

# Academic Research:

How Intelligent Furniture Applications Affect Student Success



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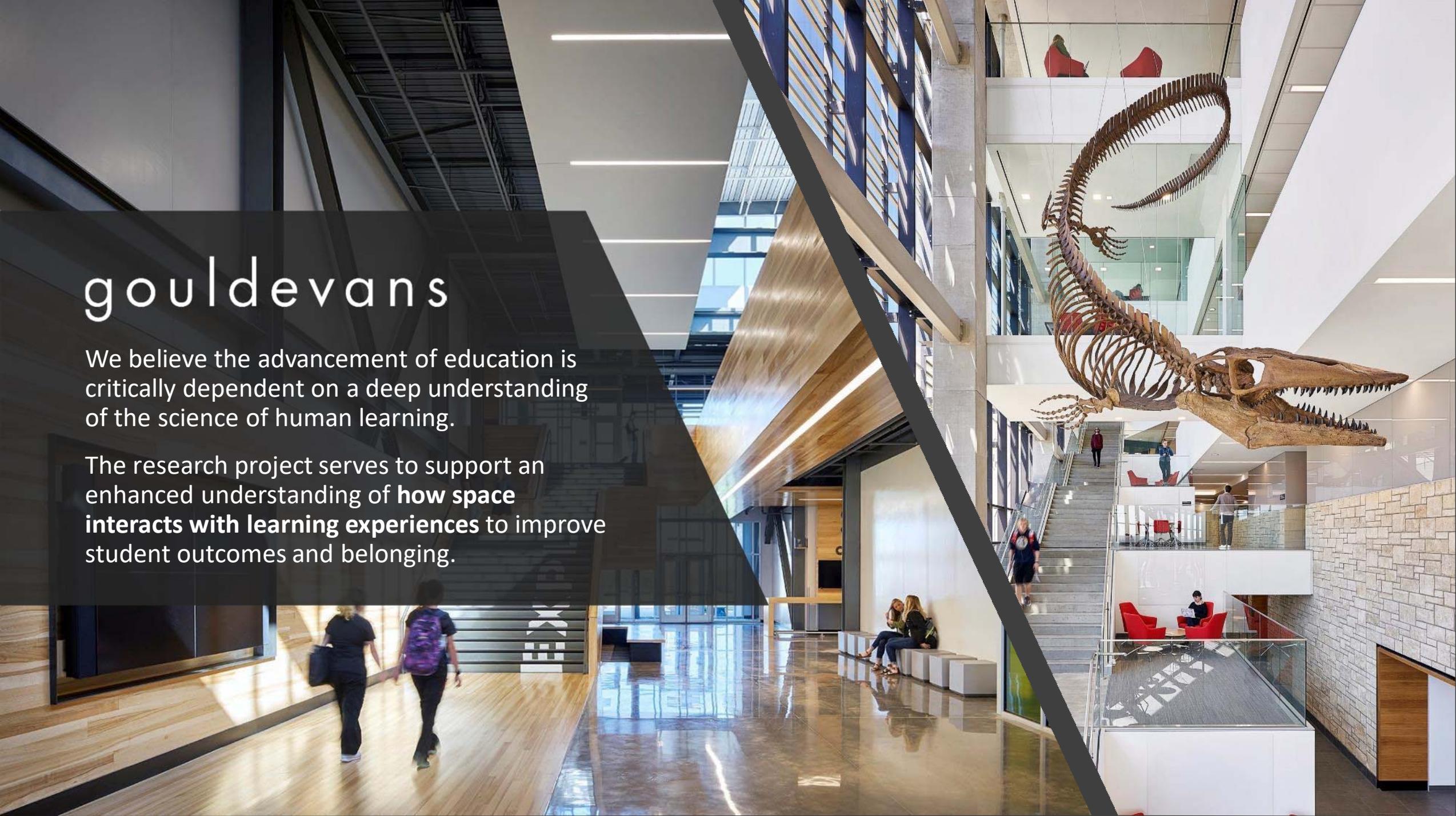
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Gould Evans + University of Kansas

# gouldevans

We believe the advancement of education is critically dependent on a deep understanding of the science of human learning.

The research project serves to support an enhanced understanding of **how space interacts with learning experiences** to improve student outcomes and belonging.



# Learning Objectives

1. Learn from the “student voice” how space impacts culture and learner engagement.
2. Utilize research evidence to lend more insight to the selection of furniture applications.
3. Better support learner variabilities via strategic classroom design.
4. Improve educator efficacy via insights from case study classrooms.

# 1 Like Minds Come Together...

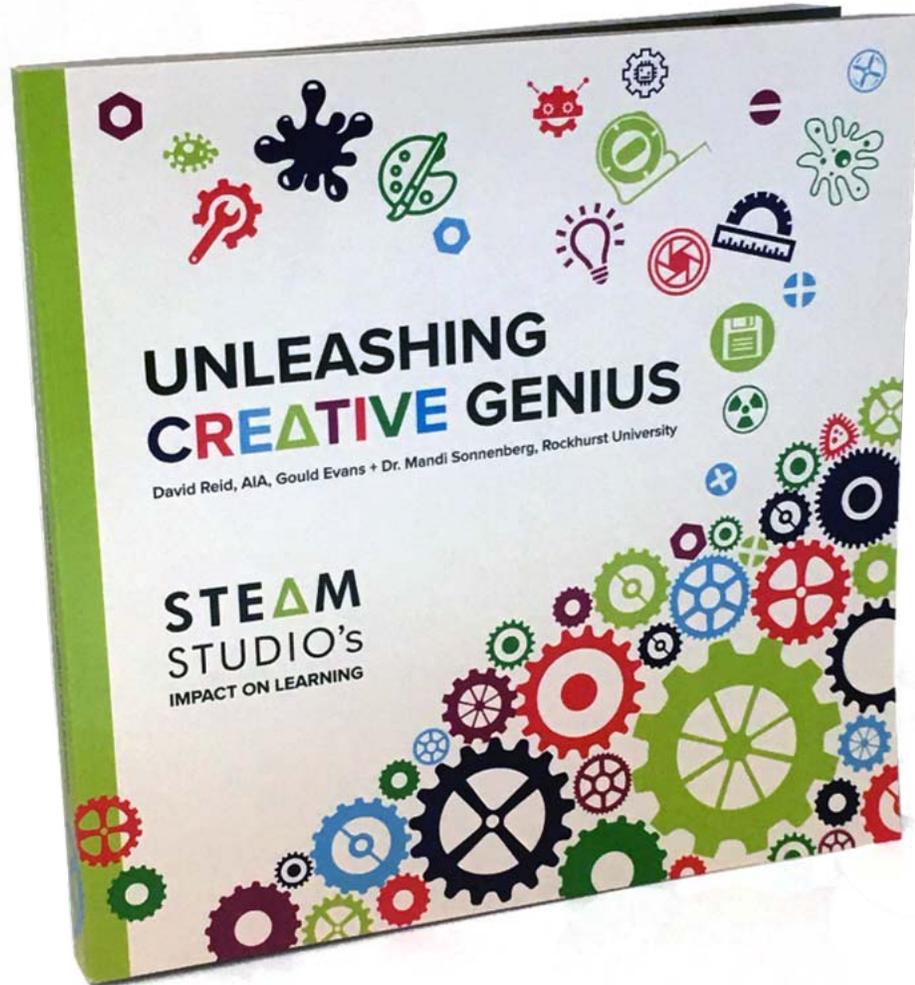
STEAM Studio

# STEAM STUDIO

[steam-studio.org](http://steam-studio.org)

