



CORGAN ■ — HUGO — MATHTRACK

# **On Track for Community Success:** *Considering the “Place” and “Workforce” Together in Education*

APRIL 10<sup>TH</sup>, 2024



On Track for Community Success: Considering the “Place” and “Workforce” Together in Education

# Introductions



**Anthony Wang**

Vice President, Education Studio Design Director  
Corgan



**Dr. Kevin Berkopes**

CEO and Cofounder of MathTrack Institute  
MathTrack Institute



**Samantha Flores**

Vice President, Director of Hugo  
Corgan



Overview — Corgan

# A Leading Architecture + Design Firm



Amarillo · Atlanta · Austin · Chicago · Dallas · Dublin · Frisco · Houston · London · Los Angeles  
New York City · Orlando · Phoenix · San Antonio · San Francisco · Seattle · Singapore · Washington D.C.





On Track for Community Success: Considering the “Place” and “Workforce” Together in Education

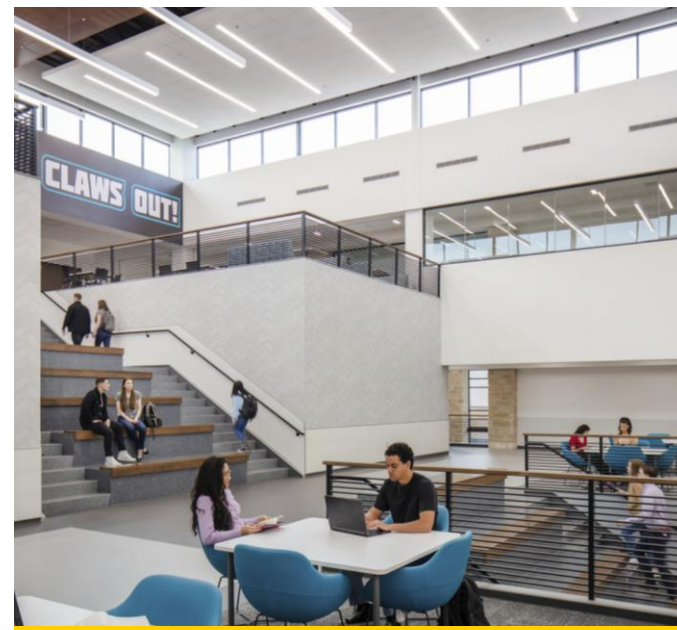
# A Leading Architecture + Design Firm



AVIATION & MOBILITY



DATA CENTERS



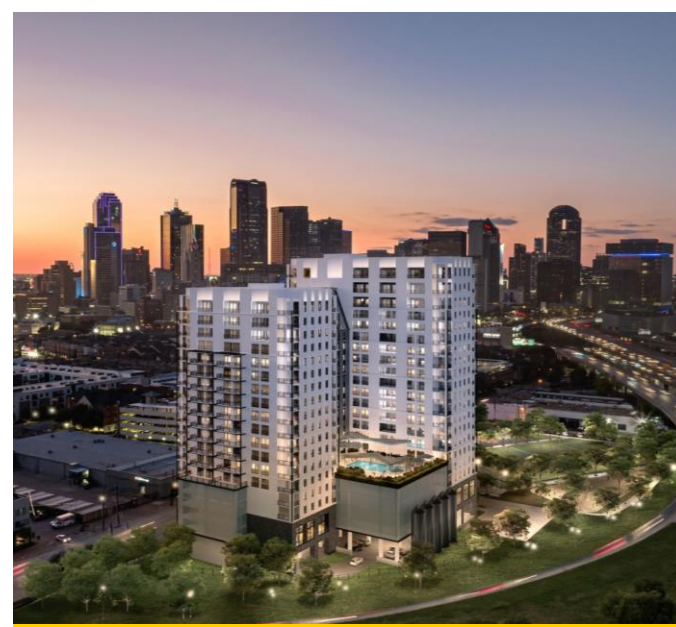
EDUCATION



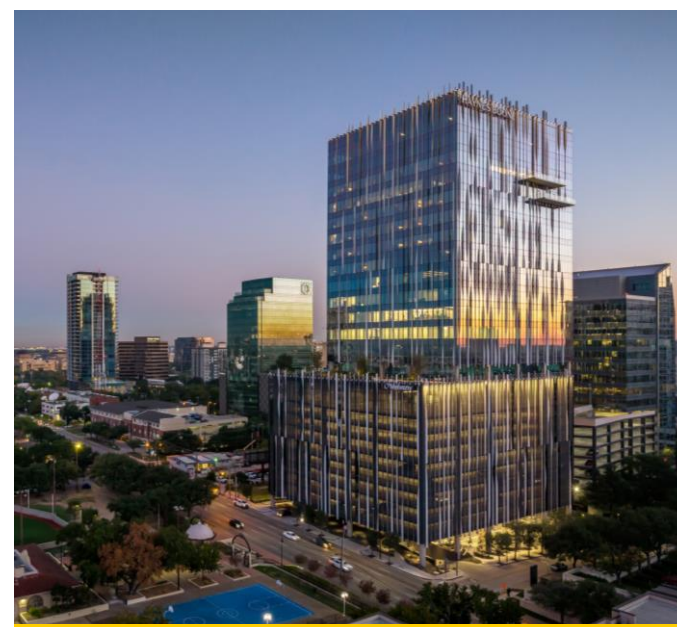
HEALTH



MIXED USE



MULTI-FAMILY



OFFICE



WORKPLACE

# Top 10

K-12 Architecture Firm  
BD+C 2023

# #4

Architecture Firm  
BD+C 2023 Giants





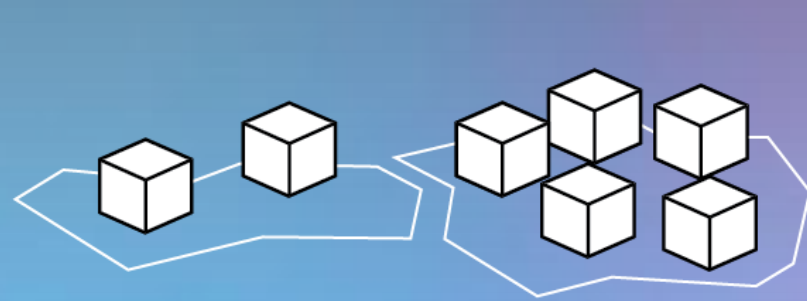
**HUGO**

elevating **data-driven** design research  
around the **human experience**

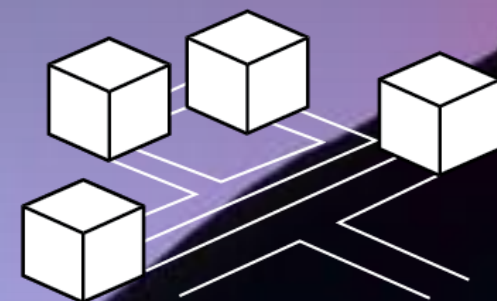


How do we design  
for the future?

...and what drives our  
behaviors and decision making?



**ECOSYSTEM**



**NEIGHBORHOOD**



**BUILDING**



**SPACE**



**PRODUCTS**



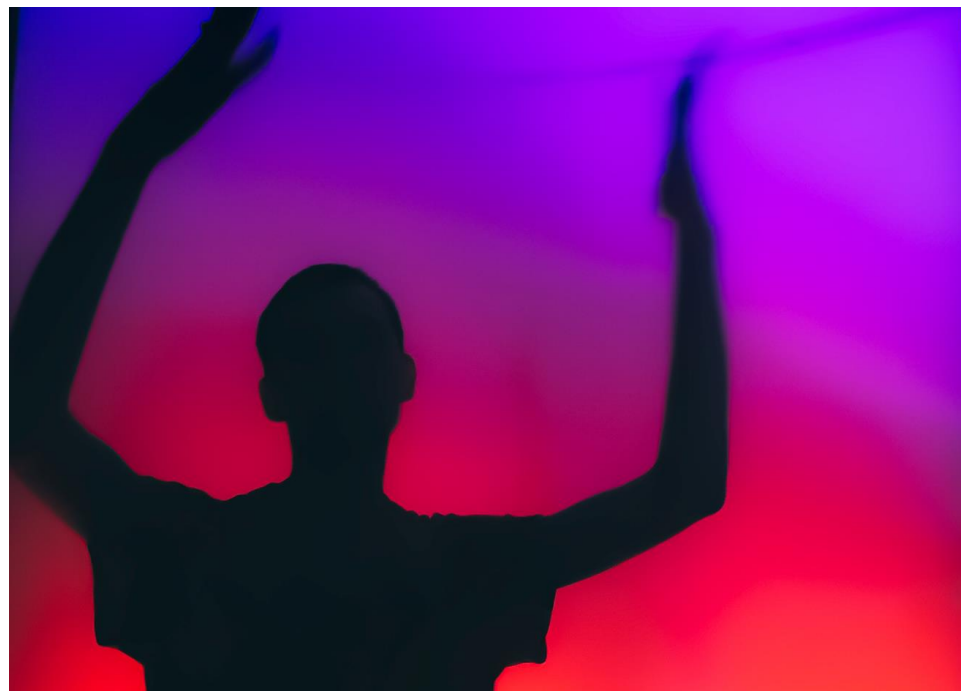
**USER**



On Track for Community Success: Considering the “Place” and “Workforce” Together in Education

# Research Types

Driving how we **inform our work**



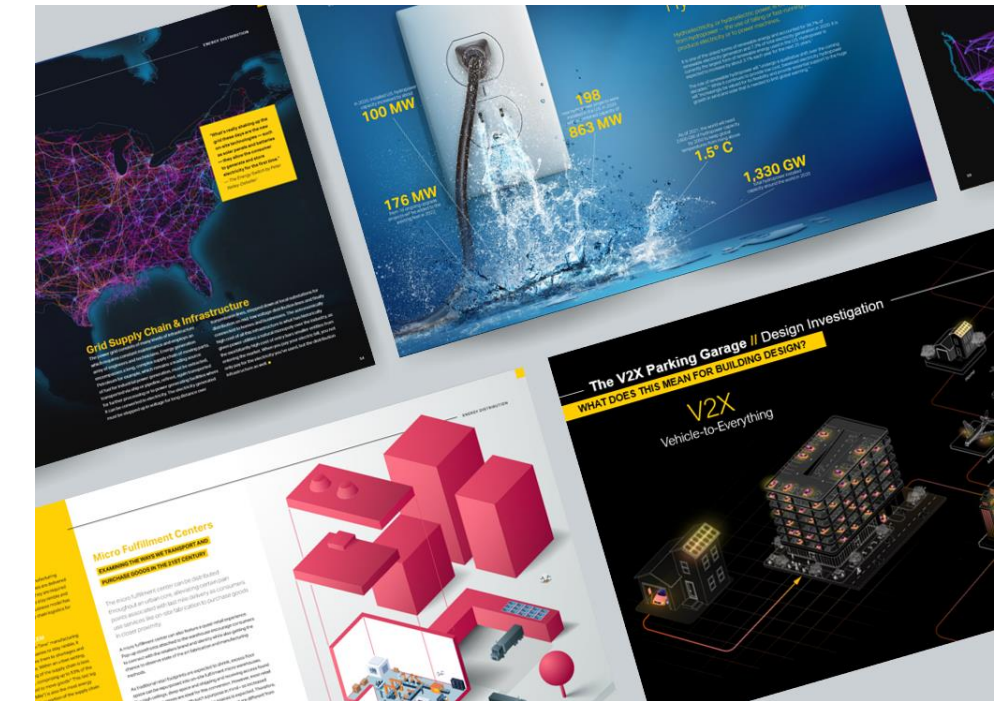
## HUMAN EXPERIENCE // BEHAVIORS

Our research identifies key factors that influence the human experience, uncovers unique insights, and develops UX design strategies that accurately reflect the user’s needs and preferences, promote user satisfaction, well-being, and a sense of place



## ENVIRONMENTAL ANALYSIS // SPACE

We assess the surrounding physical, social, and cultural context to inform the design process and ensure that the building is functional, sustainable, and responsive to the needs of its users and the environment



## TREND FORECASTING // TECHNOLOGY + EMERGING MARKETS

We investigate trends in technology and emerging markets to inform decision-making and create buildings that are adaptable, innovative, and able to meet the evolving demands of their users and the larger society.





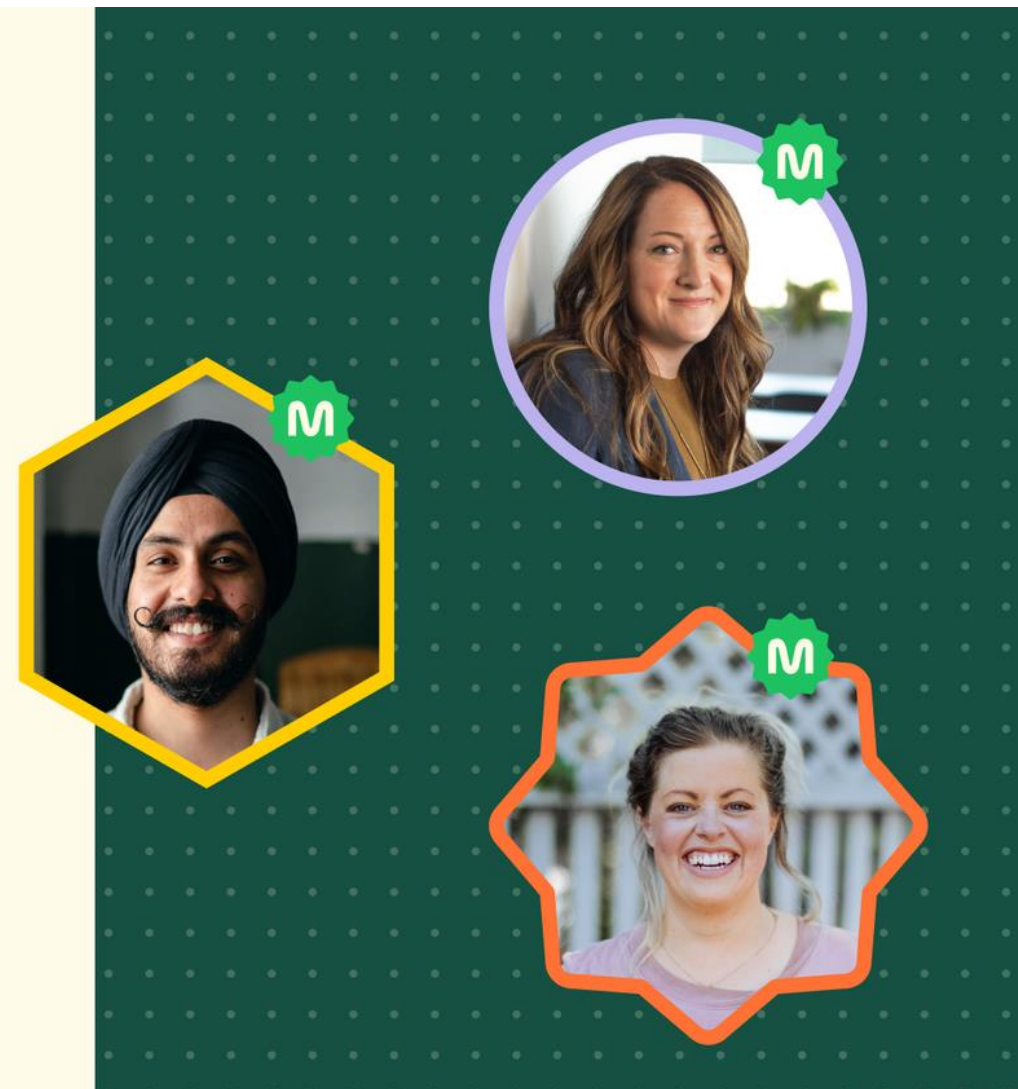
# Dr. Kevin Berkopes

*NEXT Studios – Education Innovation Executive*

*MathTrack - CEO*

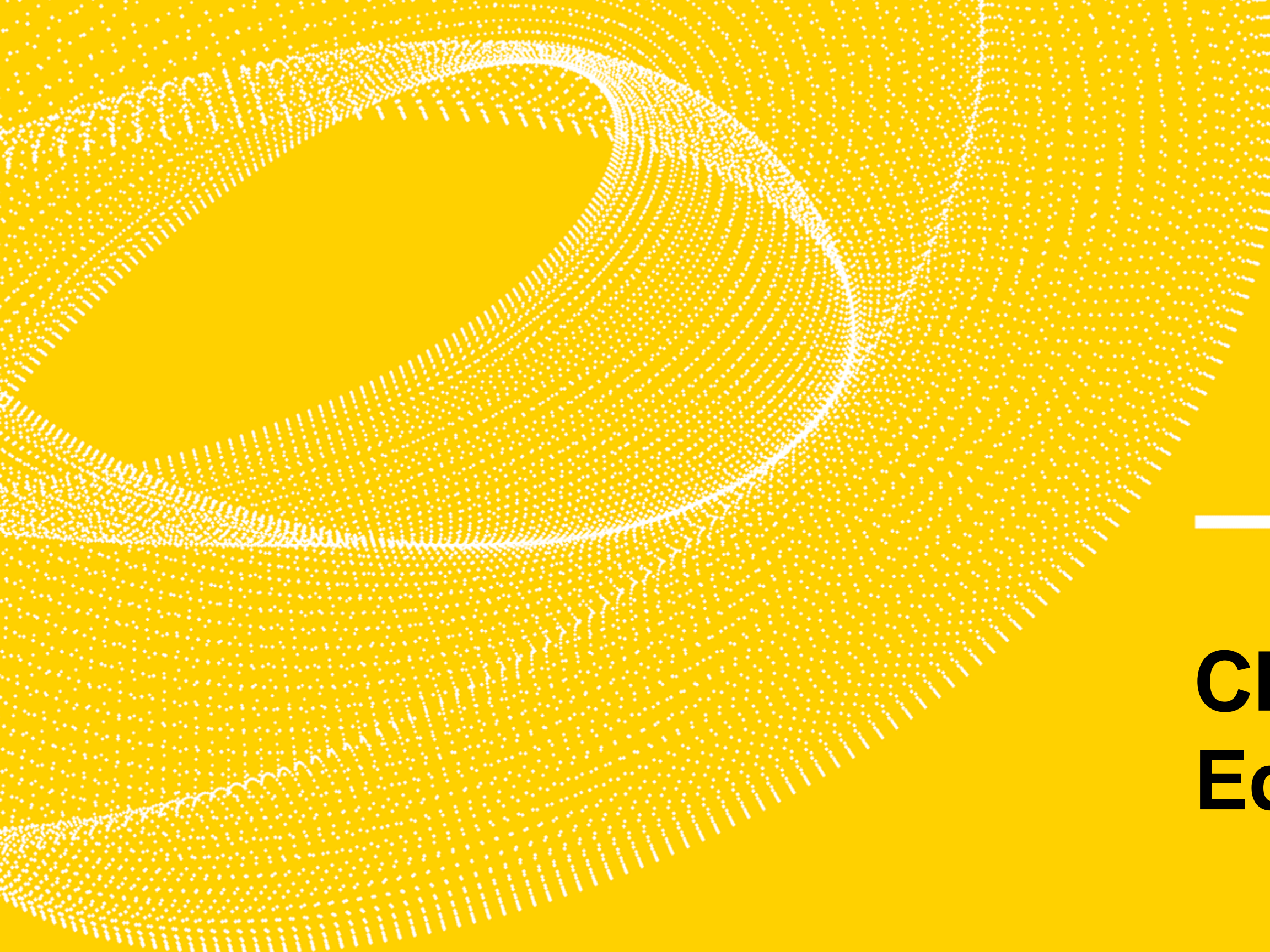
Reimagining how  
math is taught  
and learned.

