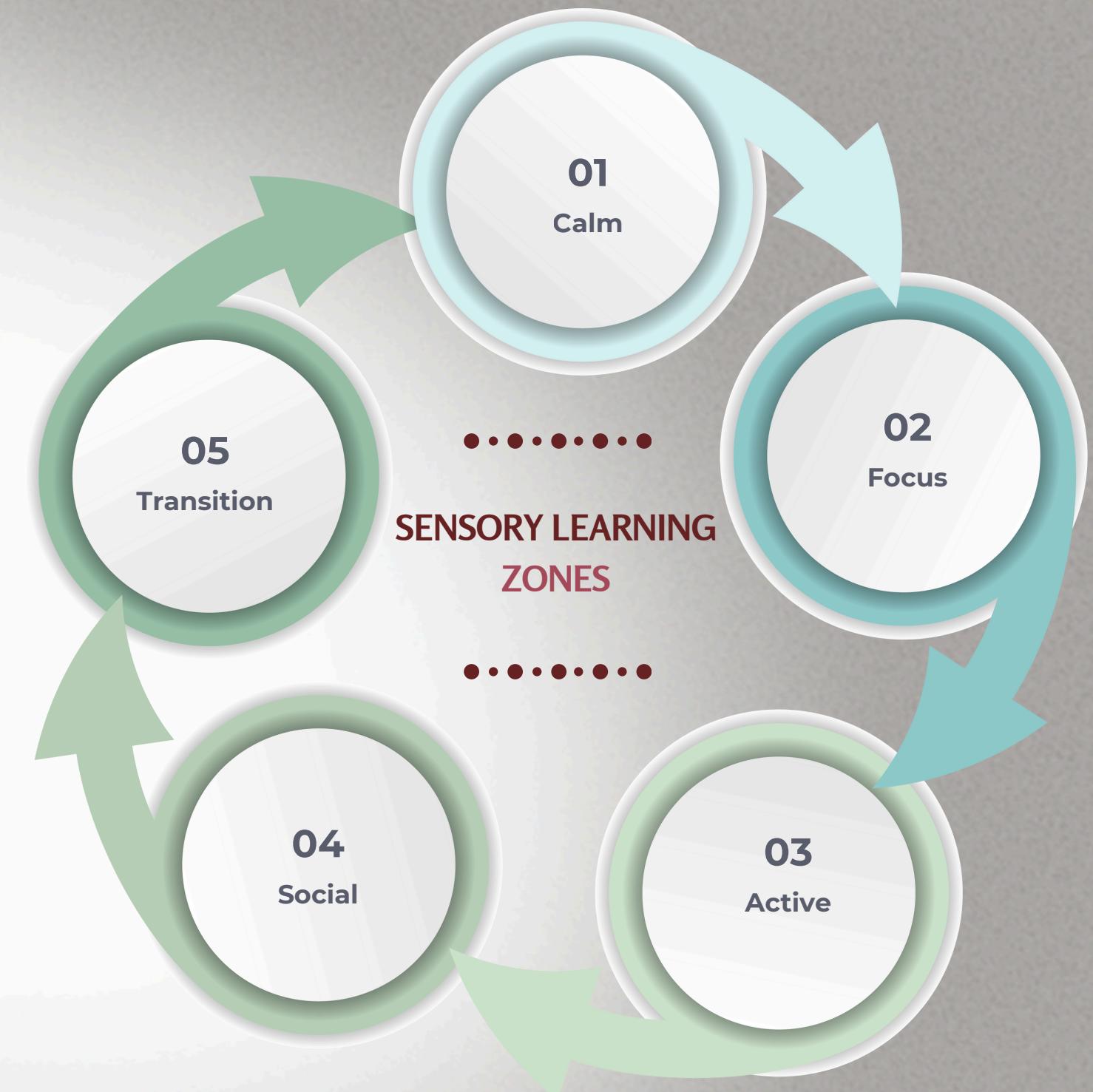
# EARLY CHILDHOOD LEARNING & SENSORY NEEDS