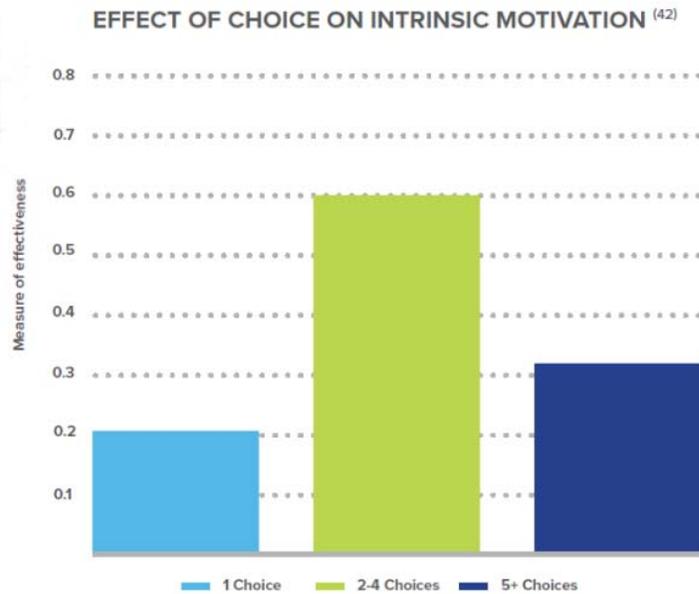
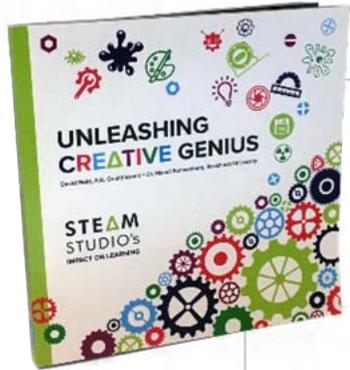


# Primary Research Themes at STEAM Studio:



1. Learning Environment
2. Personalized Learning
3. Creative Confidence
4. Intrinsic Motivation
5. School Relationships
6. Effortful Control
7. Active Learning
8. Movement
9. Participation

# Primary Research Themes at STEAM Studio:



There is a strong link between offering students choice and their intrinsic motivation for doing a task and willingness to accept challenging tasks. <sup>(42)</sup>

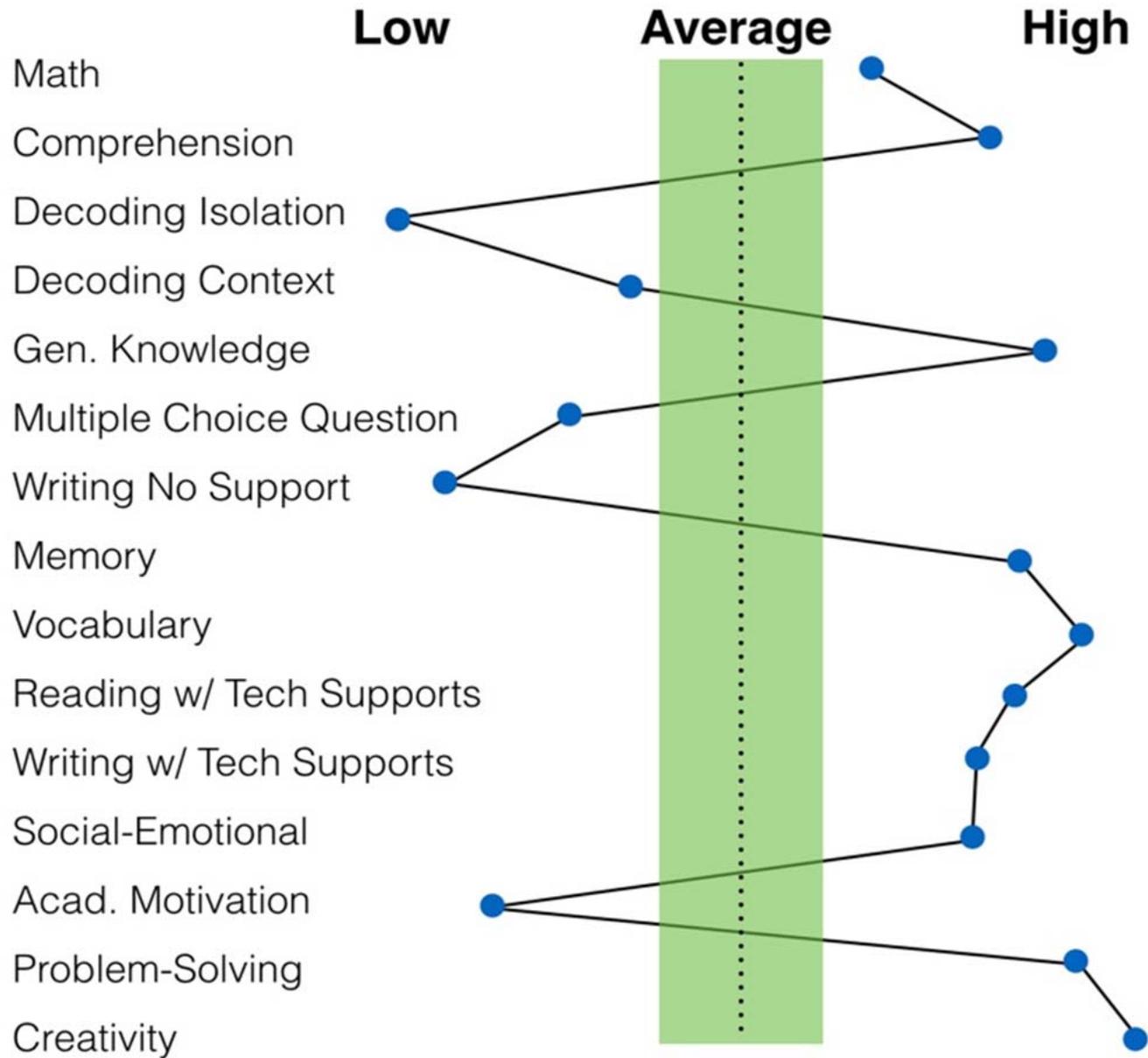
61%

of students surveyed agreed: STEAM Studio has helped me figure out what I want to do in my future.



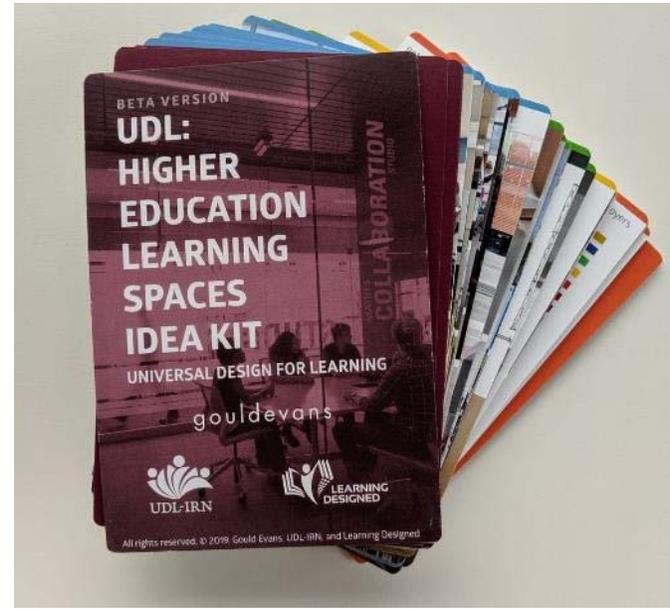


# UDL – LEARNER VARIABILITY



Todd Rose Ted Talk  
"The Myth of Average"

# UDL – SPACE DESIGN IDEA KITS





## OUR DIFFERENCE

We do not believe in the status quo and never have...