**MATHTRACK**



*I am an **educator, inventor, disruptor**— I believe that we can change the world for the better through entrepreneurship. **Real change in education will take vision and the will to build new operations and systems.** We choose true disruption, and the path that is less traveled.*





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# Challenges Facing Education



# Learning Gaps

“ Students overall haven’t returned to pre-pandemic levels of achievement, but clear progress is being made.

Sean Reardon - Professor of Poverty and Inequality in Education at Stanford

## Recovering From Pandemic-Era Learning Loss

- Widened achievement gaps between high- and low-poverty districts
- A recent report from the **Education Recovery Scorecard** found that between Spring 2022 and Spring 2023, students recovered approximately:
  - One-third of the original loss in **math**
  - One-quarter of the original loss in **reading**

“We should thank teachers and principals and superintendents for what they’ve done for American schoolchildren in the last year. Their efforts have led to strikingly large improvements in children’s learning, but we shouldn’t lose sight of the fact that the recovery has been uneven, and we have a long way to go.”

## GRADE 4 | MATHEMATICS | 2022

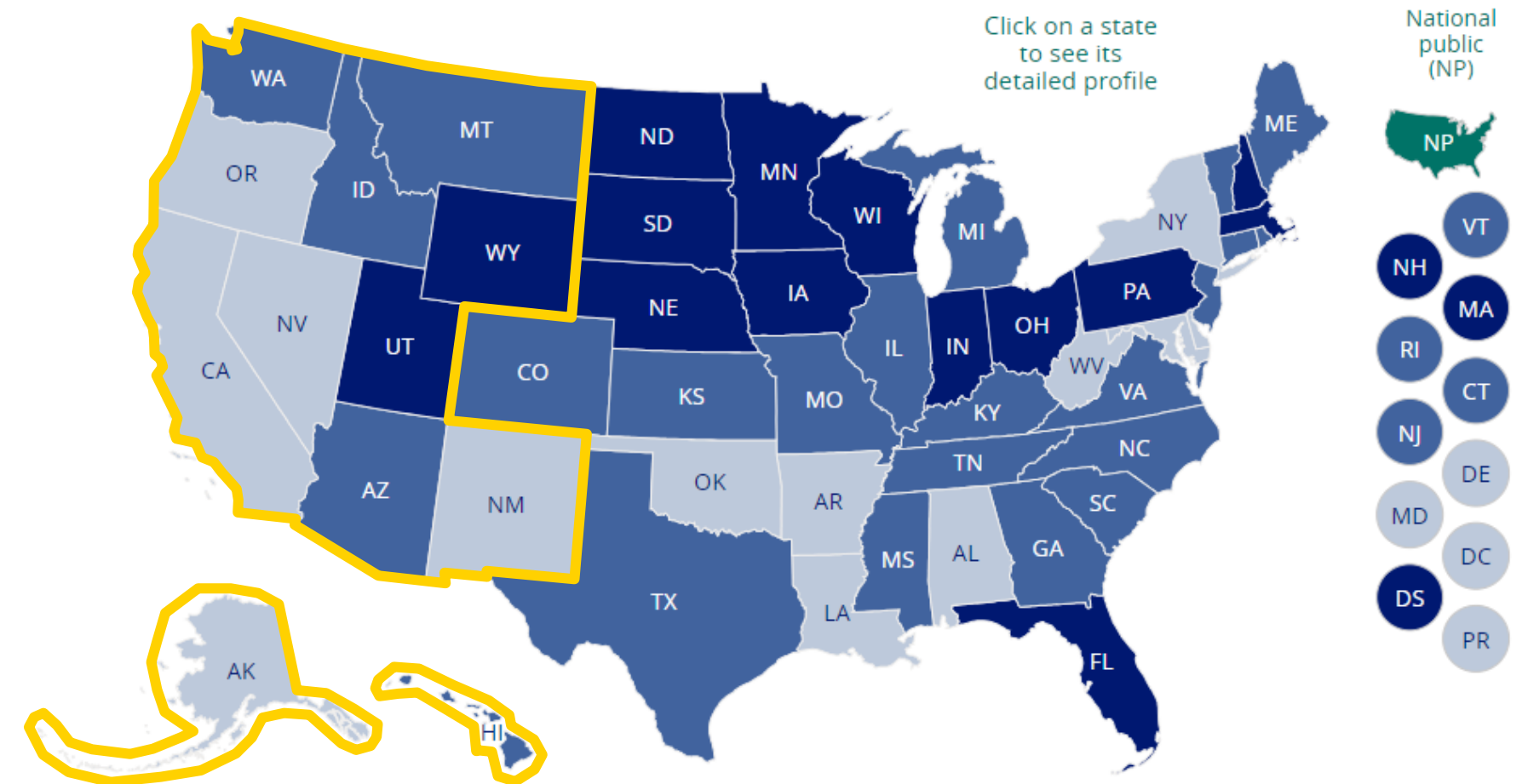
ACHIEVEMENT LEVELS - at or above *Proficient*

2022 ▾



Mathematics, grade 4

Difference in percentage at or above Proficient between jurisdictions, for all students [TOTAL] = All students, 2022



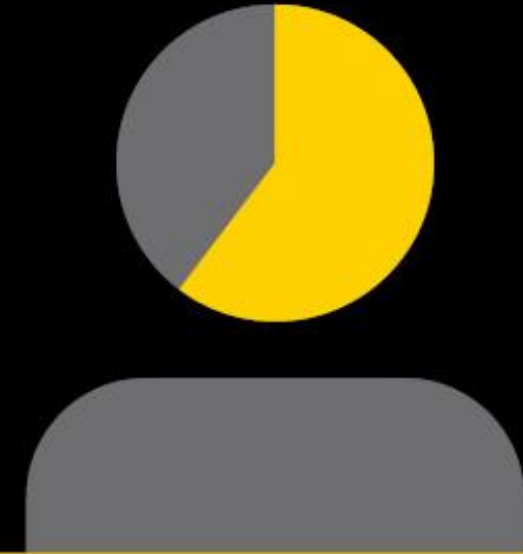




Insight From:  
***Design Lessons from Teachers 2.0***  
Corgan's 2022 Data Report



CORGAN 



**59%** of teachers reported the pressure to catch up from COVID-related learning gaps and provide educational equity as a primary source of stress.

Design Lessons from Teachers 2.0, 2022



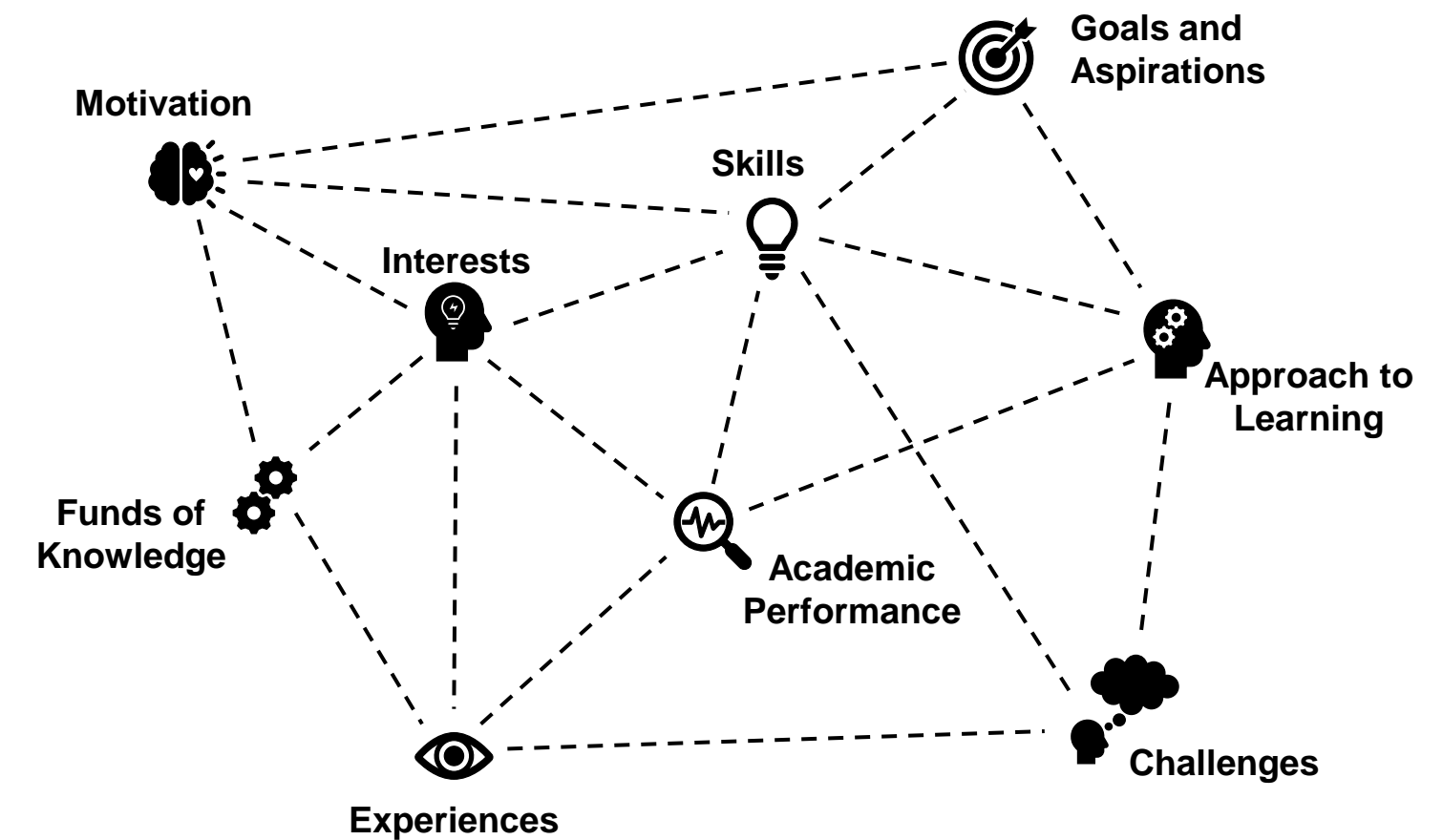
# Rising Demand for Personalized Learning

- Increasing generational expectation for personalized learning
- Gen Z and Gen Alpha (and their parents) are accustomed to the prevalence of adaptive technologies and personalized profiles – they expect learning experiences that are highly personalized and targeted
- Increase in students receiving Individualized Education Programs (IEPs) requires more personalized instruction in the classroom

“The WHAT is out there already. *The HOW and the WHY are now the critically important pieces for learning.* Students need to learn how to think, not what to think, and that includes being **metacognitive** about their own actions and choices.”



[Zmuda et al, 2017; Hughes, 2020; McCrindle, 2020]



## PERSONALIZED LEARNING:

- 1-to-1 interaction
- **Adapt** to learner cues and comprehension in real time
- Instruction **tailored** to student needs and interests
- **Individualized** approach
- Able to assess learner **progress**
- Educators can deliver this intuitively *at a small scale*





Teachers report that providing an environment that offers personalized learning and emotional support as a primary source of stress.



Insight From:  
***Design Lessons from Teachers 2.0***  
Corgan's 2022 Data Report



# Shortage of Qualified Educators

Estimates from the Learning Policy Institute “...indicate that, at a minimum, 314,134 positions were either **unfilled or filled by teachers not fully certified** for their assignments, representing about **1 in 10** of all teaching positions nationally”

” State Teacher Shortages: Teaching Positions Left Vacant or Filled by Teachers Without Full Certification  
[LEARNING POLICY INSTITUTE](#)

**44%**  
 of public schools reported having one or more vacant teaching positions during the 2022-2023 school year

In 2022,  
**All 50 States** reported teacher shortages in at least one subject area

Approximately  
**33%** of teachers surveyed by McKinsey in 2021 planned to leave their role before the next school year



“ At the heart of our society lies the invaluable teaching profession – entrusted with nurturing the educational journey of our youngest generation. Yet, a concerning trend has emerged: the growing shortage of educators in the United States...addressing this pressing issue has become more imperative than ever.

“The U.S Teacher Shortage 2023: A State-by-State Breakdown”  
 Scholaroo



# Why is There a Teacher Shortage?



## ECONOMIC FACTORS

Increases in cost of living and cost of education outpace rate of teacher pay



## DECREASED ENROLLMENT IN TEACHER EDUCATION PROGRAMS

Enrollment in traditional teacher preparation programs declined by nearly a third between 2010 and 2018



## BURNOUT AND LOW MORALE

Teachers are decreasingly finding the stress and disappointments they experience in their job worthwhile, causing many to consider leaving



## ADDITIONAL ROLES AND INCREASED DEMANDS

Supporting learning needs, recovering from COVID learning loss, parent expectations, additional roles and responsibilities







# Teacher Shortages and Issues of Equity



...shortages of well-prepared teachers have historically been most severe in schools that serve larger numbers of students from **low-income families** and **students of color**, and in **subjects with greater opportunity costs**, like special education, mathematics, and science.

Emma Garcia  
Senior Researcher at the Learning Policy Institute





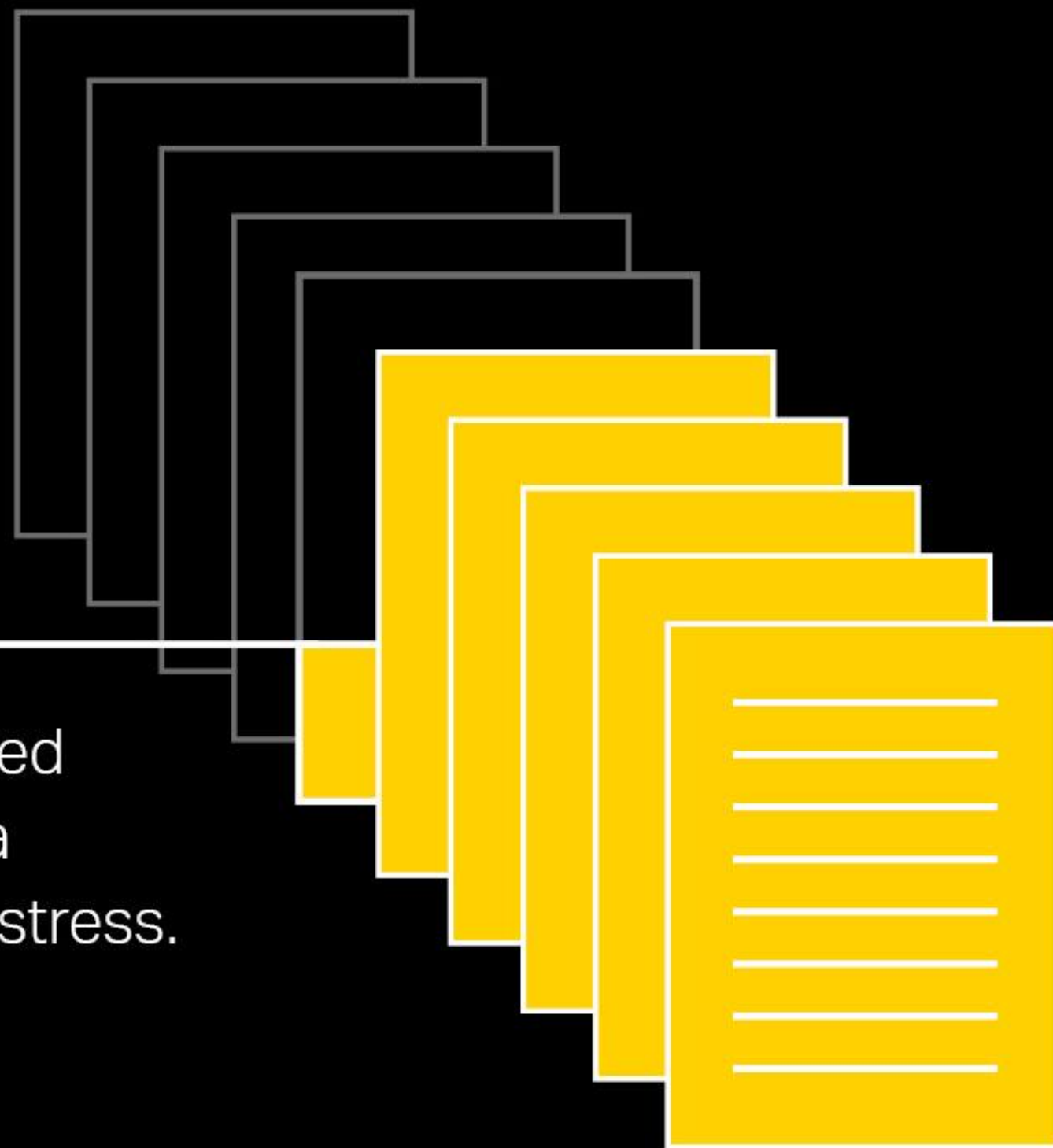
Insight From:  
***Design Lessons from Teachers 2.0***  
Corgan's 2022 Data Report

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53%

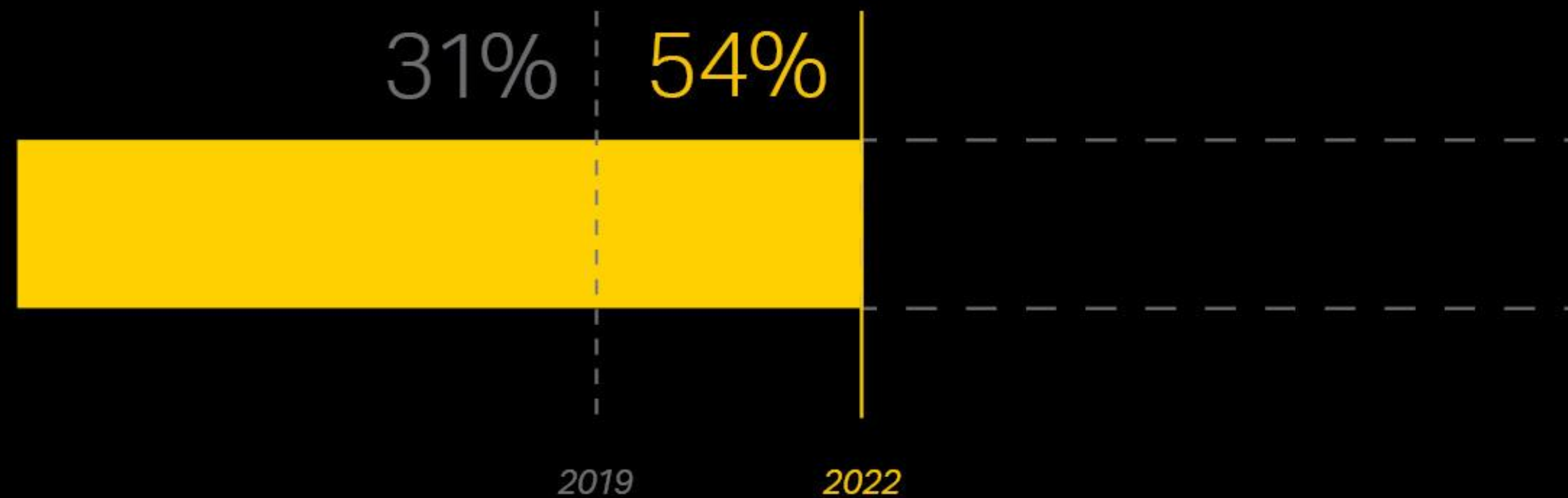
of teachers reported  
their workload as a  
primary source of stress.





# Post-Pandemic Teacher Insight

The pressure teachers put on themselves to help students succeed is increasingly a primary source of stress —up by 23% since 2019.