## 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

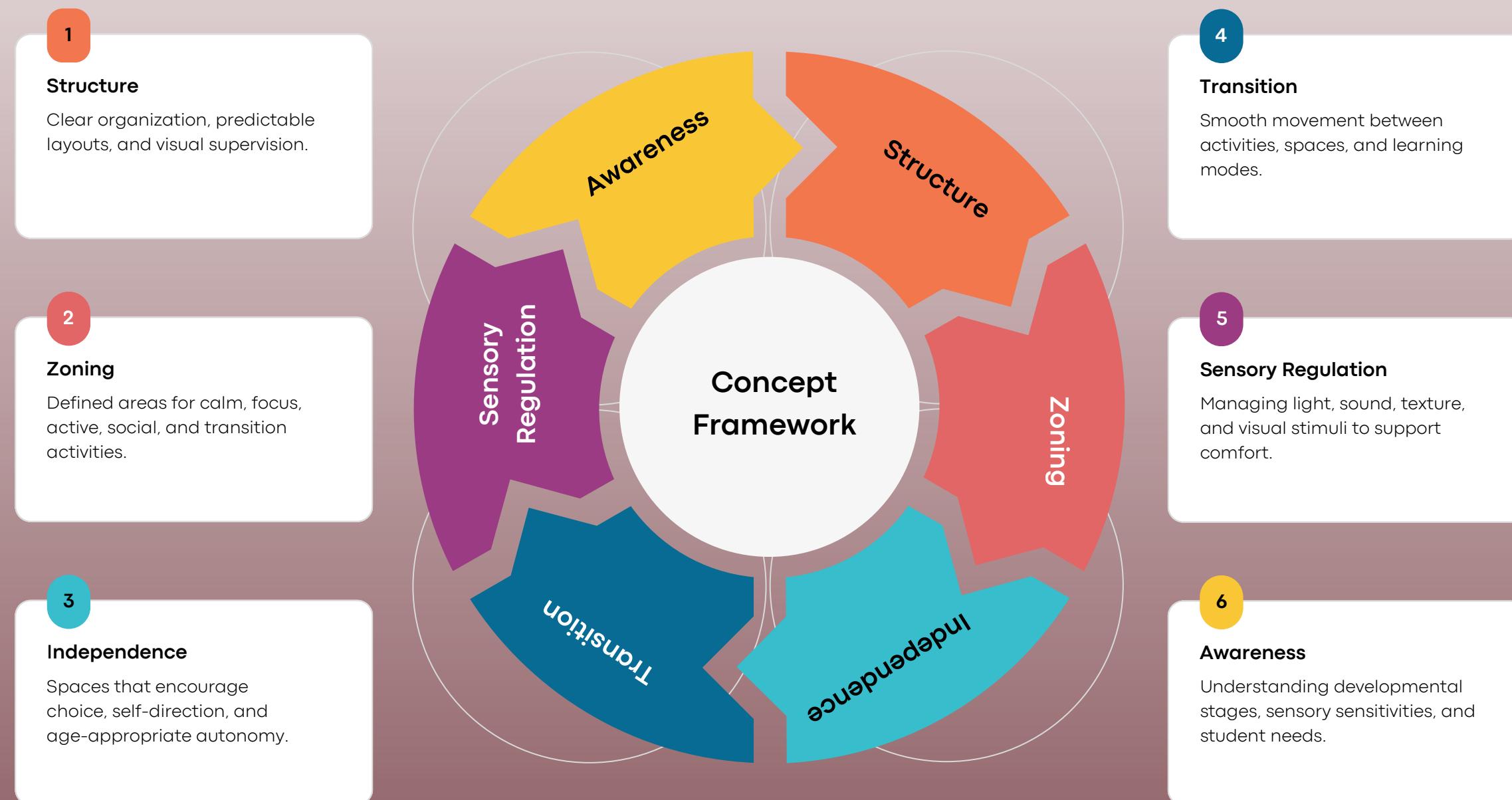
- Clear spatial organization
- Defined quiet and active zones
- Reduced visual and acoustic clutter
- Spaces that support choice and independence