From our owners to our team our core values embody

FREE THOUGHT, FLEXIBILITY AND THE ATTAINMENT OF AN  
INDIVIDUALIZED AND INCLUSIVE LEARNING ENVIRONMENT  
THAT ENCOURAGES A LIFE-LONG LEARNING JOURNEY.



We are innovators and creators, on a mission to support learners and educators now and into the future. Our contribution is to create the products and the spaces that empower the next generation in acquiring the skills to enhance their opportunities in work and in life.

### HOW DO WE ACHIEVE THIS?

By designing, manufacturing and supplying furniture and spaces that foster engagement and inclusiveness.









**We are innovators and creators, on a mission to support learners and educators now and into the future. Our contribution is to create the products and the spaces that empower the next generation in acquiring the skills to enhance their opportunities in work and in life.**

**HOW DO WE ACHIEVE THIS?**

By designing, manufacturing and supplying furniture and spaces that foster engagement and inclusiveness

# 2

## Converging Common Missions The Development of the Research Project





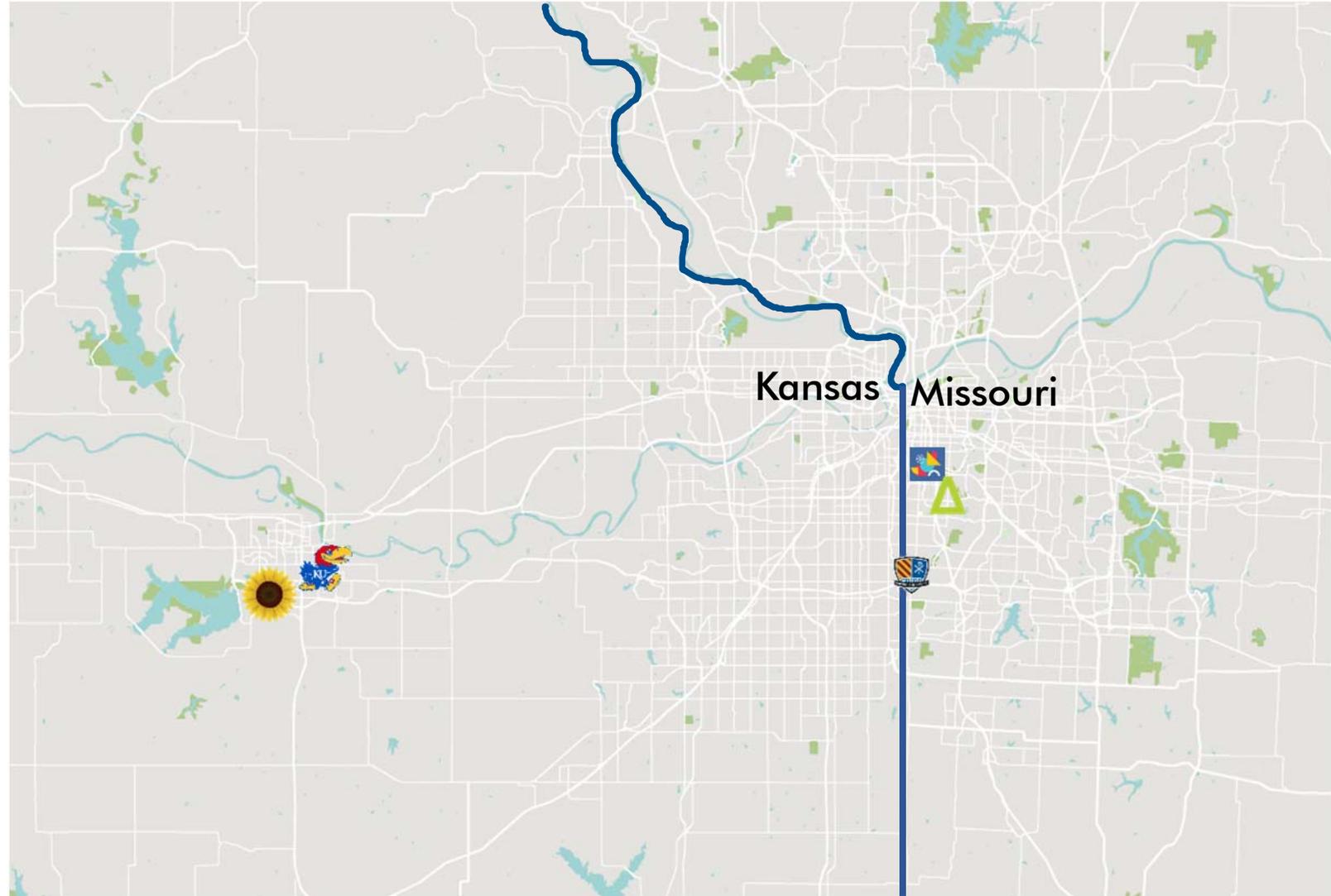
+

gouldevans +



Our Collective Interests -  
*What impact do innovative, active learning environments have on:*

1. Student Engagement
2. Inclusiveness (Belonging)
3. Student Creativity
4. Sense of Ownership
5. Student Equity
6. Effortful Control
7. Self Regulation, Self-Direction
8. Participation in Class
9. Student Wellness
10. Readiness for Life After Graduation
11. Classroom Management



## The Cast Members:



**STEAM Studio**



**Gordon Parks  
Elementary**



**Sunflower  
Elementary**



**Rockhurst  
High School**



**University of  
Kansas**



## STEAM Studio

- Alternative Education Space  
Kansas City, MO
- 3<sup>rd</sup> – 8<sup>th</sup> grade (predominantly)
- Specializes in STEAM, Design Thinking and Entrepreneurialism
- Electives, after school programming, camps, field trips, and customized programming
- Nonprofit housed inside Gould Evans' office