# Impact of Turnover and Educator Burnout on Student Outcomes

## POOR MORALE

- Morale for teachers and principals significantly declined during the pandemic
- Poor morale today might dissuade tomorrow’s teachers from entering the field

Educator **BURNOUT** is associated with:

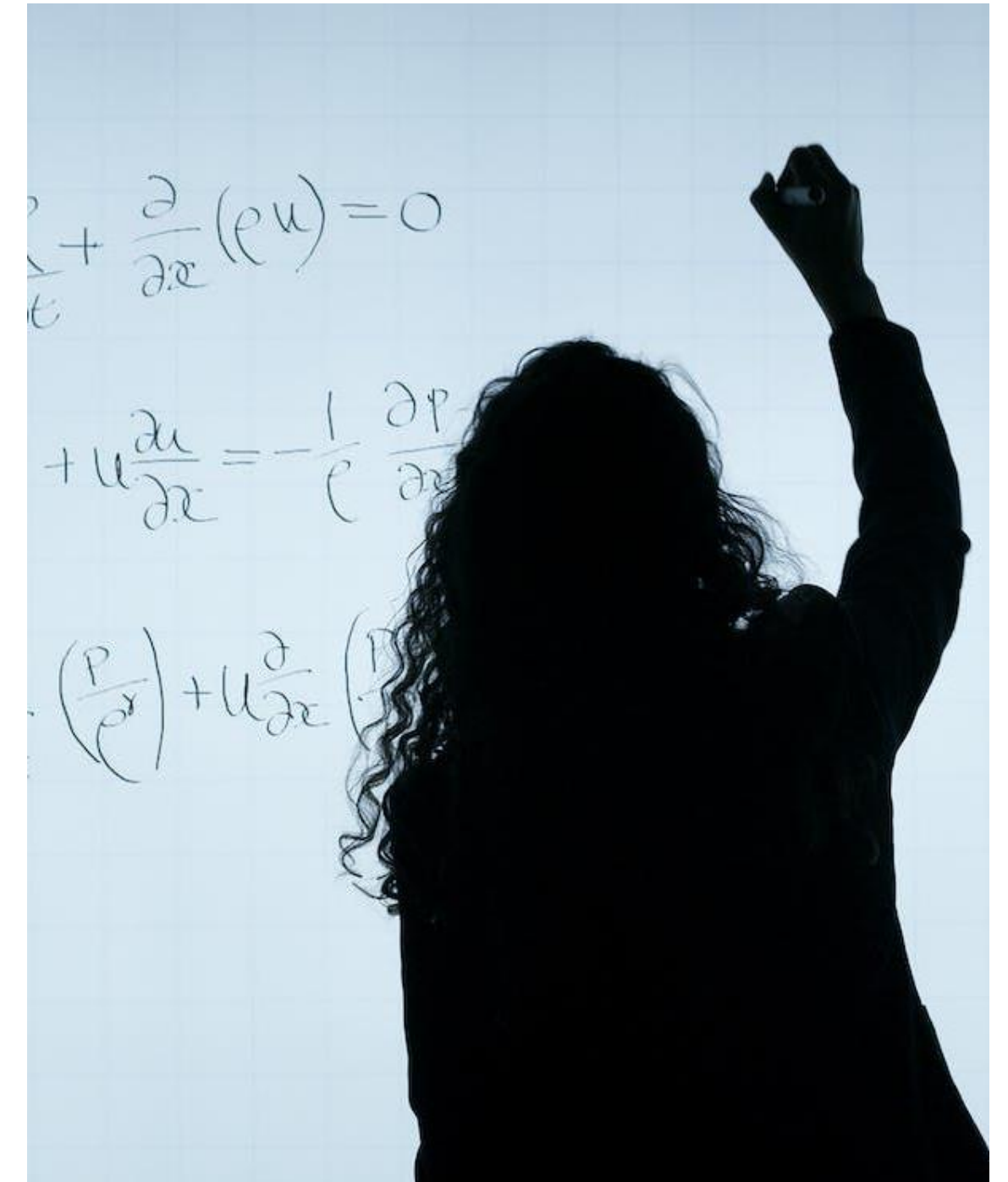
- Declines in academic achievement
- Lower quality student motivation

Teacher **TURNOVER**:

- Harms student achievement and perpetuates unequal opportunities to learn
- Impacts teacher effectiveness
- Erodes the profession’s appeal
- Drains district resources

“High rates of underprepared teachers in a district decrease student achievement and, since they are more than twice as likely to leave the profession as fully prepared novices, exacerbate teacher turnover”

- Emma García, Matthew A. Kraft, and Heather L. Schwartz, 2023



[Madigan & Kim, 2021; Garcia et al., 2023]





# Socio-Economic Divide



For a student who is in a lower socio-economic status, it's not even just the supplies or the view on education. It's also the food. We have many homeless students. **Their individual success hinges on if they can get a good meal, if they can get enough sleep, if they find a place to wash their clothes and shower.**

ALTERNATIVE SCHOOL TEACHER  
1/5 SOCIO-ECONOMIC SCHOOL



Some households are decked out with technology like you wouldn't believe and some homes have nothing, they don't even have internet”

PUBLIC SCHOOL TEACHER  
3/5 SOCIO-ECONOMIC SCHOOL



For some students it's worked okay because they're self-motivated and they've been able to adapt very well. The students who need accommodations or for the students who struggle to focus, **being at home has been a nightmare**”

PRIVATE SCHOOL TEACHER  
4/5 SOCIO-ECONOMIC SCHOOL



I have students who are chronically hungry, and I have students who do not have appropriate winter wear. **There are all kinds of things that affect their ability to learn**”

PUBLIC SCHOOL TEACHER  
1/5 SOCIO-ECONOMIC SCHOOL



As teachers, we've been told that one size education doesn't fit all, and now we're told that it needs to, but it just doesn't work for everyone.”

ALTERNATIVE SCHOOL TEACHER  
3/5 SOCIO-ECONOMIC SCHOOL



A lot of students don't have access to adequate technology. They don't have the computers, they don't have internet access, **they don't have the space.**”

ALTERNATIVE SCHOOL TEACHER  
1/5 SOCIO-ECONOMIC SCHOOL



The divide between the haves and the have nots, the divides along racial lines, the social injustice of it has been horrifying to me, and I cannot believe there has not been more of a movement among philanthropists to try and do something about this... to try and provide for the children in schools that already have so little”

PUBLIC SCHOOL TEACHER  
1/5 SOCIO-ECONOMIC SCHOOL



# Rise of AI in Education

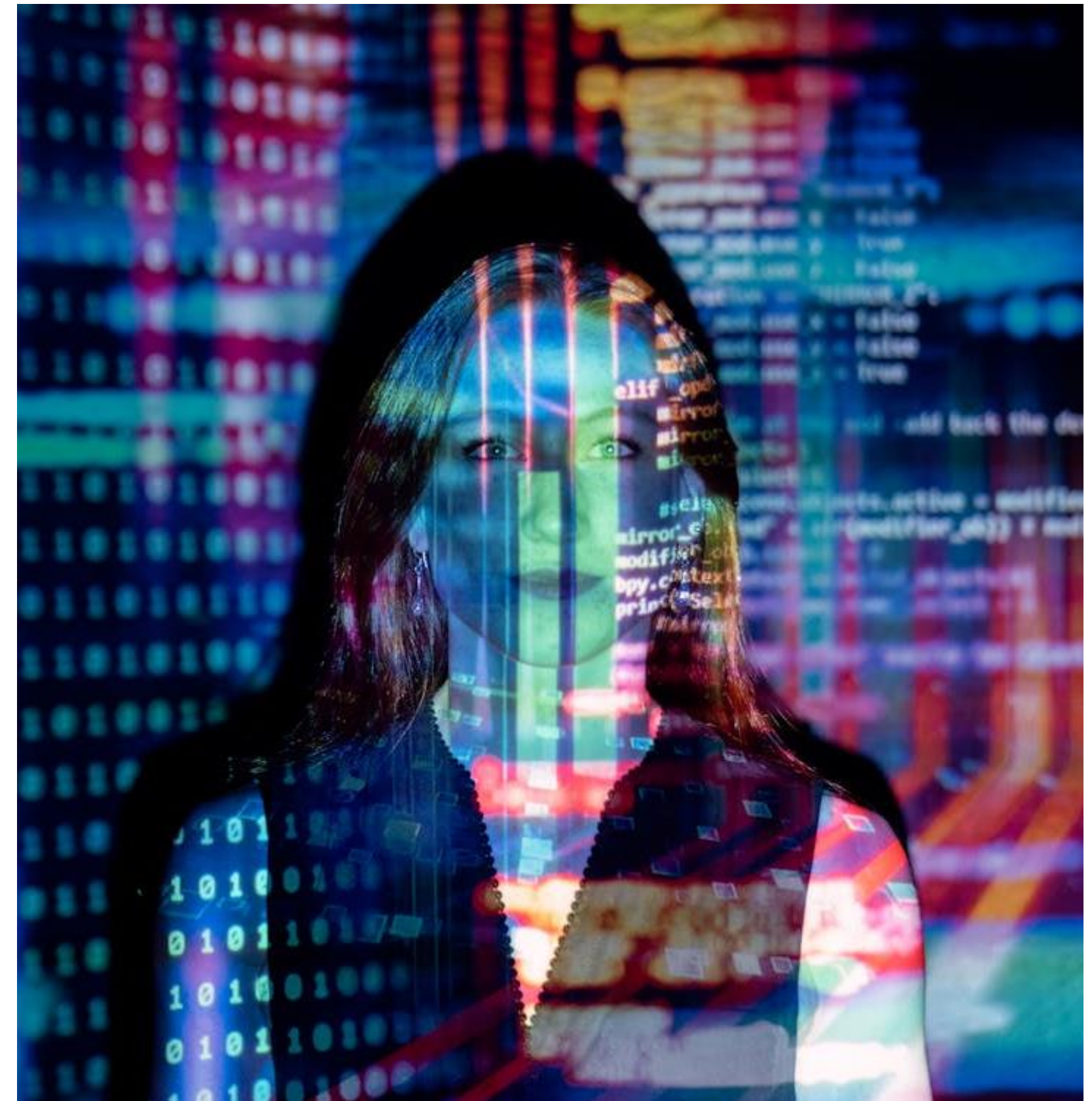
## What is the job to be done as an educator?

### Role of the Educator

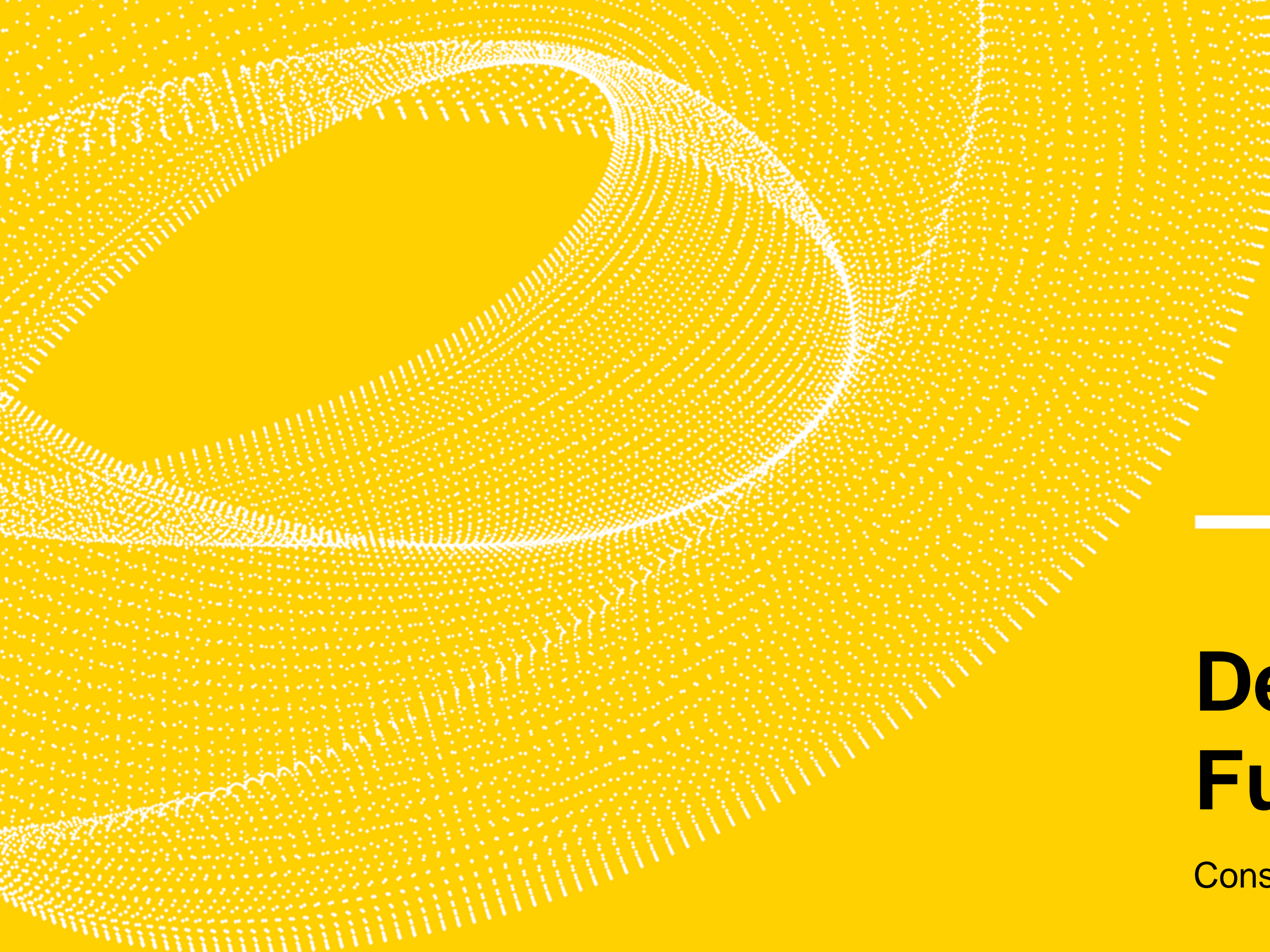
- Coach / facilitator of learning and growth
- Emotional and social support
- Facilitate engaging learning experiences

### Paradigm Conflict

- Adapt to modern context to prepare students for the present and future
- Continuing to teach in a traditional way will have education lagging behind
- AI as “Augmented Intelligence” – focus on developing human skills
- Educators need education on AI







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# Designing for a New Future in Education

Considering Place and Workforce Together



# The Power of “Place” in Education



## BELONGING

Place Attachment  
 Safety and Security  
 Connection  
 Identity  
 Pride



## VALUE

Show students they are valued and cared for by providing a high-quality learning environment



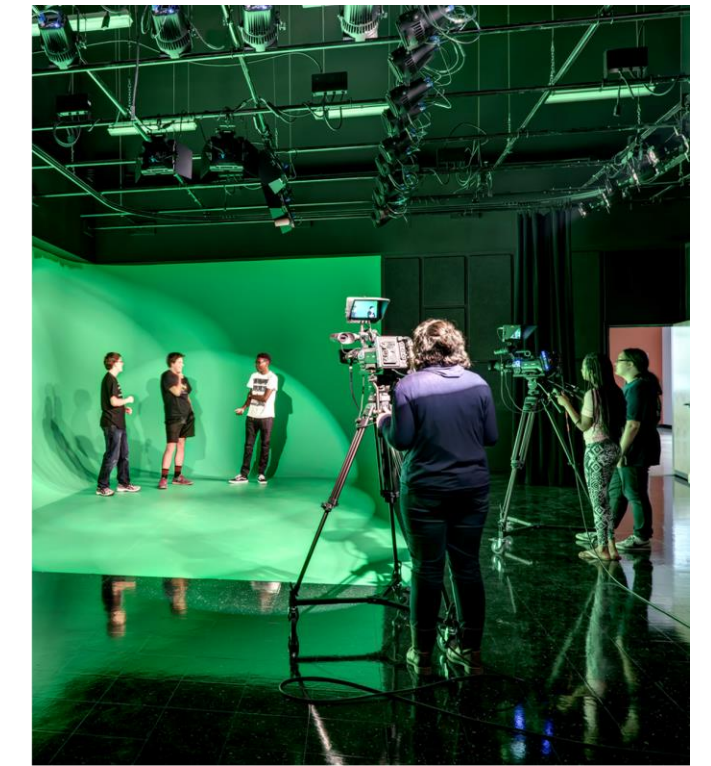
## HEALTH

Nature  
 Holistic Support  
 Biophilia  
 Restoration  
 Quality Environment



## BEHAVIOR

Cues in the environment guide behavior. Encourage learning, exploration, and interaction.



## OPPORTUNITY

Experiences  
 Tools  
 Technologies  
 Connections  
 Possibilities



# Activating “Place” to Address Challenges Facing Education

## ATTRACT AND RETAIN EDUCATORS

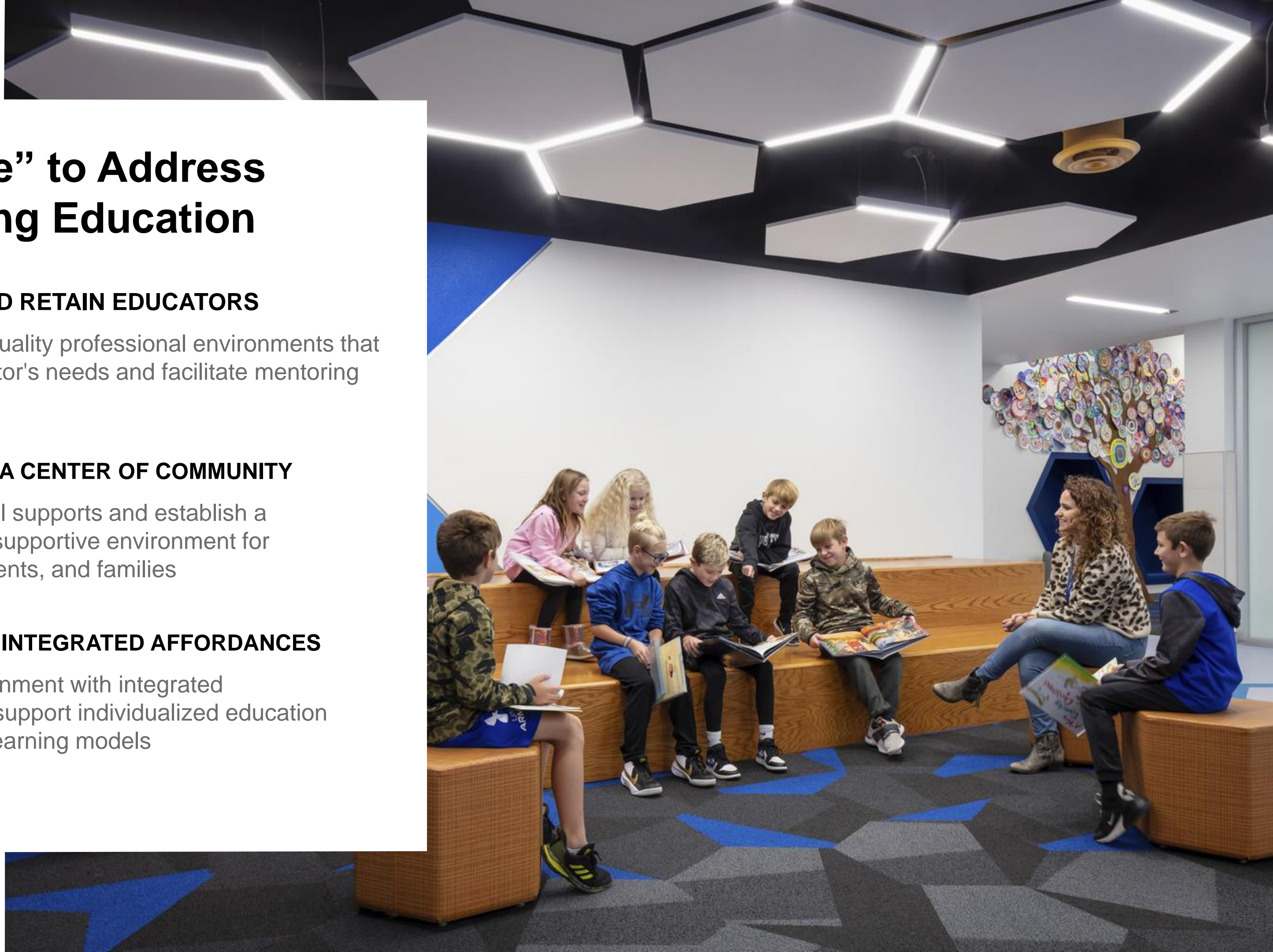
Provide high-quality professional environments that support educator's needs and facilitate mentoring

## SCHOOLS AS A CENTER OF COMMUNITY

Integrate social supports and establish a collaborative, supportive environment for teachers, students, and families

## DESIGN WITH INTEGRATED AFFORDANCES

Flexible environment with integrated technology to support individualized education and evolving learning models





## “Workforce” in Education

The community has the talent they need to create a high-quality education system.