# CONCEPTUAL FRAMEWORK INFORMED BY RESEARCH

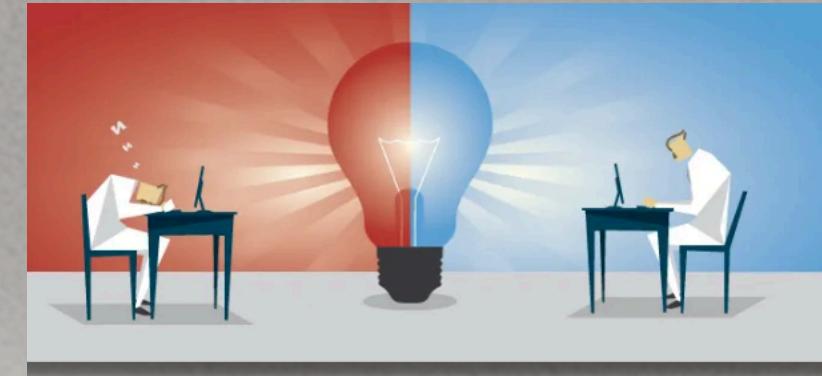
## INVESTIGATIVE FOCUS

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

### RESEARCH IMPLICATIONS:

Acoustic separation, sound-absorbing materials, and controlled transitions are critical in early learning environments.

Meallings K.: The effect of classroom acoustic conditions on literacy outcomes for children in primary school: a review. *Build Acoust* [Internet]. 29(1), 135–56 (2022) Available from: <http://journals.sagepub.com/doi/https://doi.org/10.1177/1351010X211057331>



## 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

### RESEARCH IMPLICATIONS:

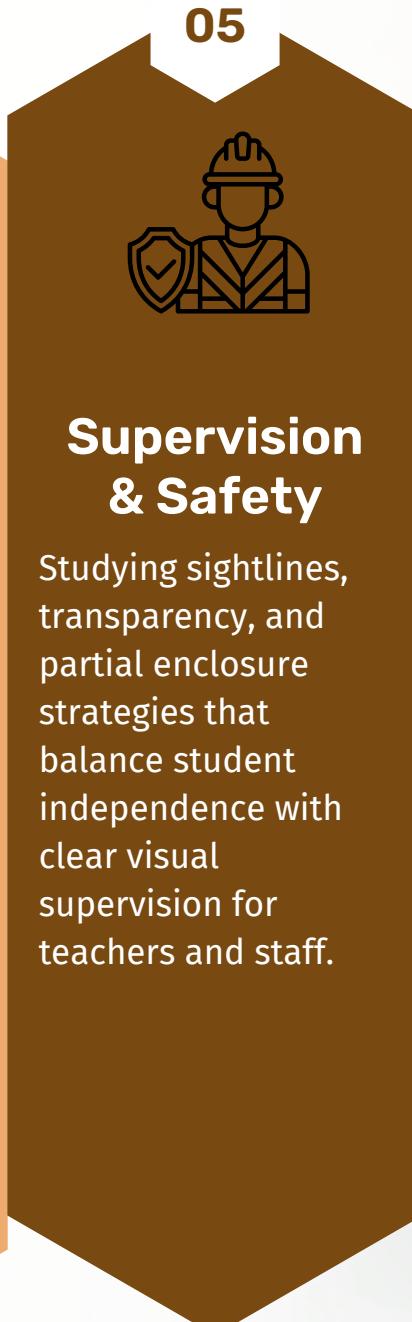
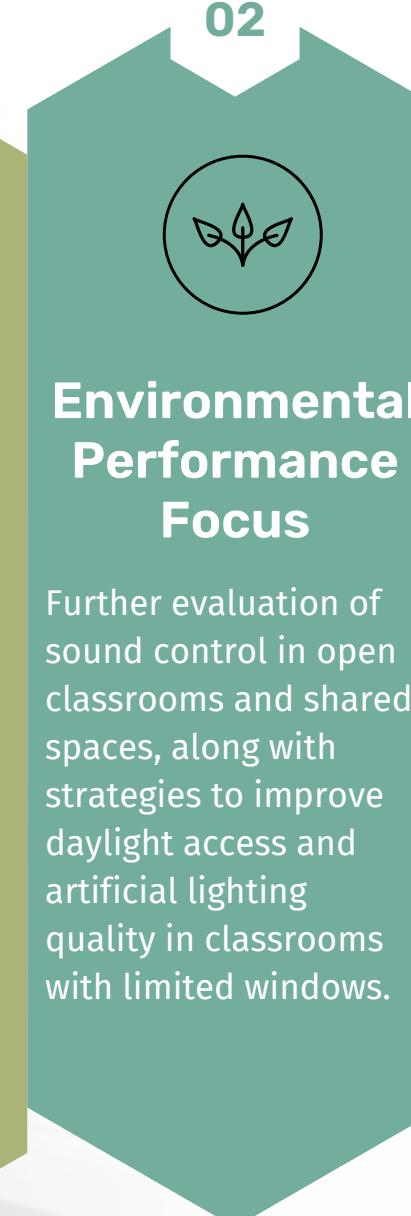
Daylighting strategies and layered lighting are essential for early childhood classrooms.