Before



STEAM Studio





STEAM Studio





## Gordon Parks Elementary

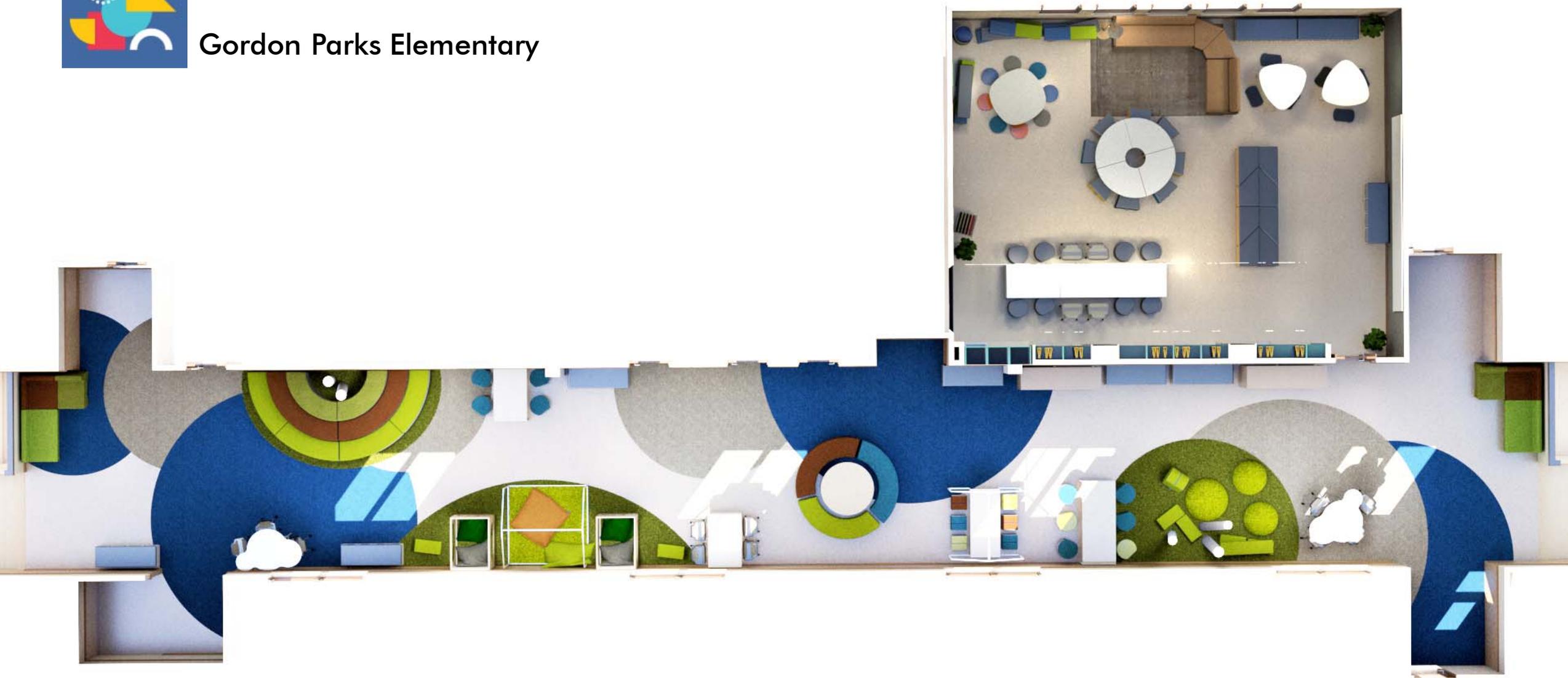
- Urban Charter School  
Kansas City, MO
- K-4<sup>th</sup> Grade, 175 Students
- 3<sup>rd</sup> Grade classroom and corridor
- 100% free & reduced lunch,  
98% trauma sensitive learners
- 42% of staff have a master's  
degree



Before



# Gordon Parks Elementary





## Gordon Parks Elementary





## Gordon Parks Elementary





## Sunflower Elementary

- Public Elementary School, Lawrence, Kansas
- K-5 school, 500 Students
- 4<sup>th</sup> Grade classroom + shared commons area
- 40% FRL, also serves wealthiest area of Lawrence – racially and ethnically diverse
- KU School of Education was already embedded doing UDL research
- Already piloting PBL and UDL



Before





# Sunflower Elementary





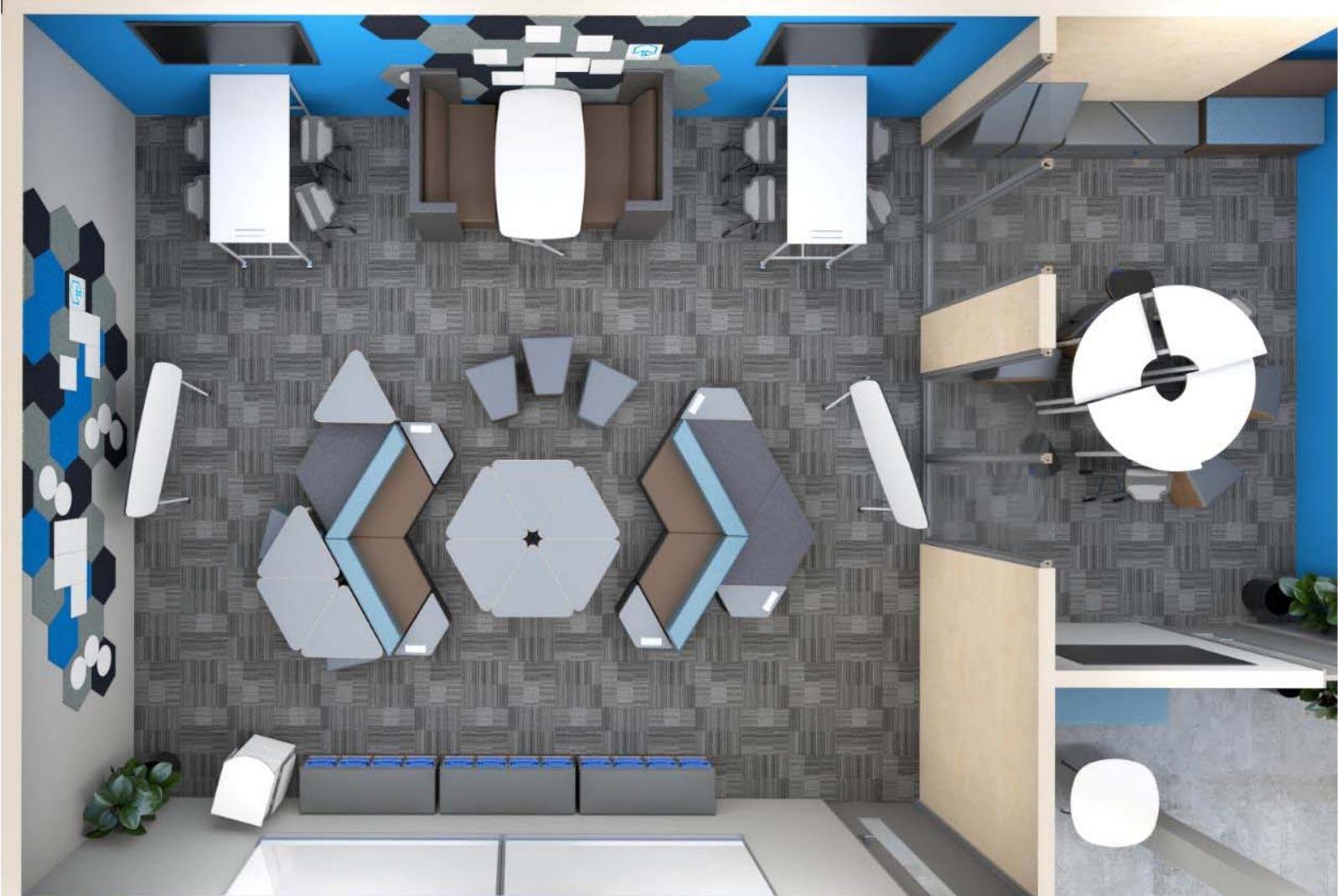
## Rockhurst High School

- Private Jesuit High School, all boy population, Kansas City, MO
- 9<sup>th</sup> -12<sup>th</sup> Grades, 1,000 students
- Classroom (shared), breakout space, and maker space (shared)
- Predominantly white, affluent student body with diversity initiatives overlaid
- Past 5 years have been conducting research in Steelcase Active Learning Classrooms using Steelcase perception data surveys