- The community makes education
- Educators often teach very close to their home community
  - Don’t ship people in – activate communities with opportunities for professional advancement
  - It takes a village



“Teacher labor markets are hyperlocal, with most teachers choosing to work within 15 miles of their hometowns.”

*Michelle Reininger - Executive Director of the Center for Education Policy Analysis*

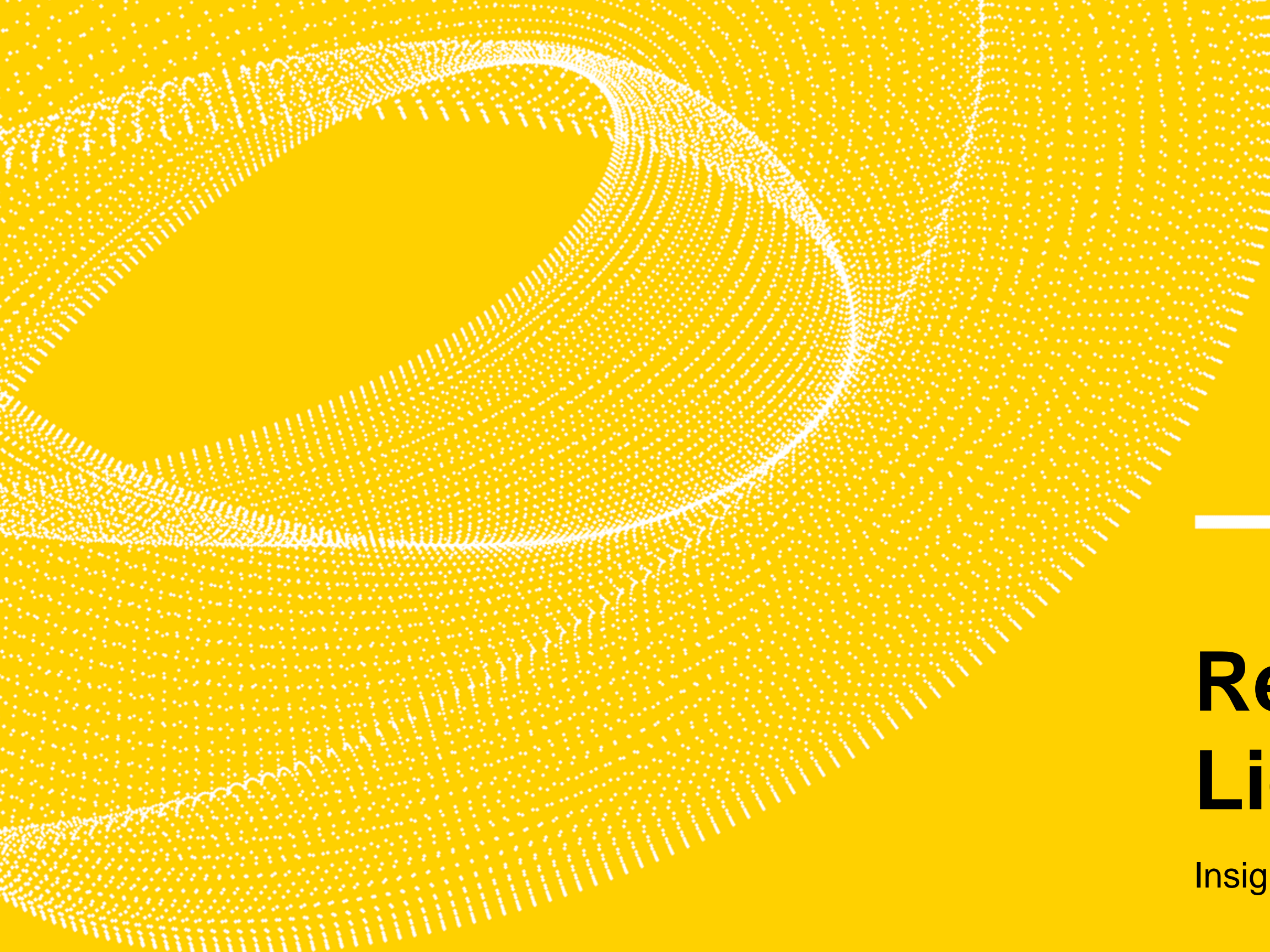


Can we create a *mutually beneficial* relationship by building a *symbiotic connection* between schools, educators, and communities?

**Considering  
“Place” and  
“Workforce”  
Together**







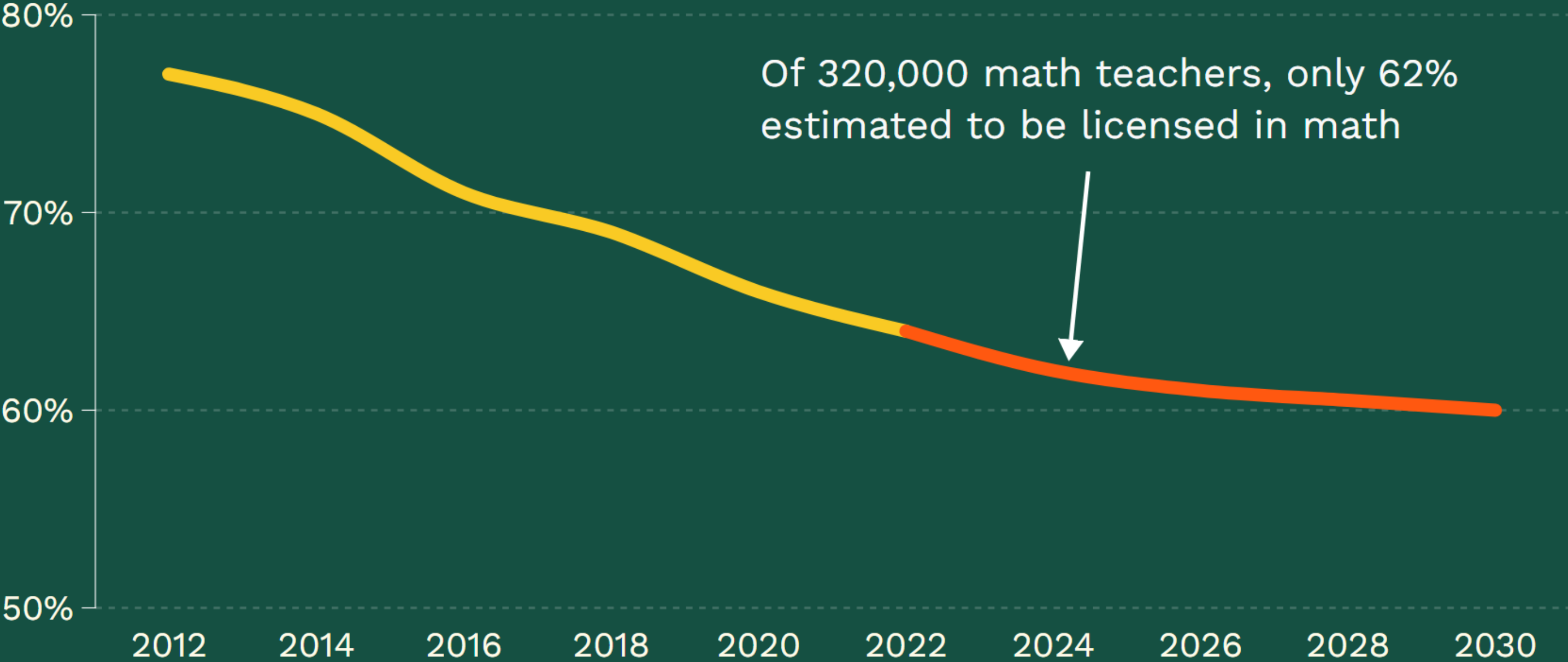
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# Rethinking the Licensure Model

Insights from MathTrack Institute



# There aren't enough qualified math teachers for schools to hire



Source: Estimate based on the following: Learning Policy Institute, 2016, A Coming Crisis in Teaching?; Teacher Preparation Data from Title2.ed.gov; Teaching statistic from nces.ed.gov

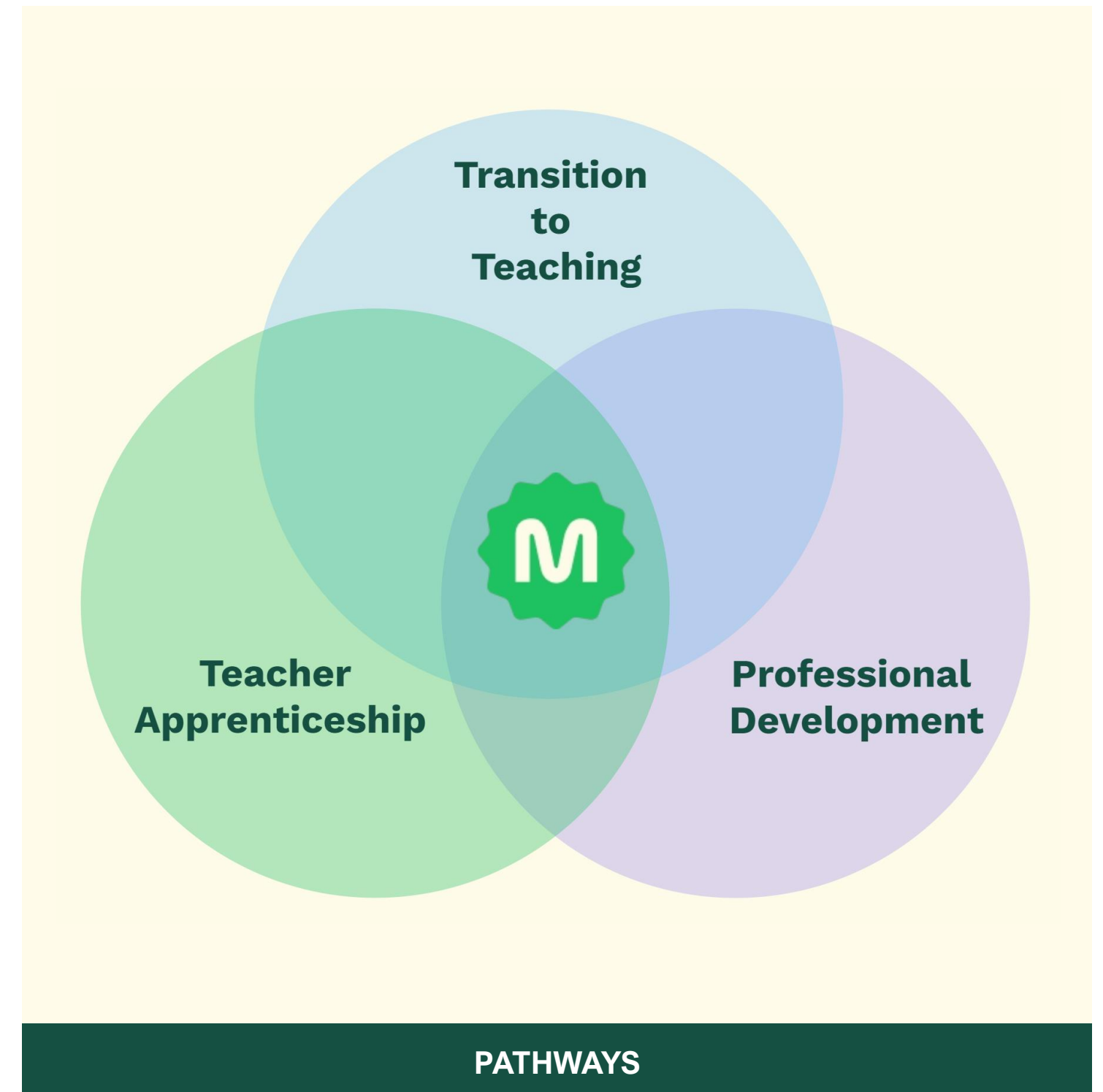


## MathTrack Institute

Math has seen a **38% enrollment decline** in new math teacher preparation programs since 2012, and the problem continues to worsen. **By 2030, it's estimated that 128,500 unlicensed math teachers will fill classrooms across the United States.**

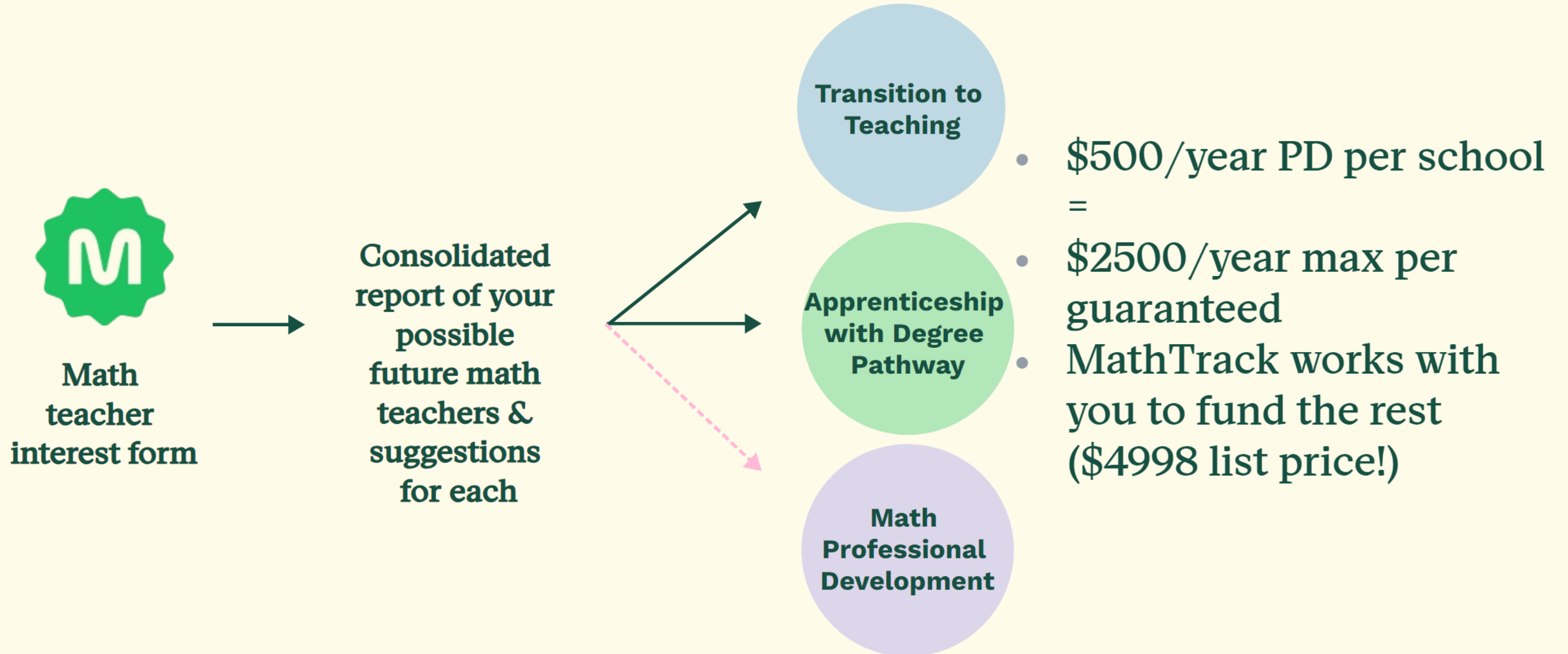
### ABOUT MATHTRACK:

- Institution of Higher Education
- Provide training, development, and bachelor's degrees in math education
- Work with school districts across the US
- Dedicated to nurturing the understanding of math and pedagogy to help anybody become an inspiring math teacher
- Apprenticeship-based model empowers untapped talent





# MathTrack provides your community the pathway to the next stage of their math teaching career.





# Apprenticeship Model

## *Benefits for Educators, Communities, and Students*

### MathTrack Bachelor’s Program

- Provides pathway for underqualified educators to become fully licensed to teach **grades 5-12 mathematics**
  - Paraprofessionals
  - Emergency math teaching license
- **Earn-and-learn program for working educators**
- Embedded, on-the-job training provides **hands-on practice**
- Self-paced coursework and asynchronous learning

### Individualized Supports

- Dedicated success coach
- In-school mentorship program
- Preparation for Praxis licensure tests



With MathTrack, it is easy to prepare new math teachers to be effective quickly!

**Cristy Jordan, Principal**

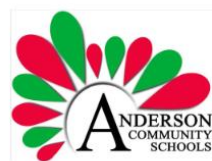


## MathTrack in Action

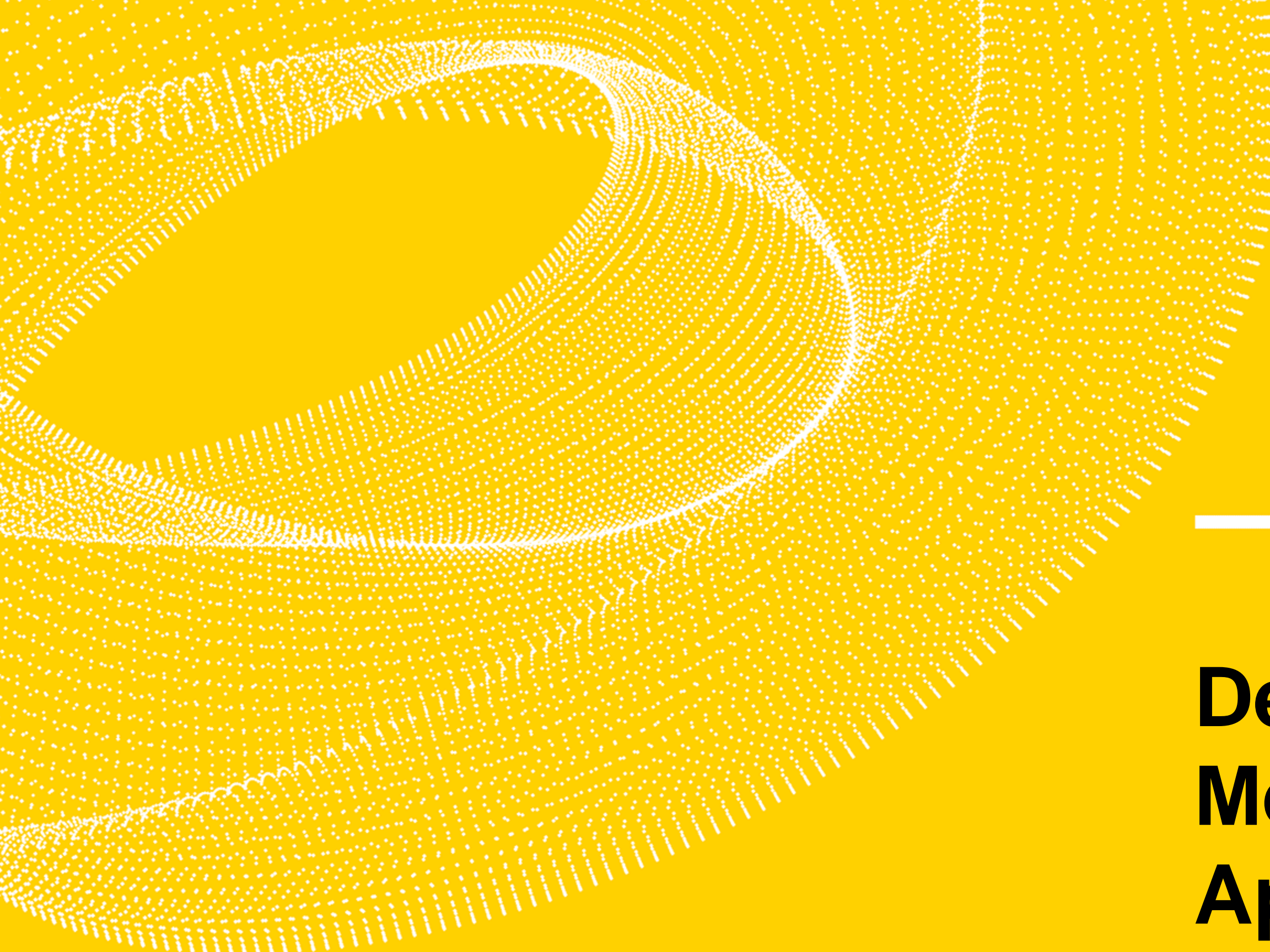
If you want better outcomes in the classroom, having credentialed teachers is key

According to research conducted by **Johns Hopkins University**, teachers trained through **MathTrack Institute** have higher students outcomes, on average, than other teachers.