Sleegers P, Moolenaar N, Galetzka M, Pruyn A, Sarroukh B, van der Zande B. Lighting affects students' concentration positively: Findings from three Dutch studies. *Lighting Research & Technology*. 2012;45(2):159-175. doi: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

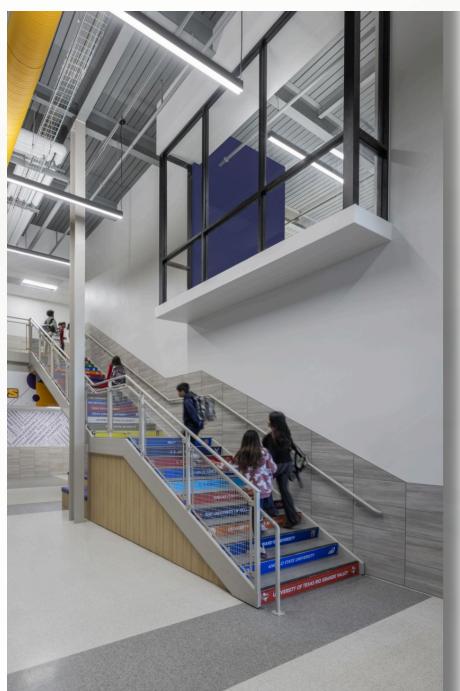
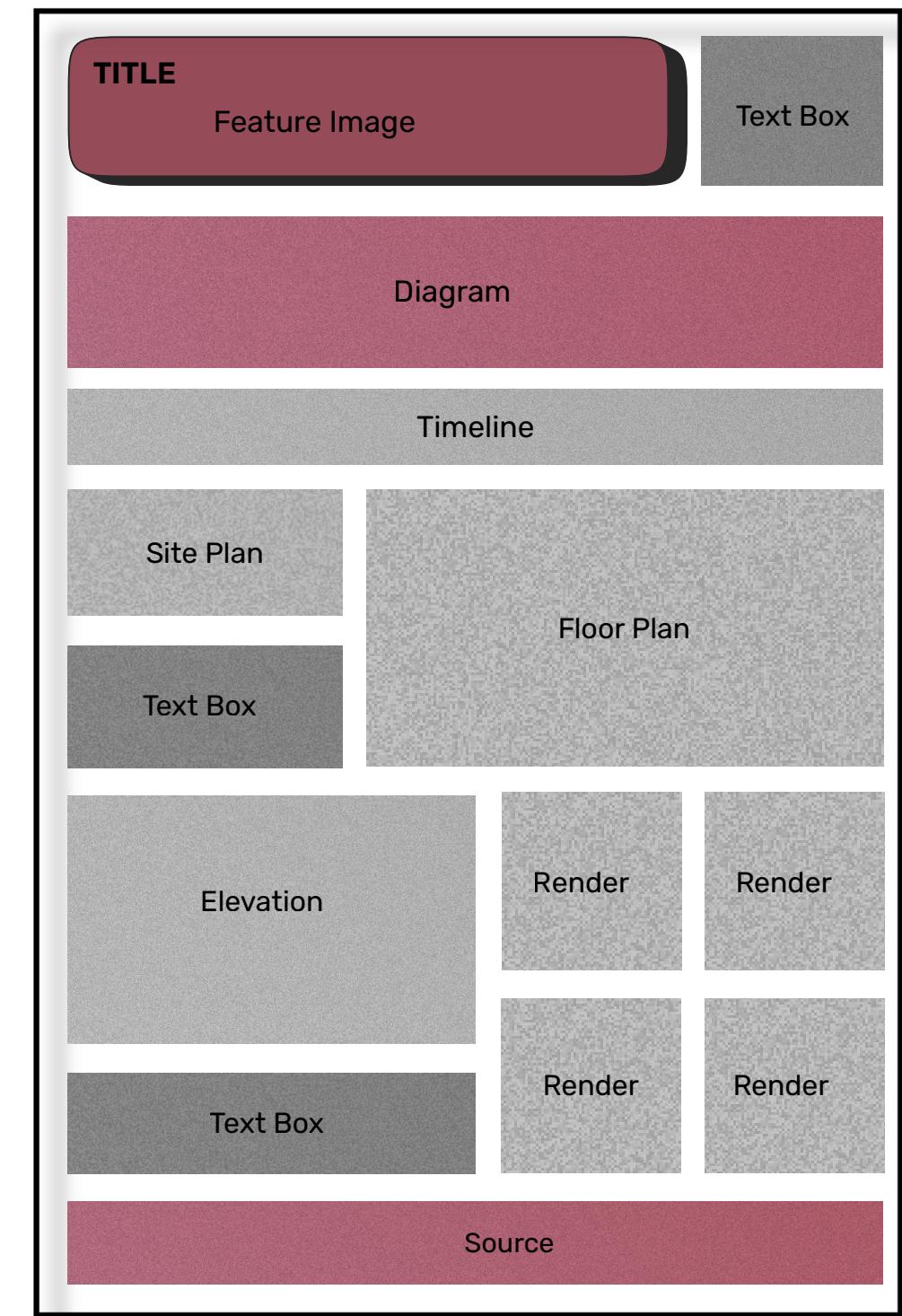
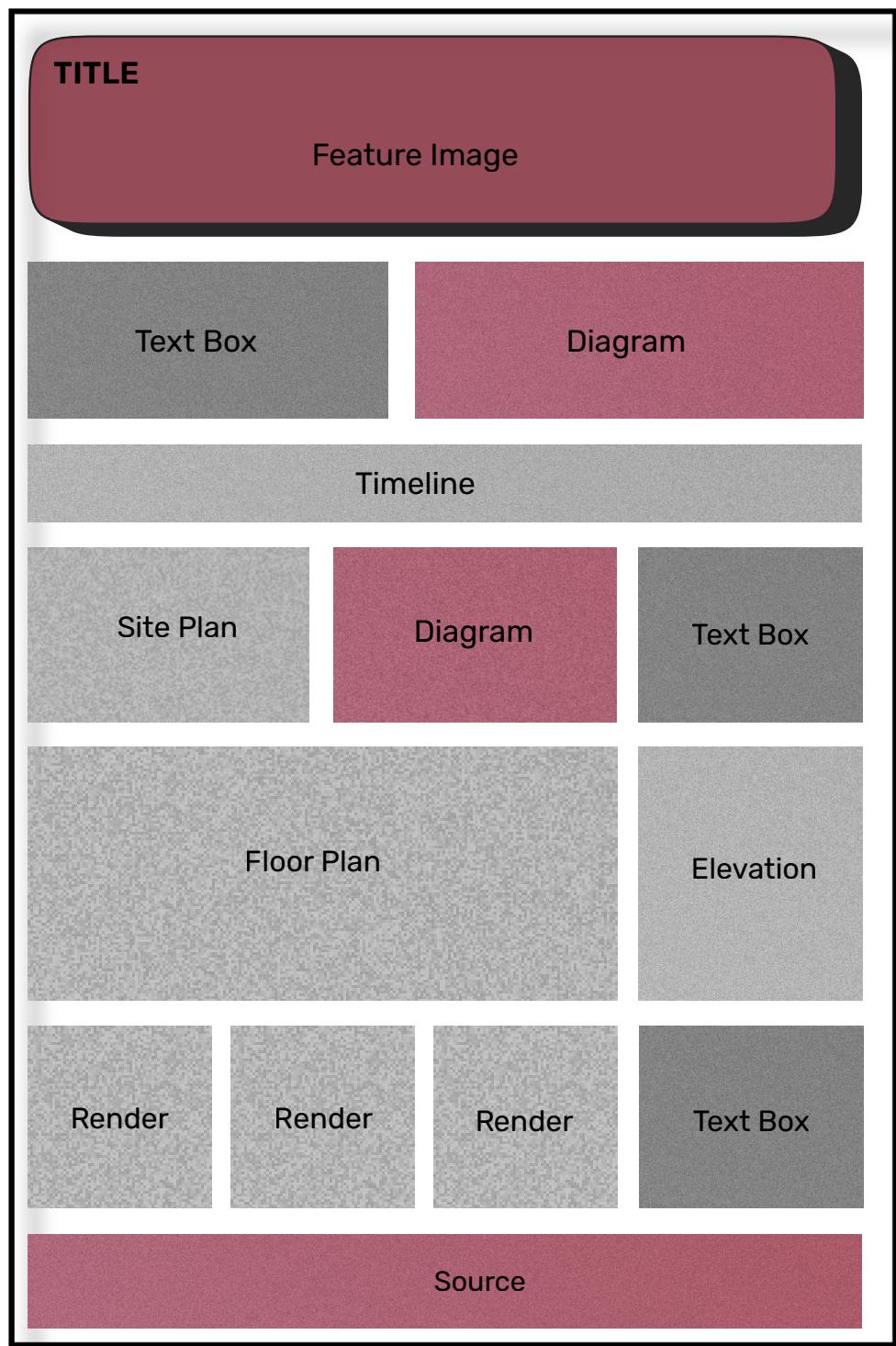