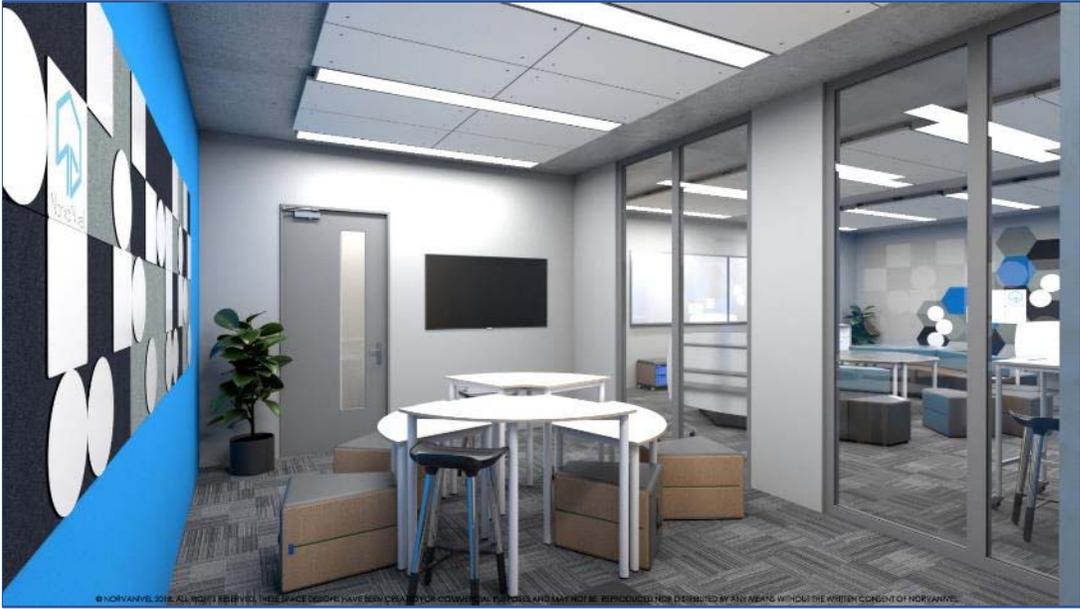


# Rockhurst High School



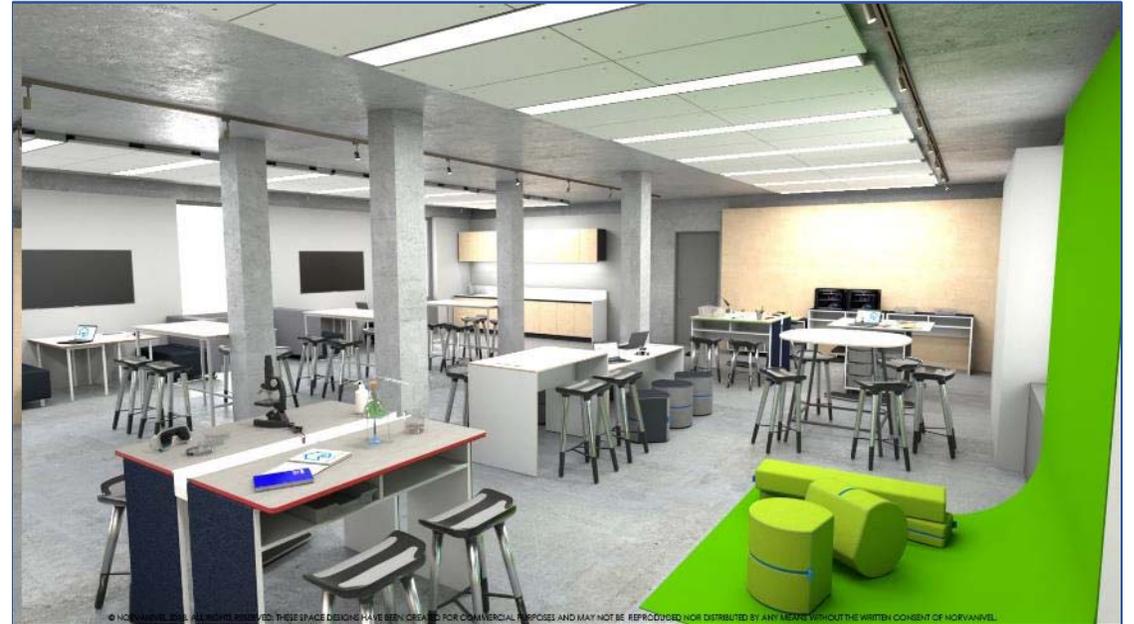


# Rockhurst High School





# Rockhurst High School





University of Kansas

- School of Education
- One classroom, 55 student capacity (shared)
- Mixture of courses and instructors; Children's Literature, Instructional Design Strategies, ...



Before



# University of Kansas School of Ed





# University of Kansas School of Ed



# 3

# The Research Approach



## Laying the Ground Work

Soliciting partnerships & approvals  
Exploring specific research pathways  
Designing the learning spaces  
IRB Application