### SCHOOL DISTRICT PARTNERS:







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# **Designing for a Mesh Network Approach**



# Design Sprint: Crossroads Learning Pods

Crossroads Education + Corgan

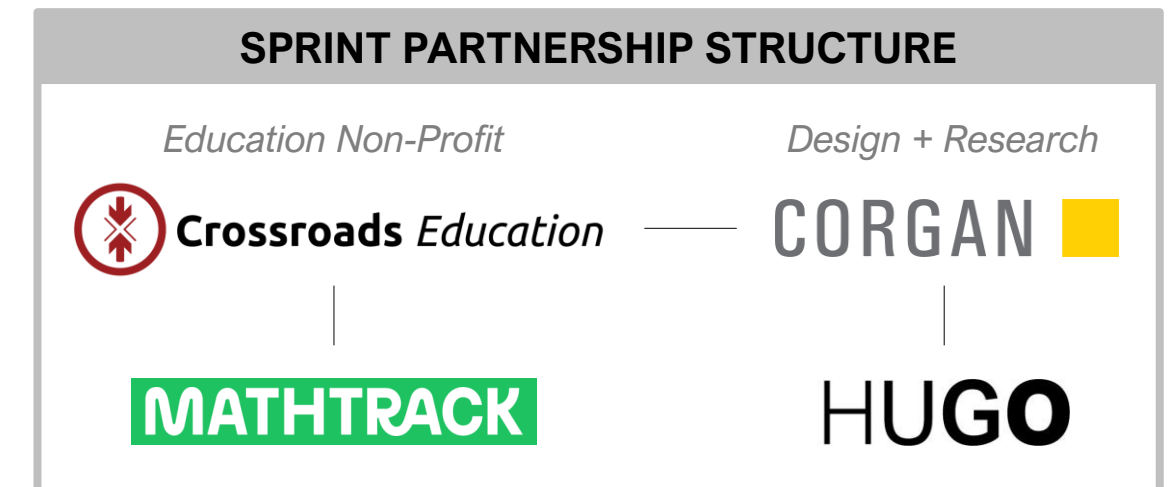
## Reimagining the one-room schoolhouse for the modern age

- Three-week design sprint
- **Mesh Network:** system of distributed educational facilities that augment school districts
- Leverage innovative learning models to support individual needs
- Integrate social supports
- Facilitate an apprenticeship model of educator certification

**Crossroads Education** is using **technology** to help solve some of our toughest educational challenges and **putting the power of instruction and learning back in students’ hands**

” Education today is at a crossroads – it is at a tipping point where **the old model doesn’t meet the current needs of society**. When faced with a crossroad, and you make a choice by understanding what your own needs are, and how they can be supported.

Dr. Kevin Berkopes, CEO of Crossroads Education



**eLearning Management**  
Learning Pods



**Private Tutoring**  
Online + in-person



**Peer-to-Peer Learning + Teaching**  
Learning Commons Model



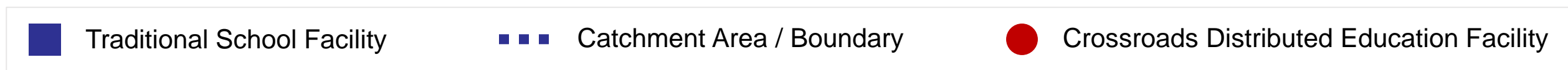
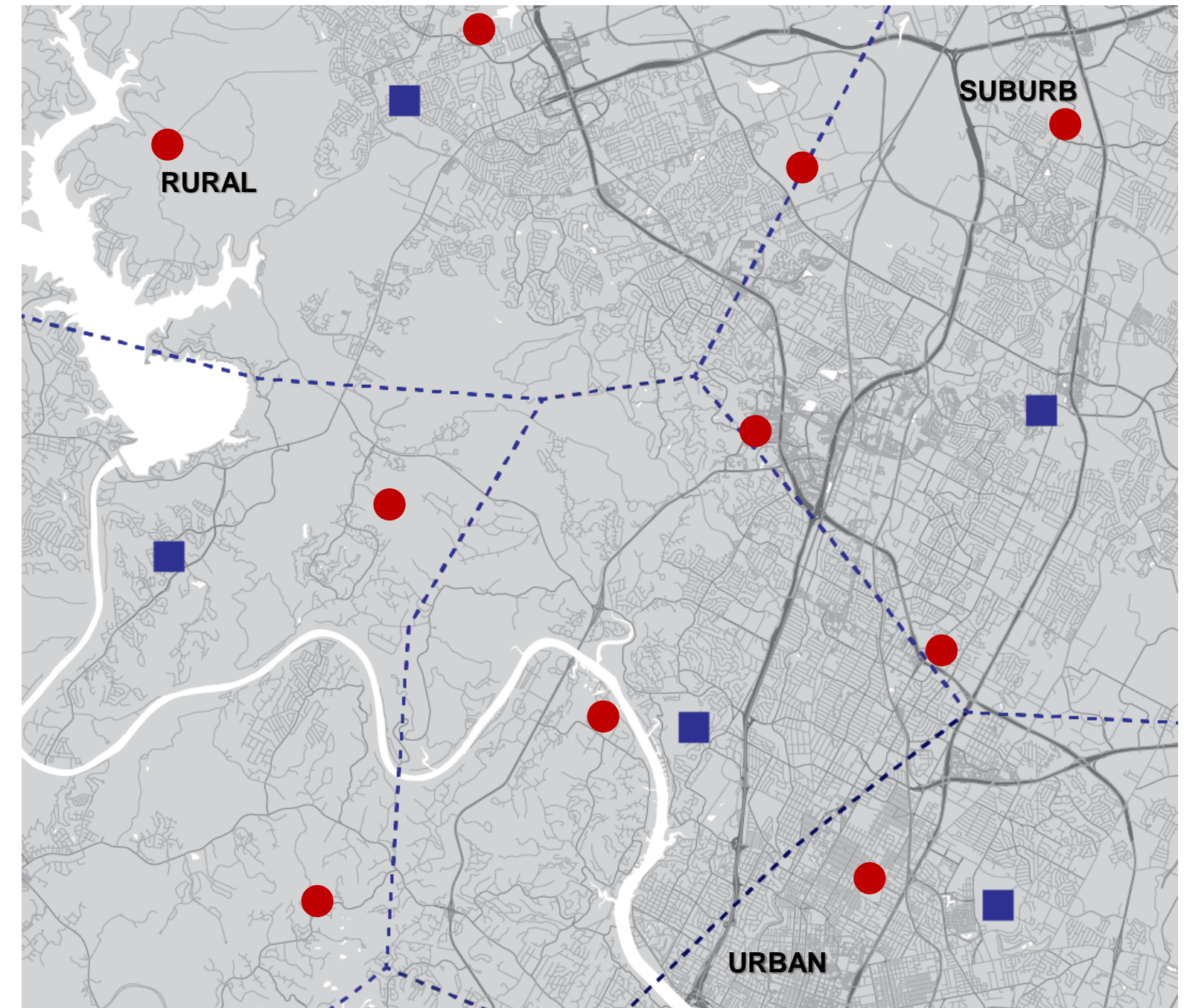
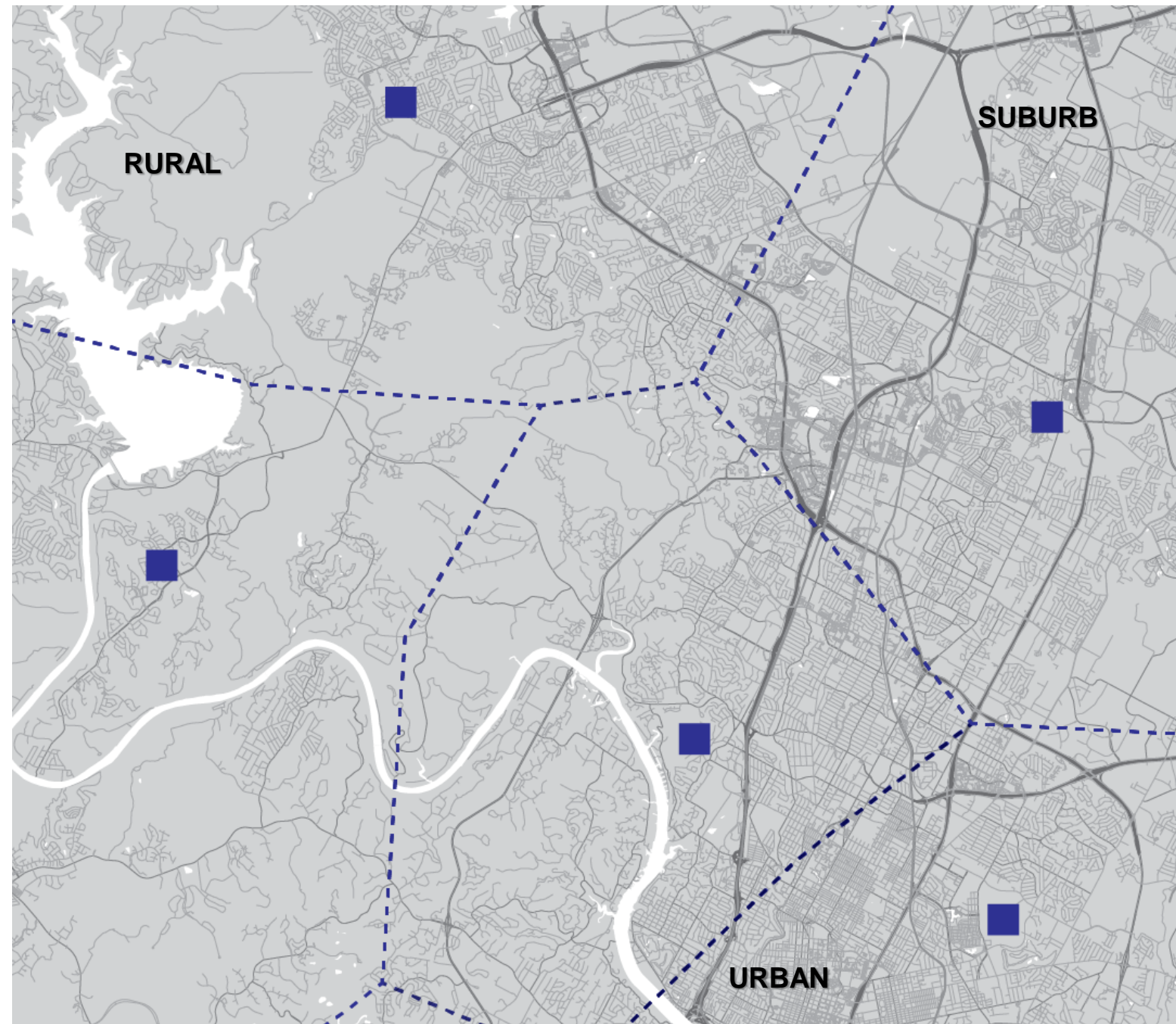
**Staffing + Programming**  
XR Academy  
Community Commons



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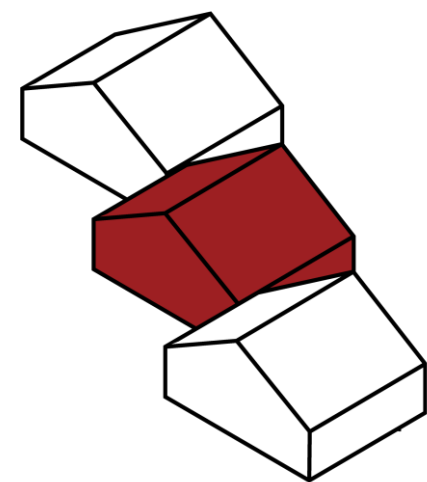
# Building a Supportive Mesh Network

## Traditional vs. Distributed Networks



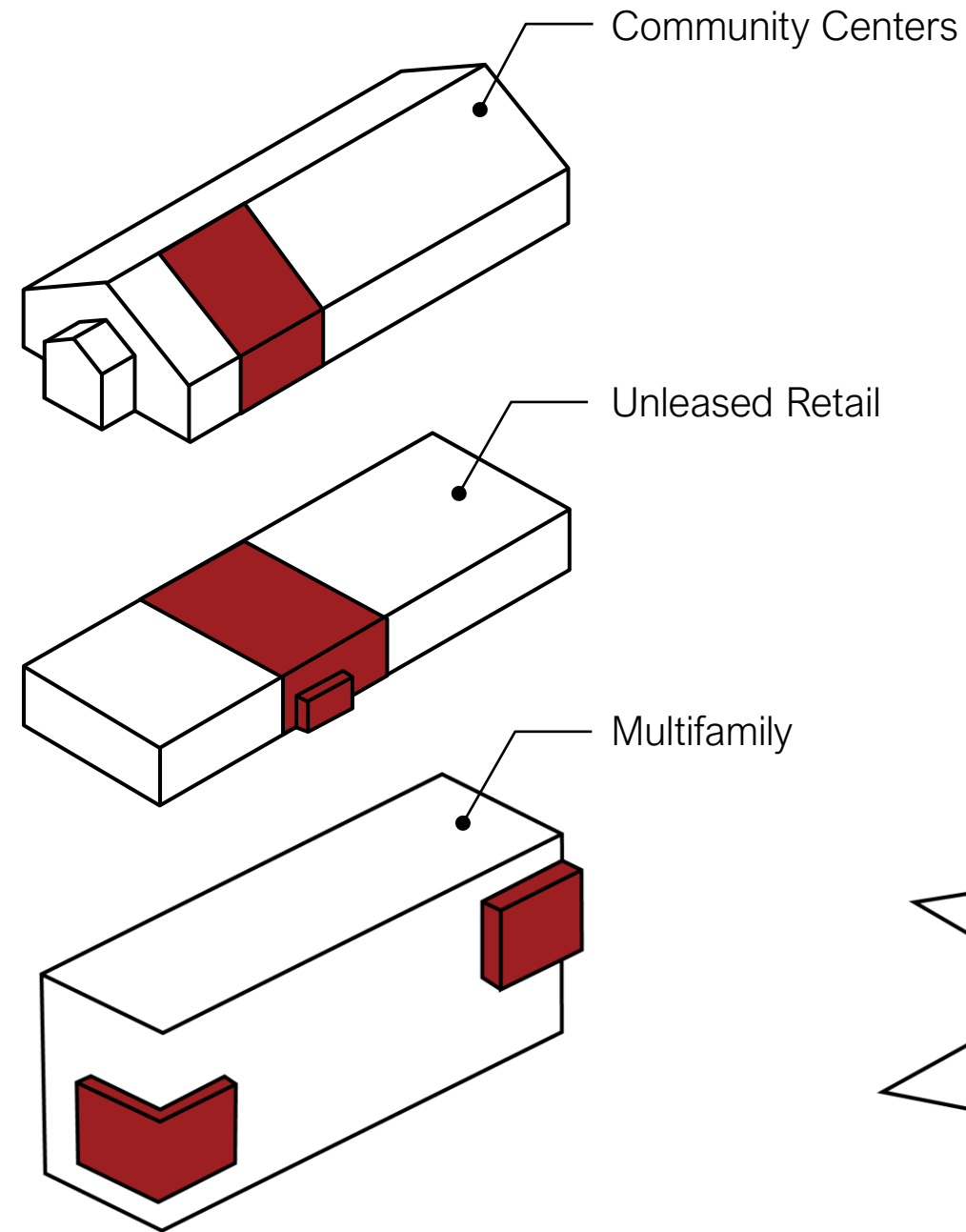


# Distributed Concepts

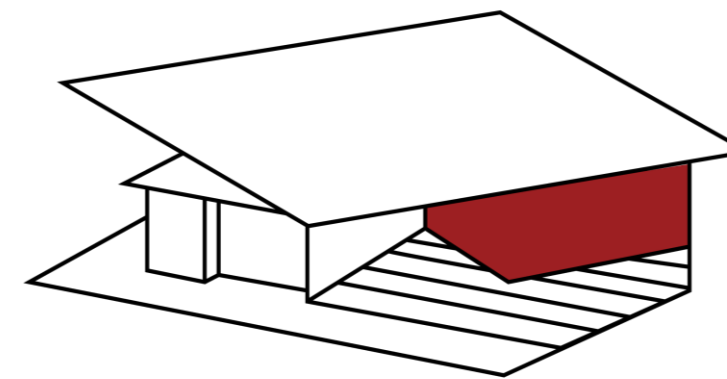


**REMOTE  
LEARNING PODS**

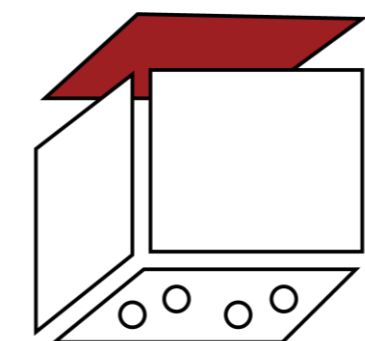
Current Model



**RETROFIT  
SOLUTIONS**



**ONE-ROOM  
SCHOOLHOUSE**



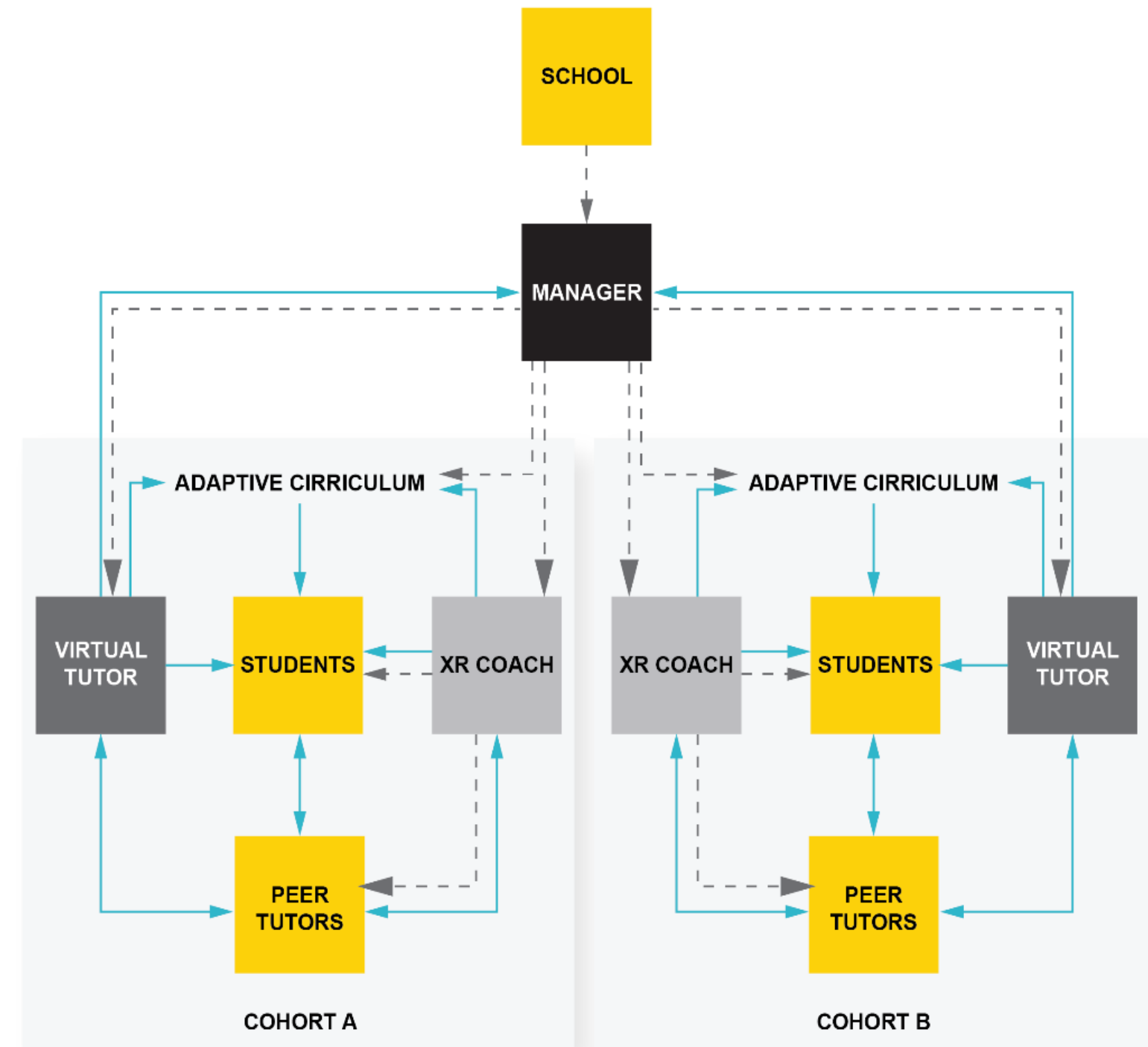
**FLEXIBLE  
FURNITURE**

Usable in any solution





# Delivering Personalized Learning



SUPPORT ———>  
OVERSIGHT - - - ->



# VR + AR

**90%** of educators agree that VR technology is quite an effective way of providing differentiated and personalized learning experiences for students.