Image sources: Education Snapshots (n.d.).  
Elementary school photo collection.  
<https://educationsnapshots.com/?s=ELEMENTARY+SCHOOL>



# POSTER LAYOUT IDEATION



# REFERENCES

- American National Standards Institute. (2010). Acoustical performance criteria, design requirements, and guidelines for schools (ANSI S12.60-2010). <https://webstore.ansi.org>
- Education Snapshots. (n.d.). Elementary school image collection. <https://educationsnapshots.com/?s=ELEMENTARY+SCHOOL>
- Evans, G. W., & Maxwell, L. E. (1997). The effects of noise on children at school: A review (ERIC Document No. ED432122). ERIC. <https://eric.ed.gov/?id=ED432122>
- Garland Independent School District. (n.d.). Northlake Elementary School. <https://www.garlandisd.net/choose-your-school/school-directory/northlake-elementary-school>
- Heschong, L. (2002). Daylighting and human performance. *ASHRAE Journal*, 44(6), 65–67.
- Heschong Mahone Group. (1999). Daylighting in schools: An investigation into the relationship between daylighting and human performance. Pacific Gas and Electric Company. <https://www.h-m-g.com>
- 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>
- 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>
- Ulrich, R. S., Zimring, C., Zhu, X., DuBose, J., Seo, H. B., Choi, Y. S., Quan, X., & Joseph, A. (2008). A review of the research literature on evidence-based healthcare design. *HERD: Health Environments Research & Design Journal*, 1(3), 61–125. <https://doi.org/10.1177/193758670800100306>
- U.S. Green Building Council. (2019). LEED v4 for building design and construction. <https://www.usgbc.org>
- U.S. Lighting Group. (n.d.). Lighting students' concentration. [https://www.usailighting.com/stuff/contentmgr/files/1/d4a5e8097a28dd56c9843c79750baf9e/misc/lightingstudentsconcentration\\_sleegers.pdf](https://www.usailighting.com/stuff/contentmgr/files/1/d4a5e8097a28dd56c9843c79750baf9e/misc/lightingstudentsconcentration_sleegers.pdf)
- World Health Organization. (2018). Environmental noise guidelines for the European region. <https://www.who.int>



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# THANK YOU