Fall 2018

## Furniture Installation:

Painting, refreshing finishes

January 2019

## Phase I, Expeditionary Pilot Phase

Observations, Focus Groups, Interviews with  
Students and Educators

Spring 2019

## Phase II, Longitudinal Research

Surveys: Student Engagement, Creativity,  
Student Belonging, Student Ownership

Fall 2019 – Ongoing

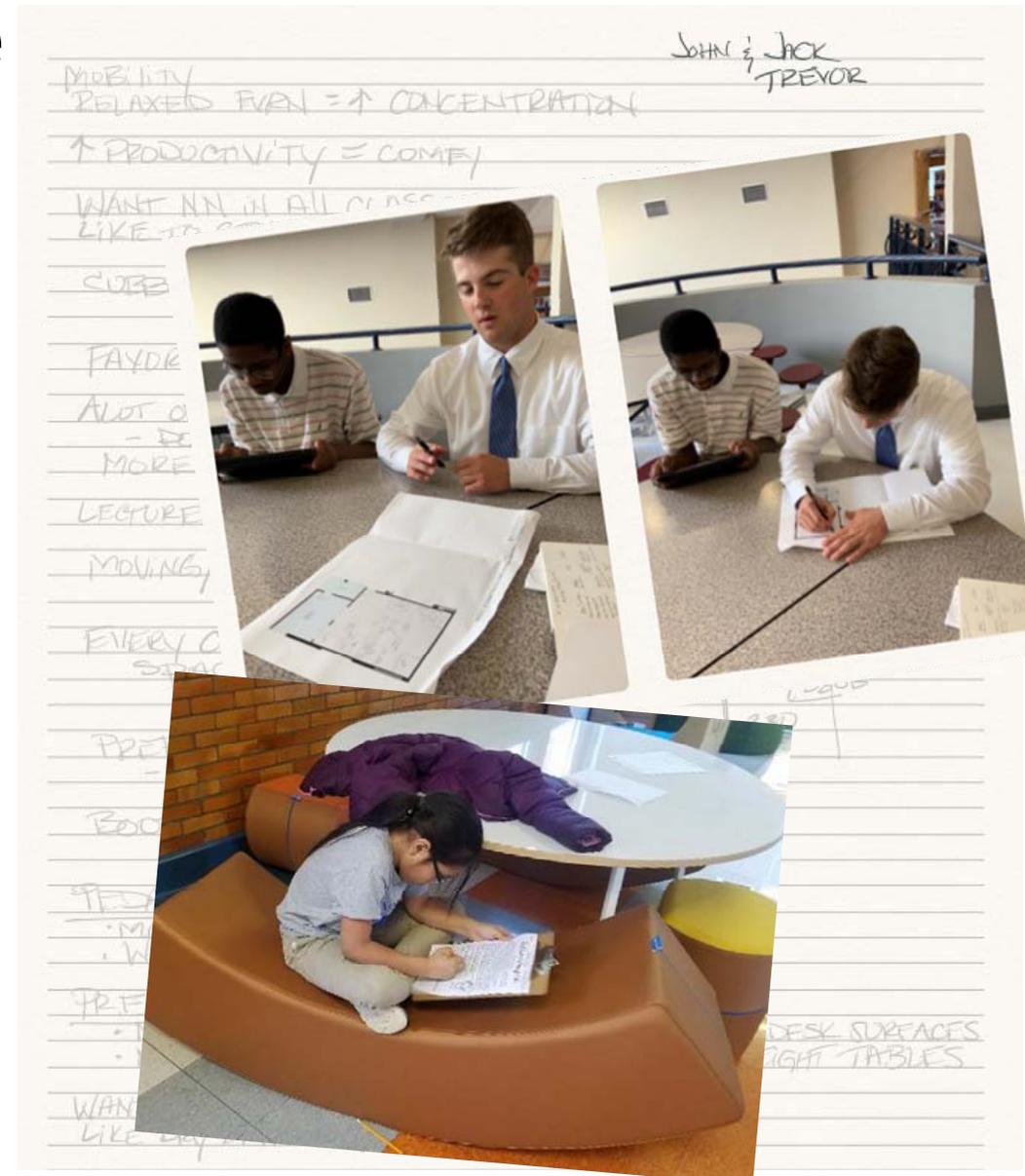
Observations, Focus Groups, Interviews with  
Students and Educators

# Expeditionary Pilot Phase

Learning Space Design Research - Key Findings Spring 2019

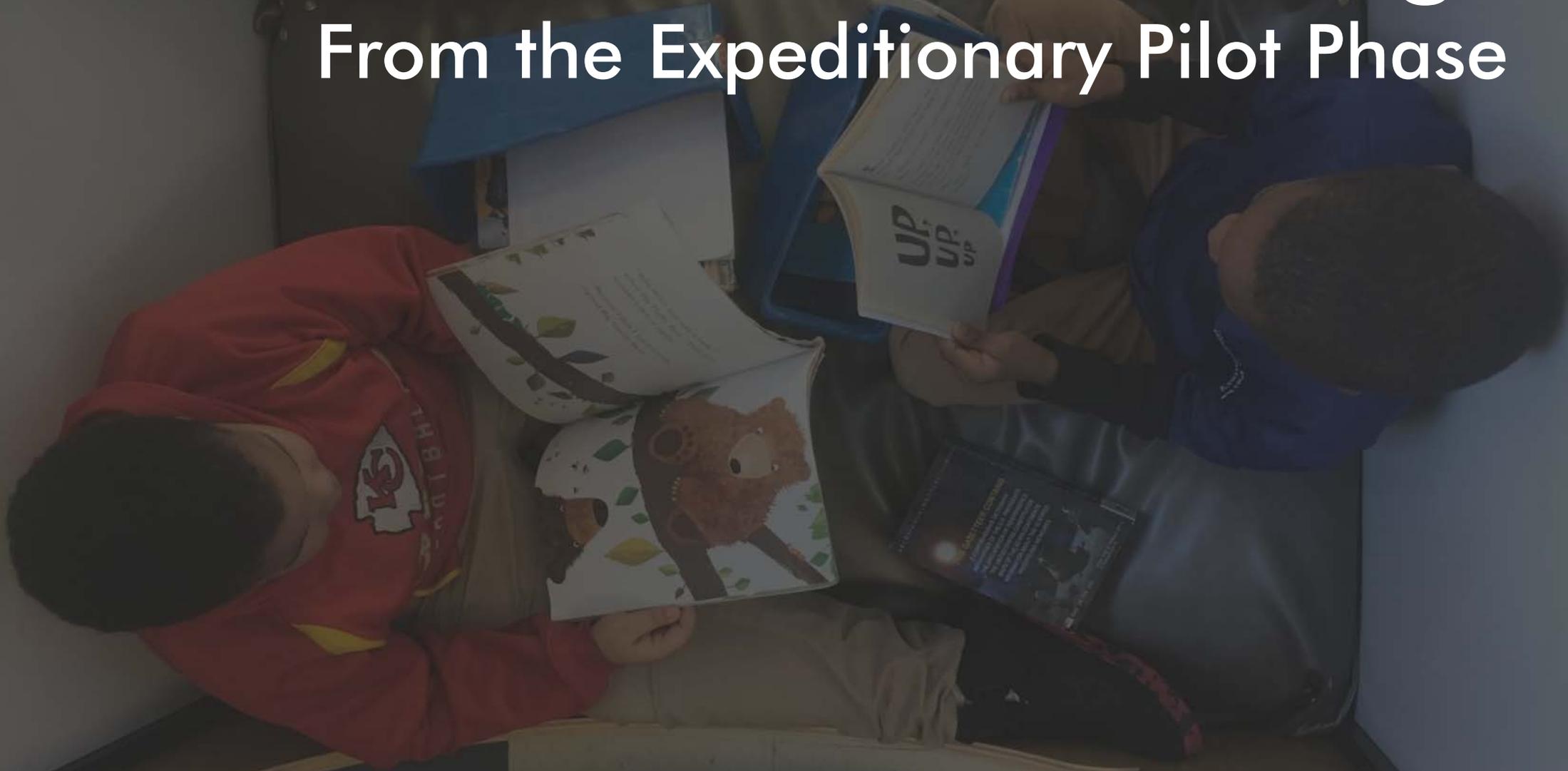
Key Findings Matrix \* see image

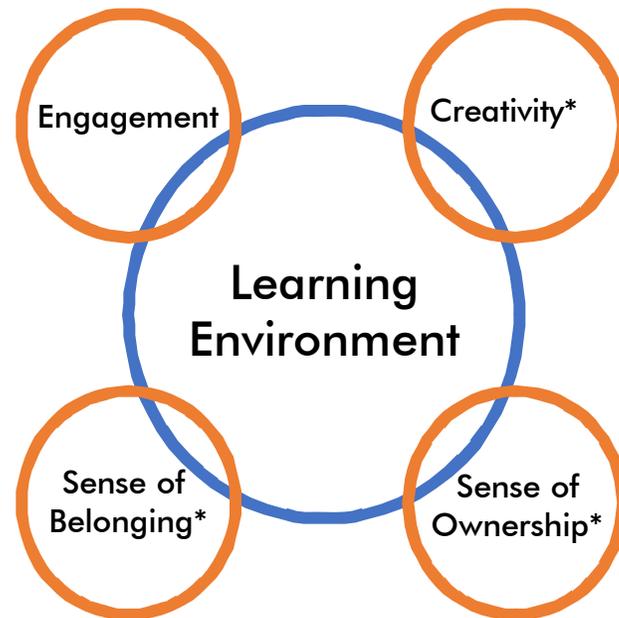
	Sunflower Elementary	Gordon Parks Elementary	Rockhurst High School	STEAM	JRP - TBD
<b>Reported Dispositions</b>					
increased focus	•	•	•	•	
increased energy	•		•		
improved mood	•		•		
improved productivity	•	•	•		
enabled creative thinking	•		•	•	
enabled problem solving	•		•	•	
increased engagement	•		•	•	
appreciated the sense of autonomy - the choice to decide how they work and where	•		•	•	
increased interaction with teacher	•		•	•	
increased interaction with other students	•		•	•	
decreased stress	•		•	•	
improved ability to meet in small groups	•		•	•	
described the new spaces as 'casual,' 'home like,' 'refreshing,' 'relaxed'	•	•	•	•	
<b>Overall Pattern</b>					
supports task based learning	•	•	•	•	•
Initial furniture selection was appropriate - needs little to no alternate items	•			•	
believes a how-to demo to show how the furniture can possibly be used would be helpful	•	•	•	•	•