## VR + AR ARE CHANGING THE EDUCATION SYSTEM

Teachers already have many different roles to fulfill:

- Help students focus
- Eliminate Language Barriers
- Ease and improve the learning process
- Contribute to inclusivity
- Focus on exploration and practice



Education is expected to be the 4<sup>th</sup> largest sector that will invest in VR worldwide, and by 2025, VR in education will be a **\$700 million** industry

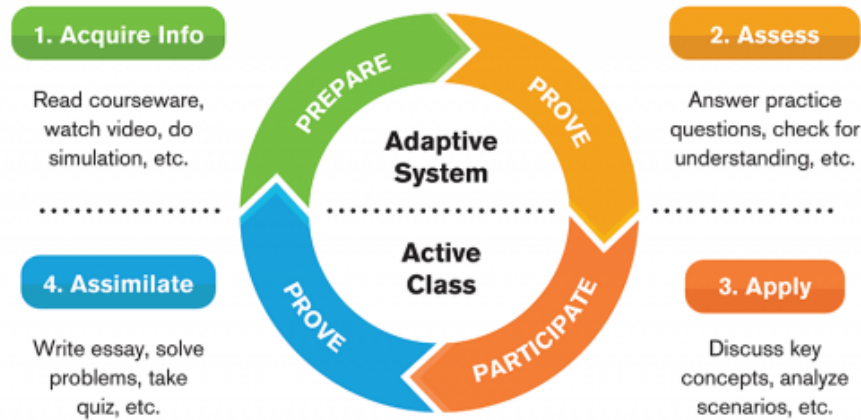
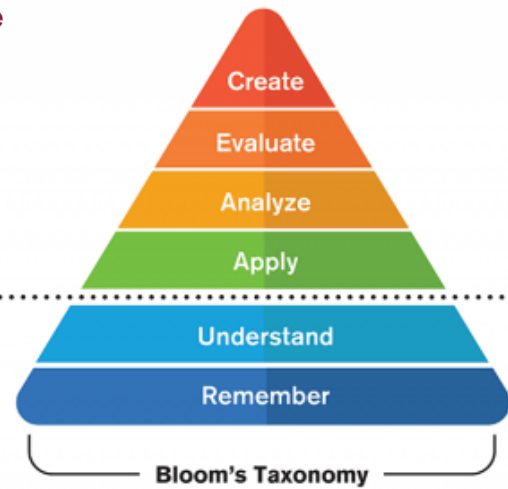
” On average, students remember 30% of what they hear and 20% of what they see. **With VR+AR, students remember 90% of their experience**



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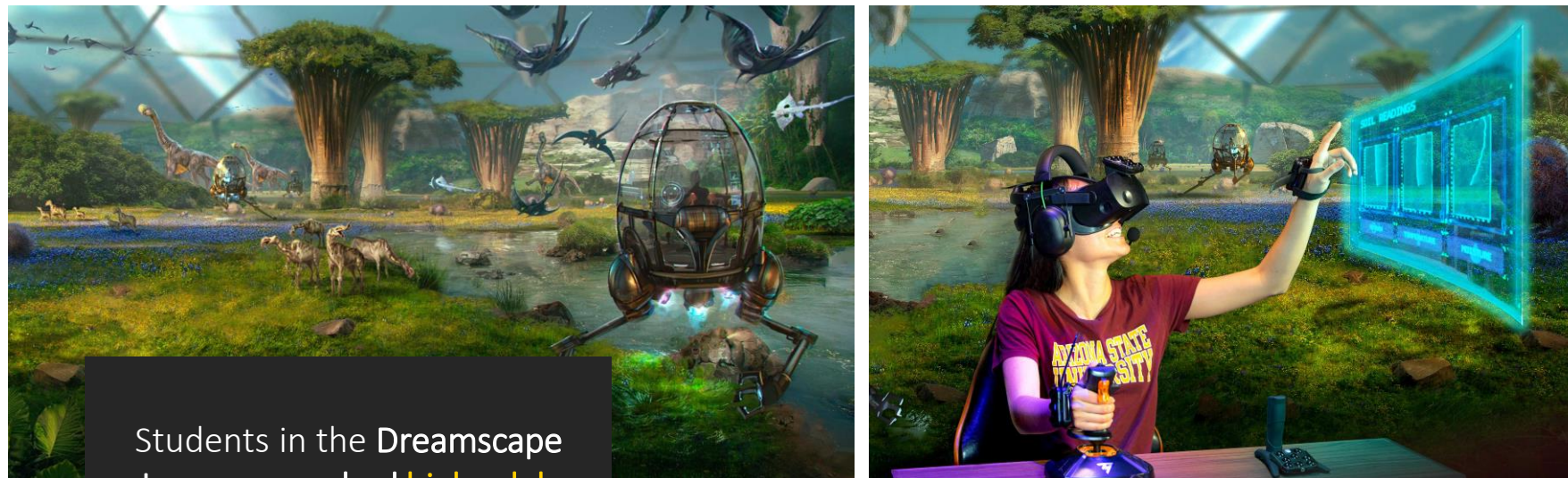
Active Learning  
In Class



# Adaptive Learning

Adaptive Learning systems dynamically adjust instruction to respond to learner characteristics, student interaction, and performance levels.

*“Adaptivity is an approach to the design of a learning system in which each learner is provided with the kind of experience they need at any given time in order to be successful in reaching the intended learning outcome” - Dr. Jan Plass, NYU*



## HOW IT WORKS:

- Data-driven systems use algorithms and student feedback to deliver individualized instruction and remediation
- Can be implemented within the framework of traditional instruction
- Integrated **Extended Reality (XR)** technologies to ground learning through movement and **immersive experiences**
- Educator supports learning as a **“guide on the side”**

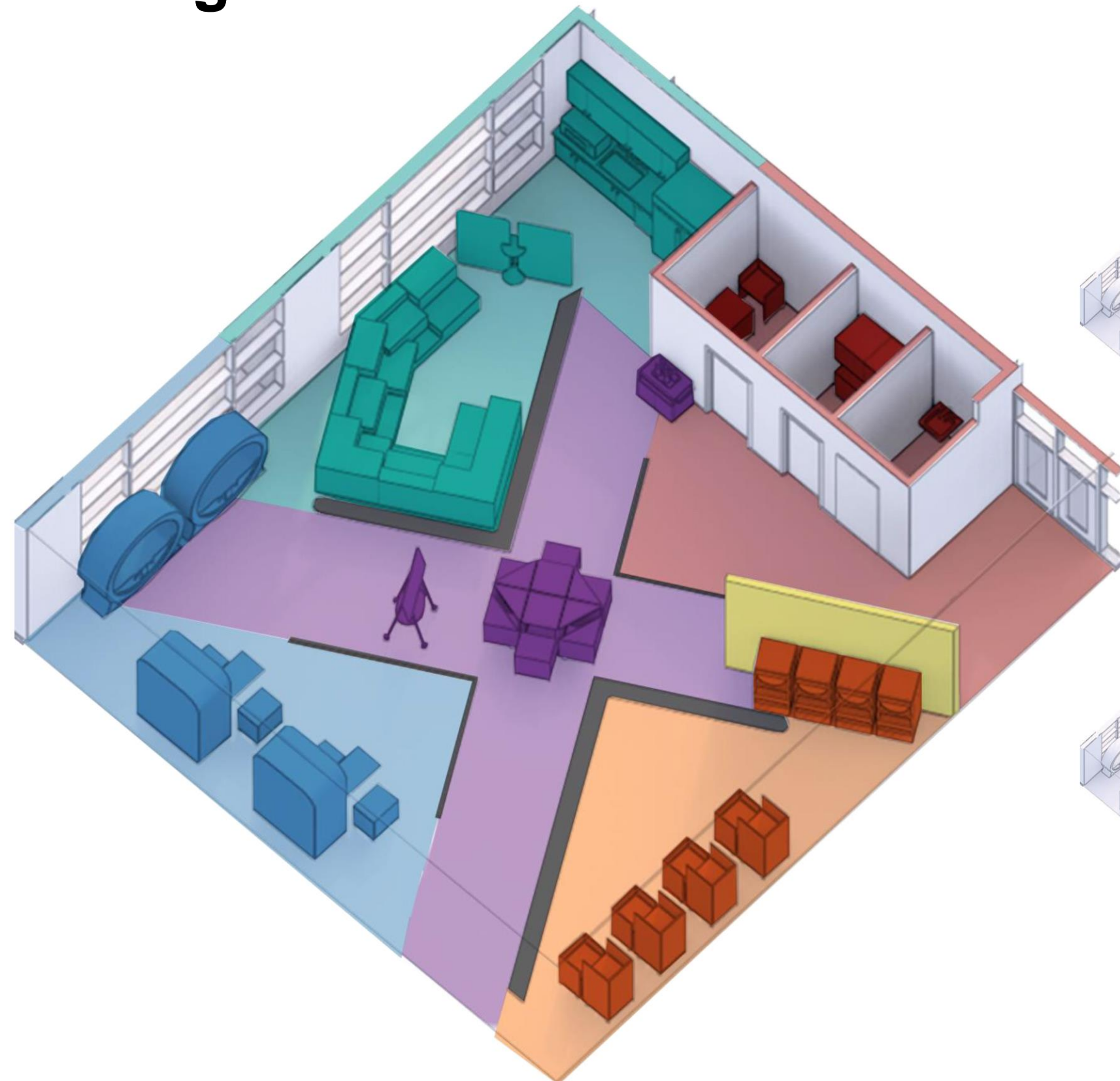
Students in the Dreamscape Learn course had **higher lab grades** than those in the conventional course — 9% higher overall. The median lab grade for students in Dreamscape Learn was **96%**, compared with 87% for the other group.

” We are moving away from mass production to **mass personalization**...we used to teach everyone the same thing at the same time. Now, we’re **connecting the right student to the right lesson**. We are changing the structure of higher education from **static to dynamic**.

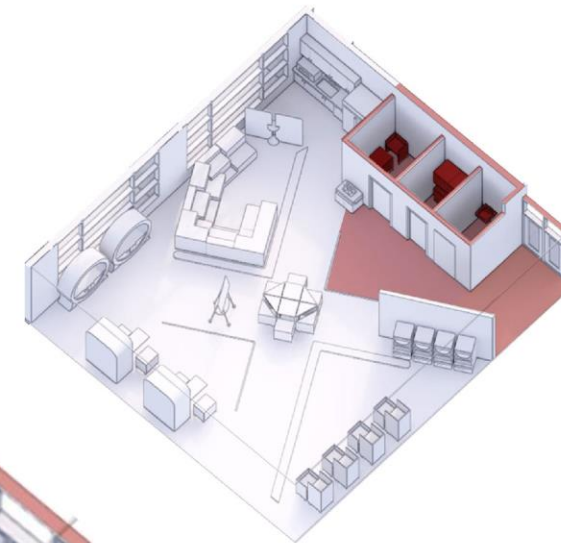


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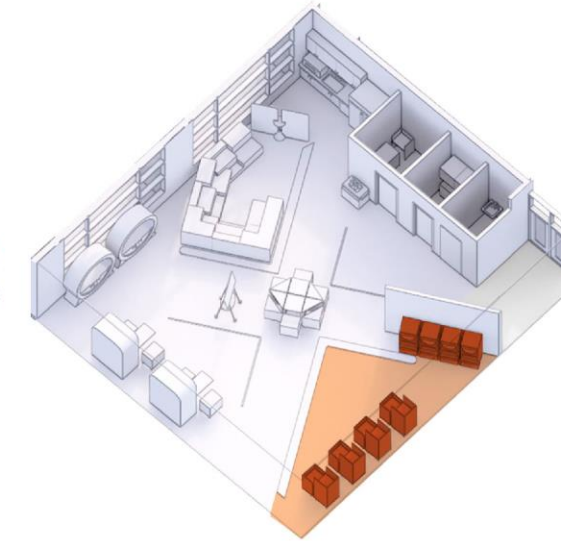
# Learning Zones



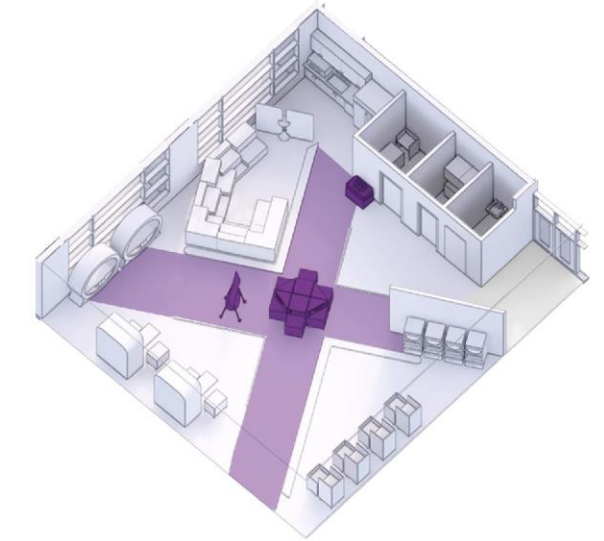
ENTRY ZONE



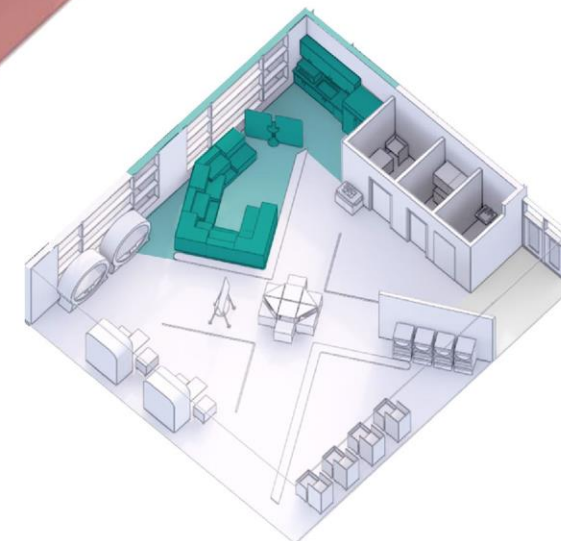
FOCUS ZONE



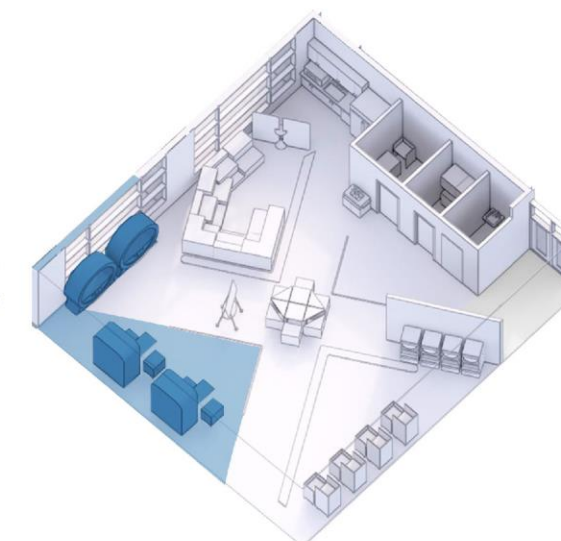
COLLABORATION ZONE



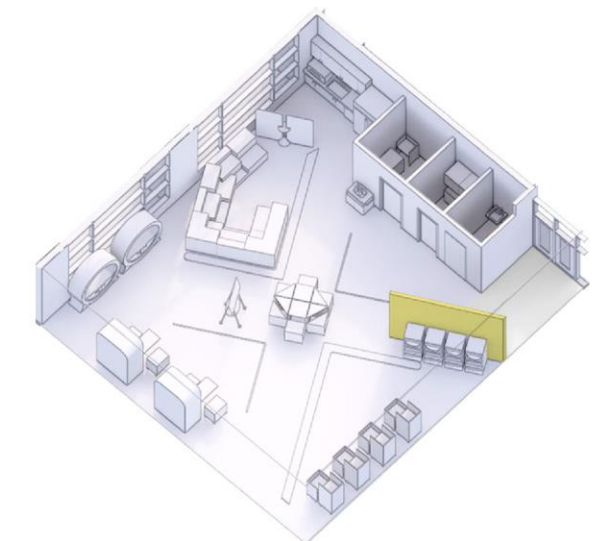
SOCIAL ZONE



PRIVACY ZONE



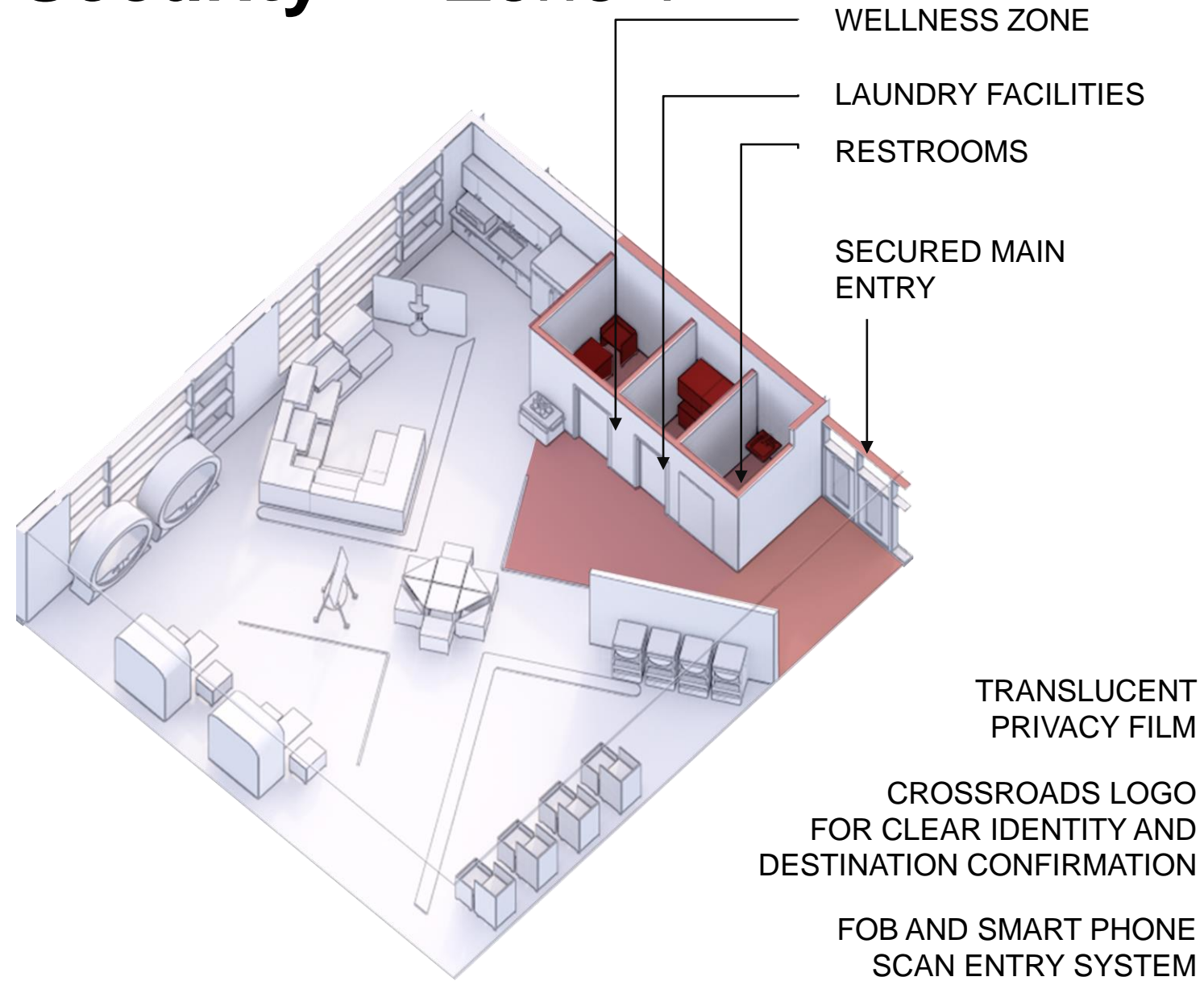
ENGAGEMENT WALL





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# Security — Zone 1



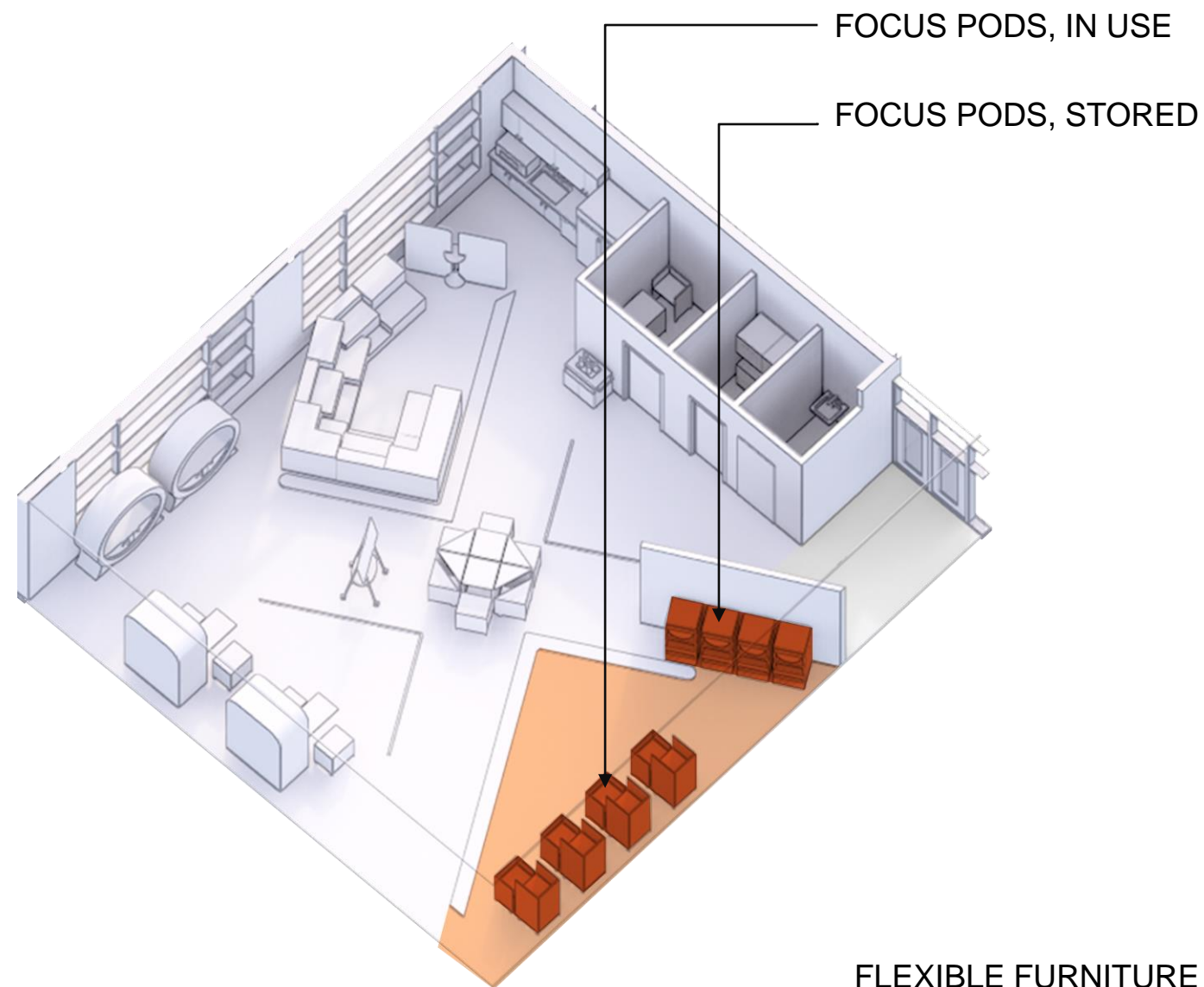
“

Not everyone lives in a safe area and [is] able to get things for themselves, especially if their parents are gone, working all day.”

REMOTE LEARNING TEACHER



## Focus — Zone 2



FLEXIBLE FURNITURE SET UP AS FOCUS PODS



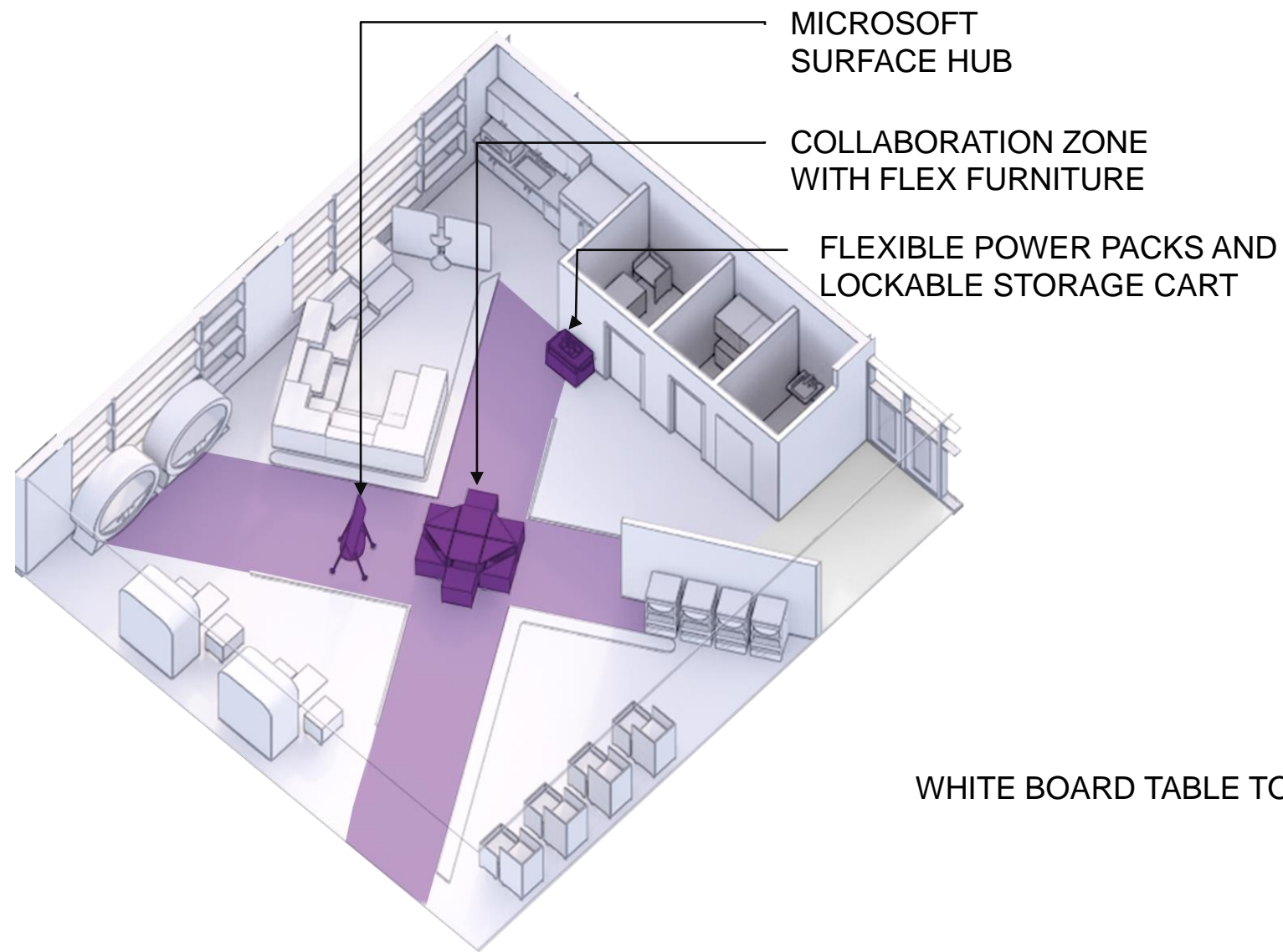
“

Making sure the kids are staying focused [is a big challenge]. It's hard to stay focused...in a different environment than school”

POD ASSISTANT



# Collaboration — Zone 3



“

I like the idea of students working with each other... It's helpful for students to see how other students do things in order to understand”

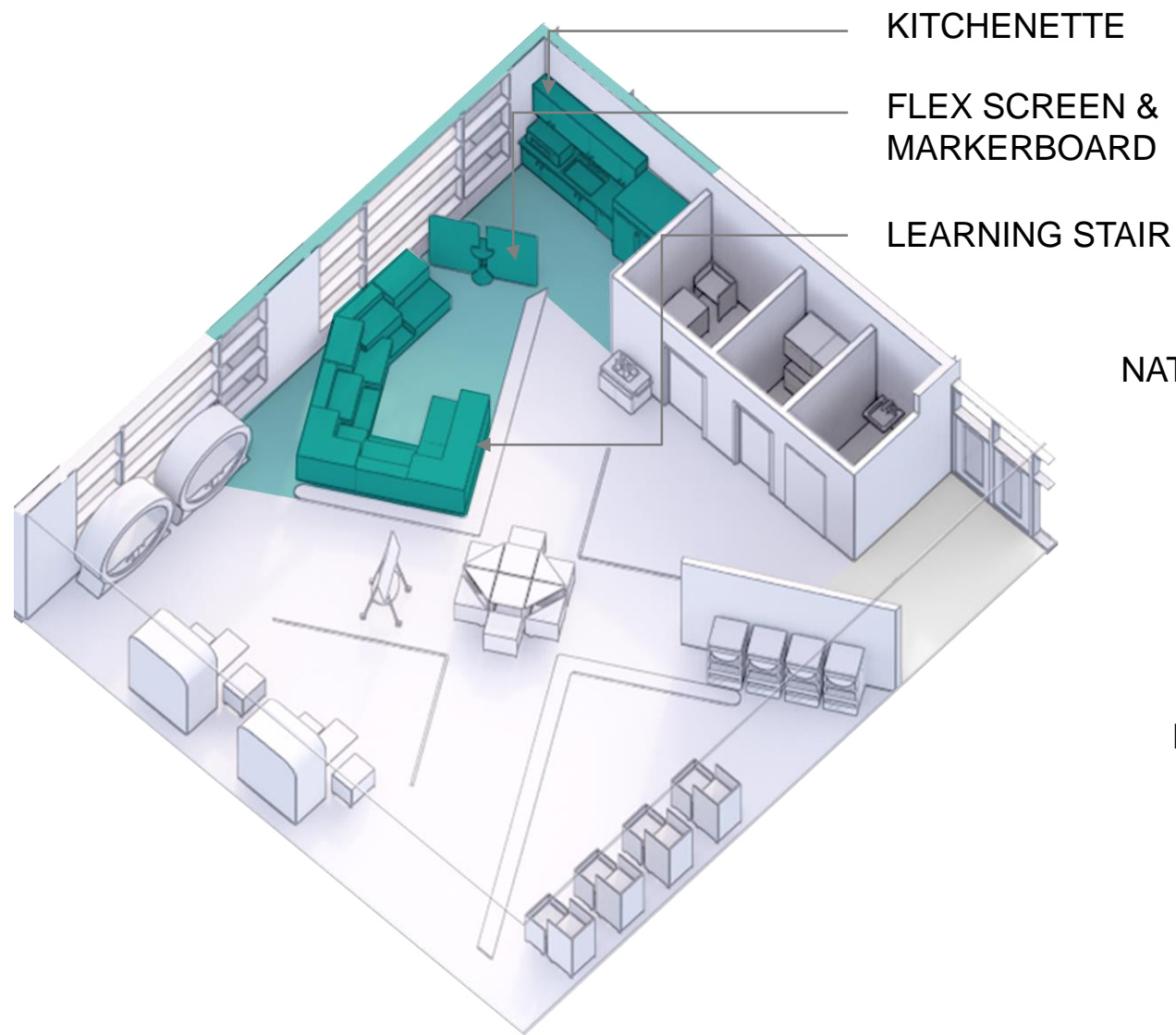
POD TEACHER





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# Socialization — Zone 4



NATURAL DAYLIGHT

LEARNING STAIR



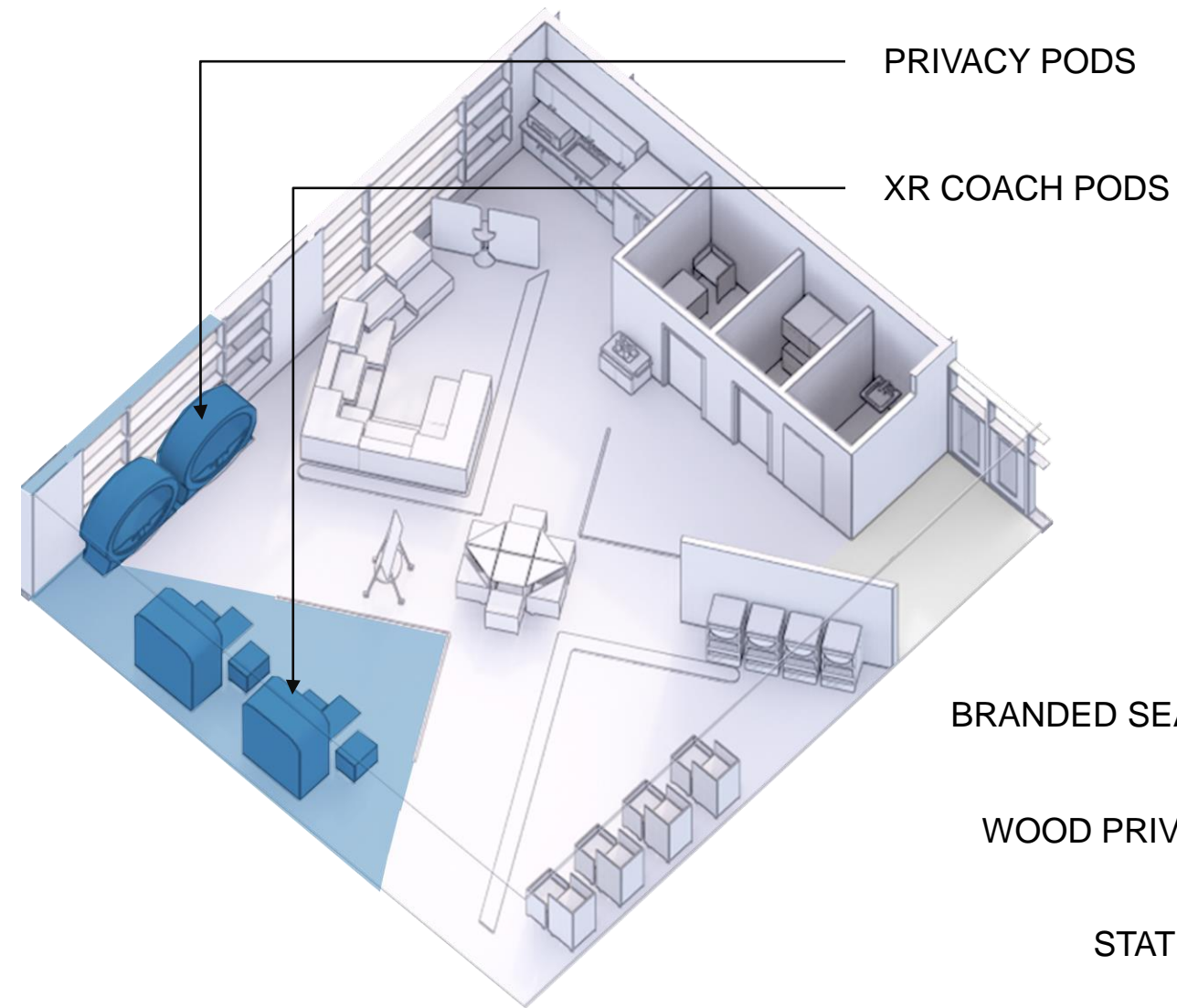
“

Students need to have some kind of socialization and they need to have structure.”

POD TEACHER



# Privacy — Zone 5



“

If they have a special need, there is a special sheet that provides sensitive information about their needs such as ADHD or allergies, or home information.”