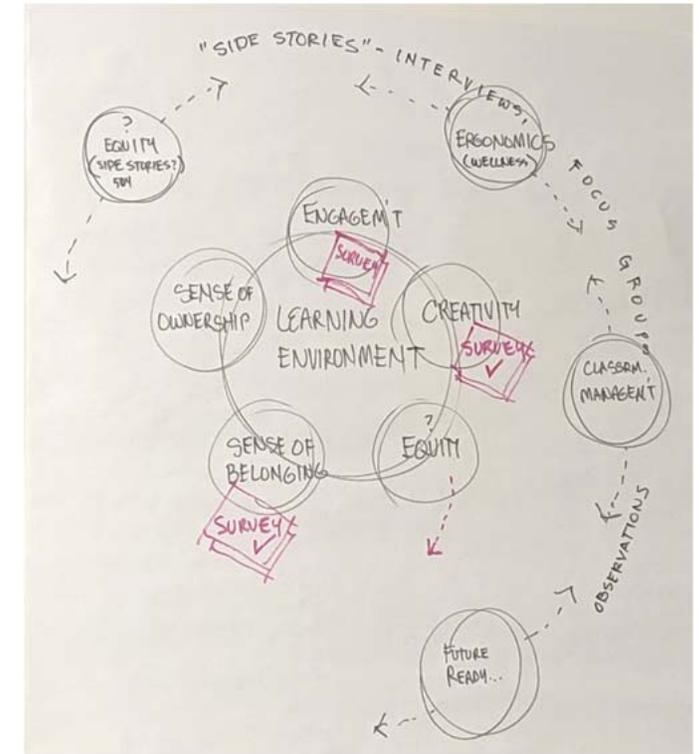
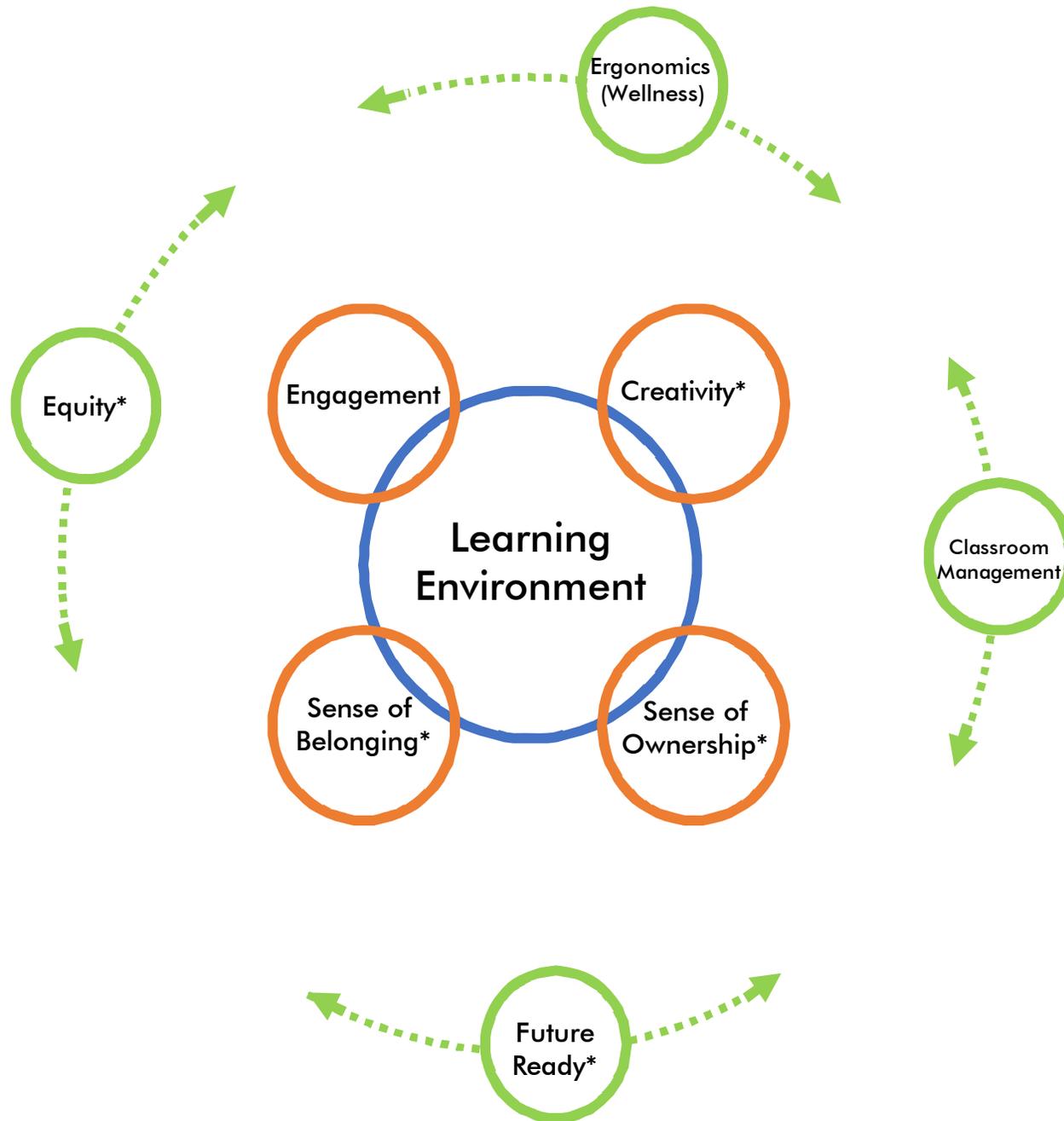