POD ASSISTANT

BRANDED SEAT BACKING

WOOD PRIVACY FRAME

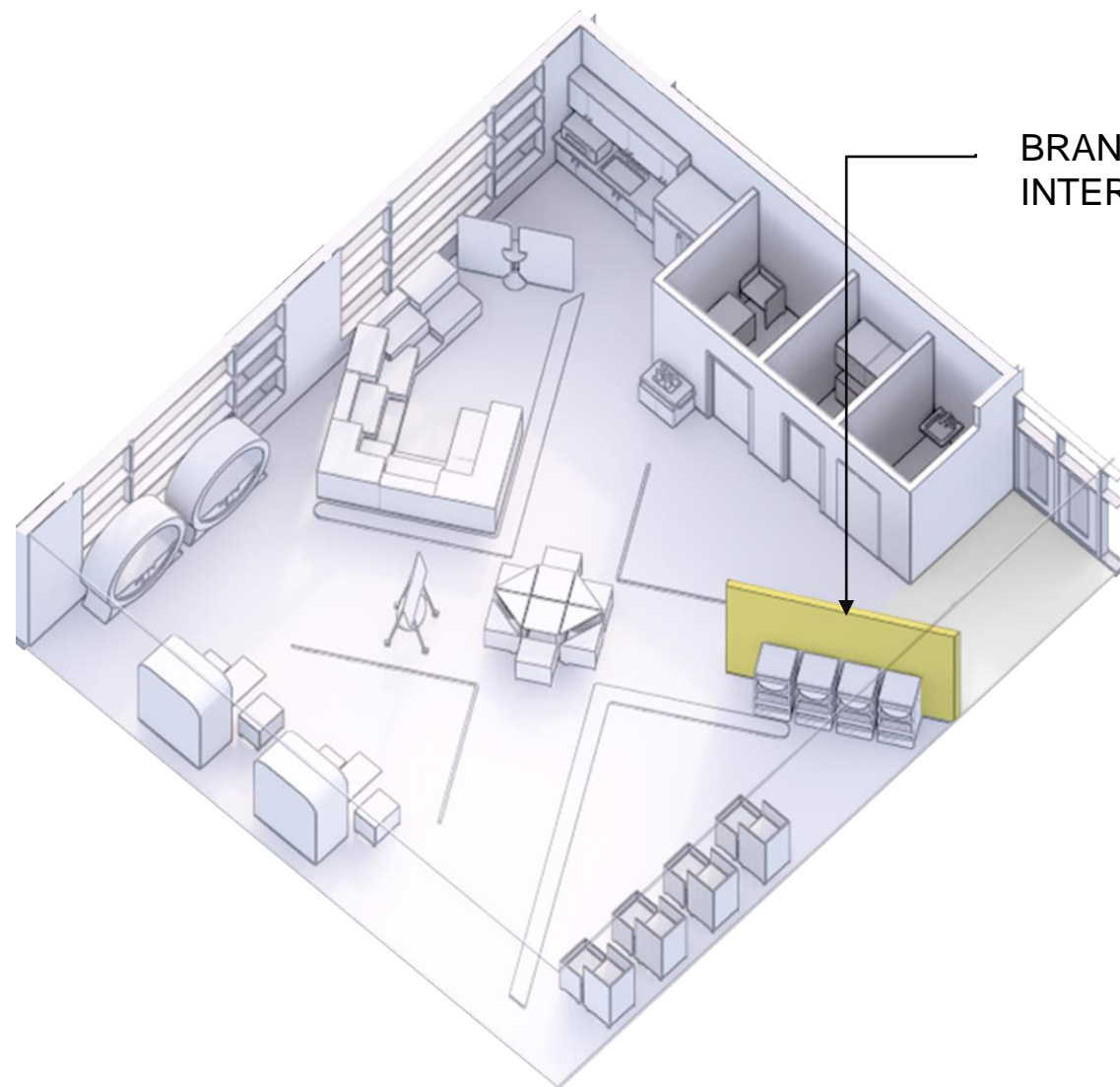
STATIONAL BASE





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# Engagement — Zone 6



BRANDING INTERACTIVE WALL



- PAINTED DIMENSIONAL LETTERS AND LOGO
- 'CLASS PLANT' VINE
- STUDENT-CONTRIBUTED PLAQUES
- WOOD TRELLIS SECURED TO CEILING



“

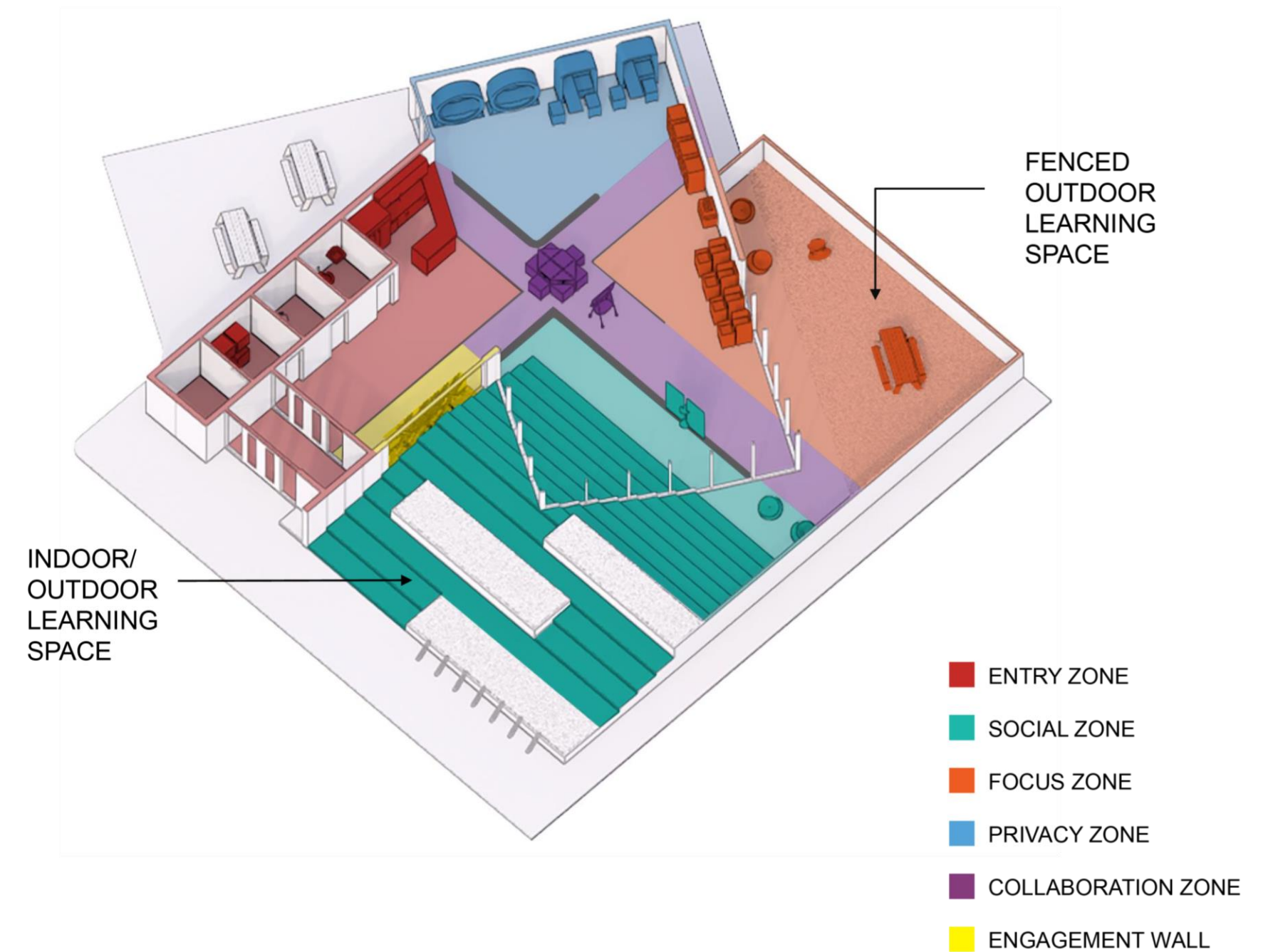
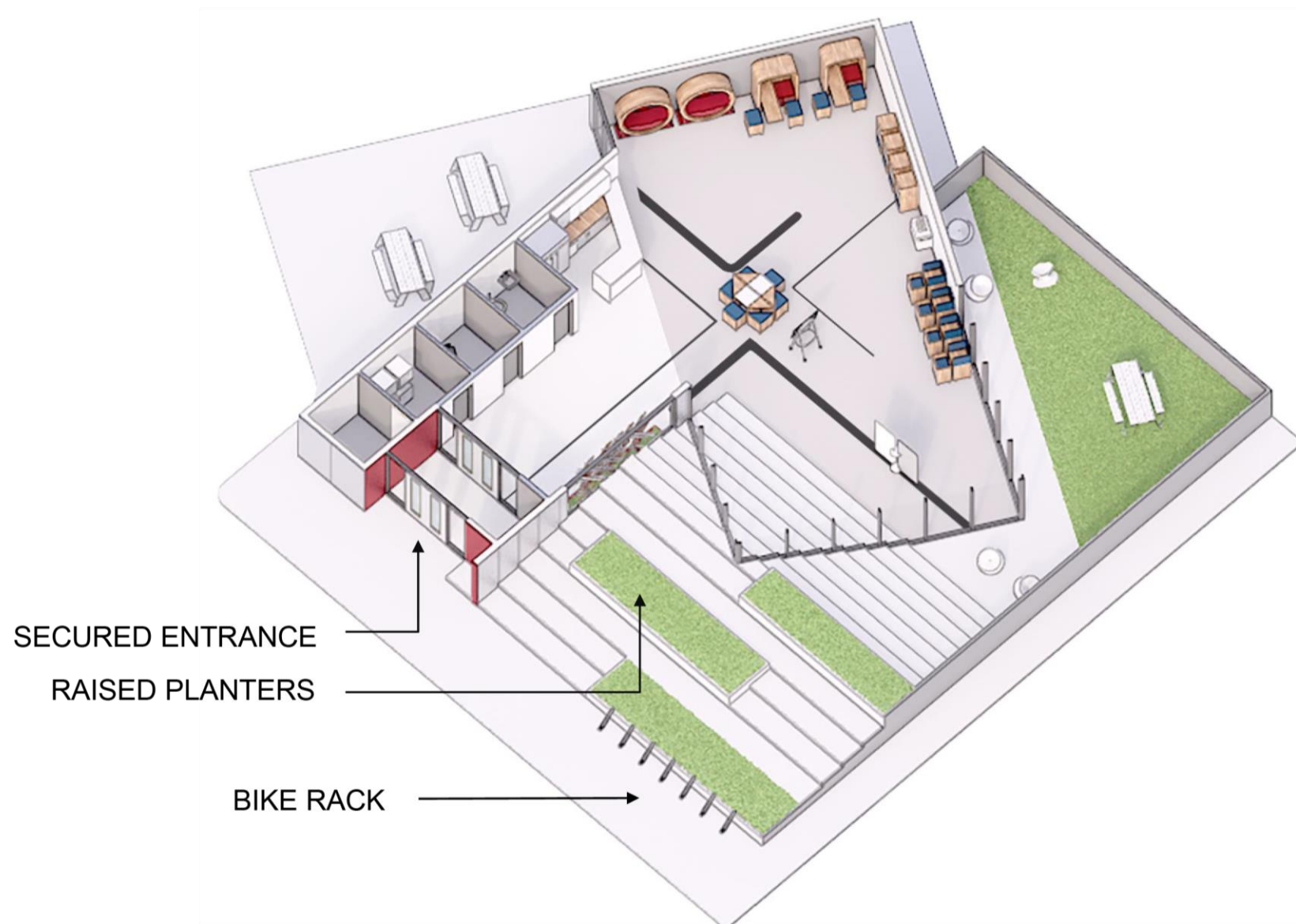
Kids aren't like adults who can sit in a business meeting projected on zoom and get the same benefit. They are children, they need interactivity.”

REMOTE LEARNING PARENT



On Track for Community Success: Considering the “Place” and “Workforce” Together in Education

# One-Room Schoolhouse for the Modern Age







401

Crossroads







Crossroads Education

COLLABORATE.  
INNOVATE.  
EDUCATE.

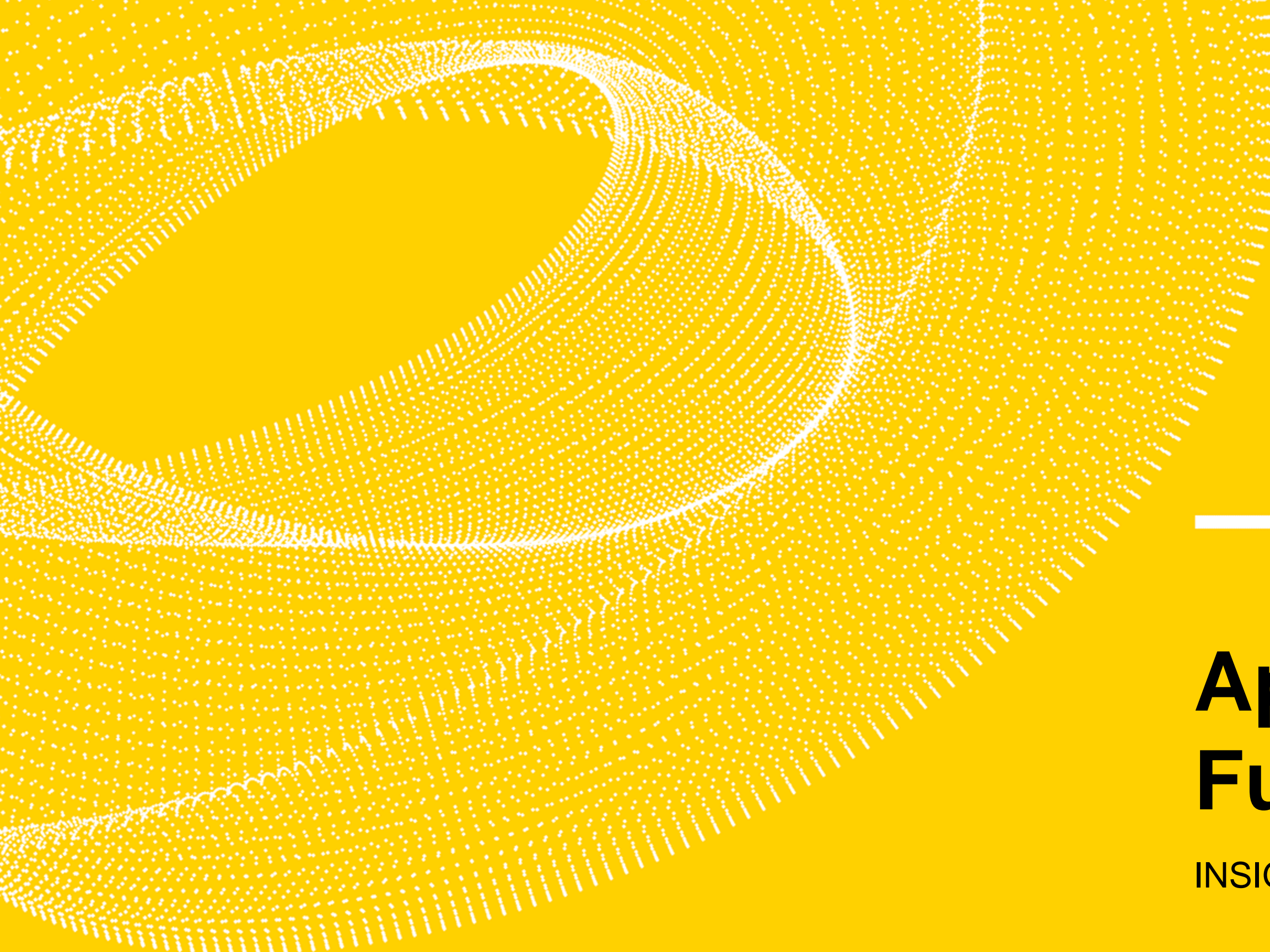












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# Applications for the Future of Education

INSIGHTS FOR SCHOOL DISTRICTS



# Applications for the Future of Education

## ELEVATING IN-DISTRICT TALENT

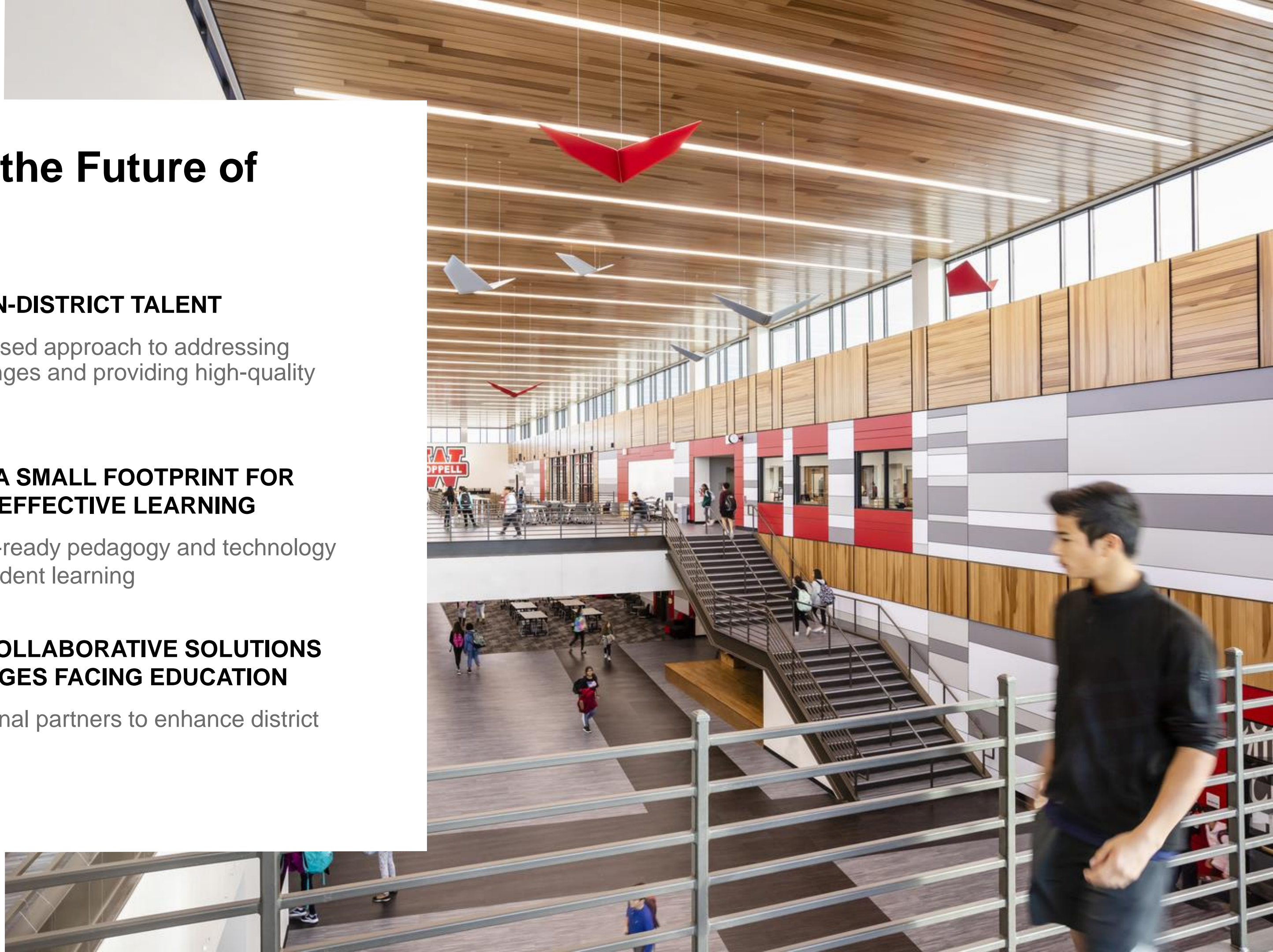
Community-based approach to addressing staffing challenges and providing high-quality education

## MAXIMIZING A SMALL FOOTPRINT FOR DELIVERING EFFECTIVE LEARNING

Overlay future-ready pedagogy and technology to advance student learning

## CREATIVE, COLLABORATIVE SOLUTIONS TO CHALLENGES FACING EDUCATION

Integrate external partners to enhance district efforts





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