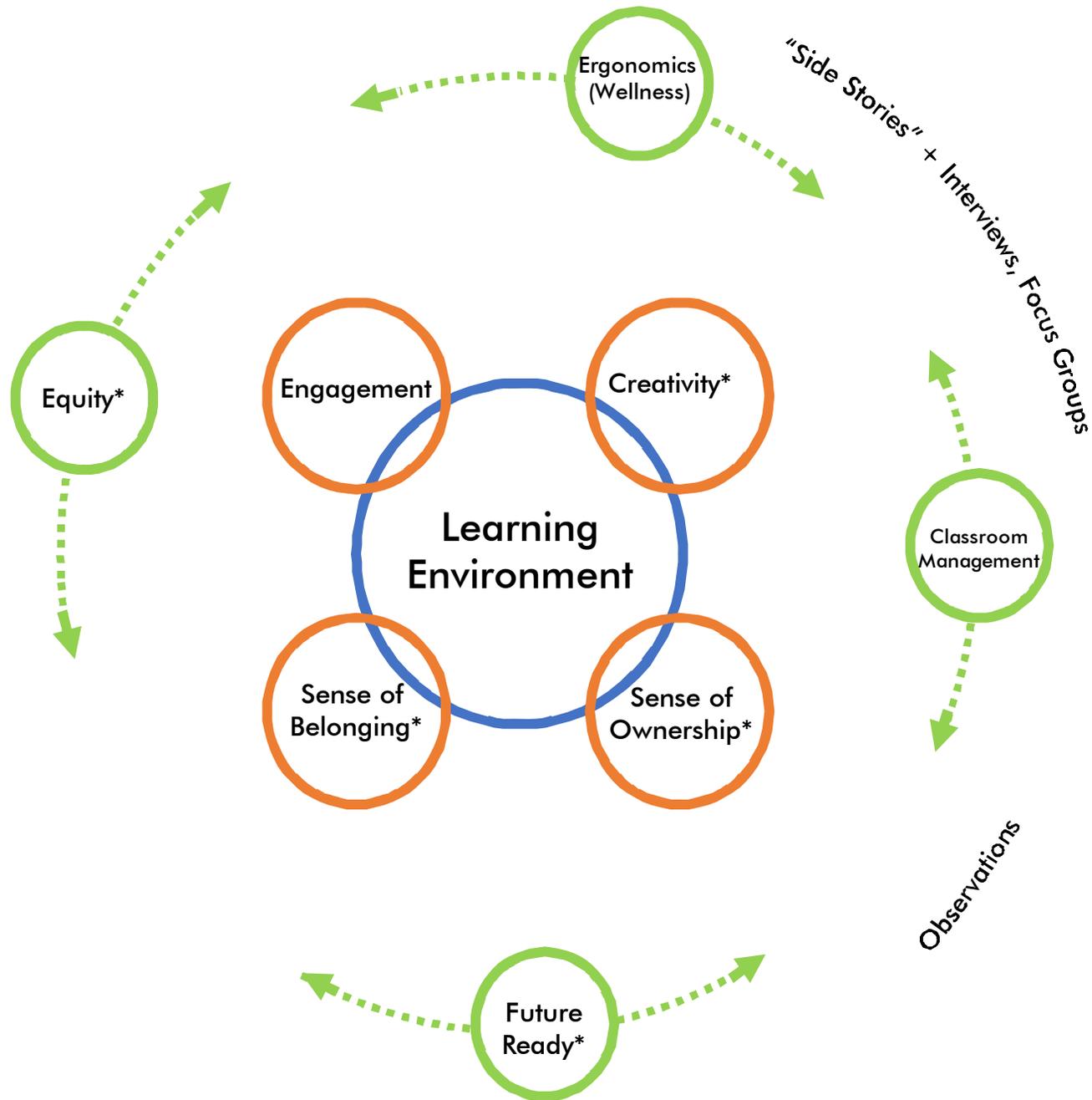
# 4

## Initial Findings From the Expeditionary Pilot Phase









**\*NOTES:**

**Creativity**

Complex Problem Solving  
 Innovative Thinking  
 Design Thinking

**Future Ready**

Meet's Portrait of a Graduate  
 Workforce Readiness  
 Transversal Skills:  
 collaboration,  
 communication, empathy,  
 grit, risk taking, etc.

**Equity**

Equity of access to learning  
 Equity of access to services &  
 programming  
 Equity of individual student  
 needs being met  
 Equity of access to  
 technology & resources

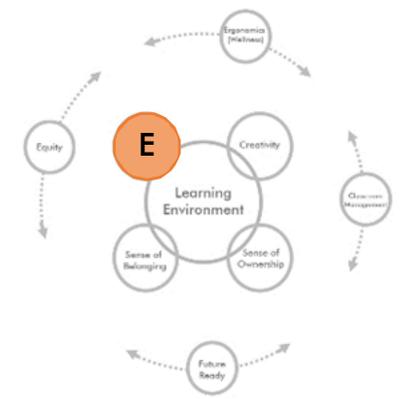
**Sense of Belonging**

Respect  
 Stress  
 School Relationships  
 Choice

**Sense of Ownership**

Choice

# STUDENT ENGAGEMENT



ENGAGEMENT	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
increased focus	•	•	•	•	•
increased engagement	•	•	•	•	•
increased energy	•	•	•	•	•
improved mood	•	•	•	•	•
improved productivity	•	•	•	•	•
enabled creative thinking	•	•	•	•	
enabled problem solving	•		•	•	
supports variety of pedagogies - multiple means for different types of learners	•	•	•		•
increased willingness to participate in class	•	•	•	•	•

# ENGAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Hospitable  
Self-regulating  
Excitement  
Change in power



*Students that are historically off task in their home classroom created their own work space, and were the first ones completed with the project!*

*There's great power to stay focused when given freedom to work where they want with whom they want.*

# ENGAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Hospitable  
Self-regulating  
Excitement  
Change in power



*Students said they were able to focus better because of the ability to move and be active.*



*More mature space allows students to step up their self-regulation.*

*Playful, childlike – freedom to enjoy their space – wakes up all their senses.*

# ENGAGEMENT



## Themes:

Flexibility  
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Self-regulating  
Excitement  
Change in power



*Students say they're able to focus better because of the ability to move and be active.*



*The students are more on task since moving into the new space.*

# ENGAGEMENT

## Themes:

Flexibility

Movement

Choice

Hospitable

Self-regulating

Excitement

Change in power

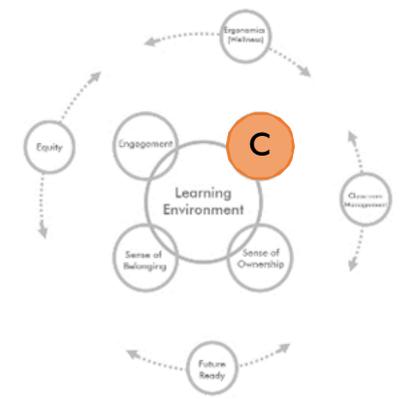
*Time on task is improved (SS)*

*Once they get started on their challenge, they're super engaged. No proactive management needed. (SS)*

*No common rules of governance (GPE)*

*First day or two– High energy! (GPE)*

# STUDENT CREATIVITY



CREATIVITY	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
looseness and informality of the space promotes "sense of freedom" and creativity	•	•	•	•	
room to spread out with projects - not confined	•			•	
mobility to move around, gets the blood flowing, allows creative thinking to open up	•				
playfulness of the space wakes up creative senses	•	•			
students use the furniture to create "stage sets" for their skits			•		
enabled creative thinking	•	•	•	•	

# CREATIVITY



## Themes:

Flexibility  
Movement  
Choice  
Easier Transitions  
Hospitable  
Self-regulating  
Excitement  
Social dynamics



*If the teacher explains how to use the furniture, they just do what you demo and don't think about it creatively.*



*When they create their own work environment, it unlocks further latent creativity. It's like "a license to be creative!"*

# CREATIVITY

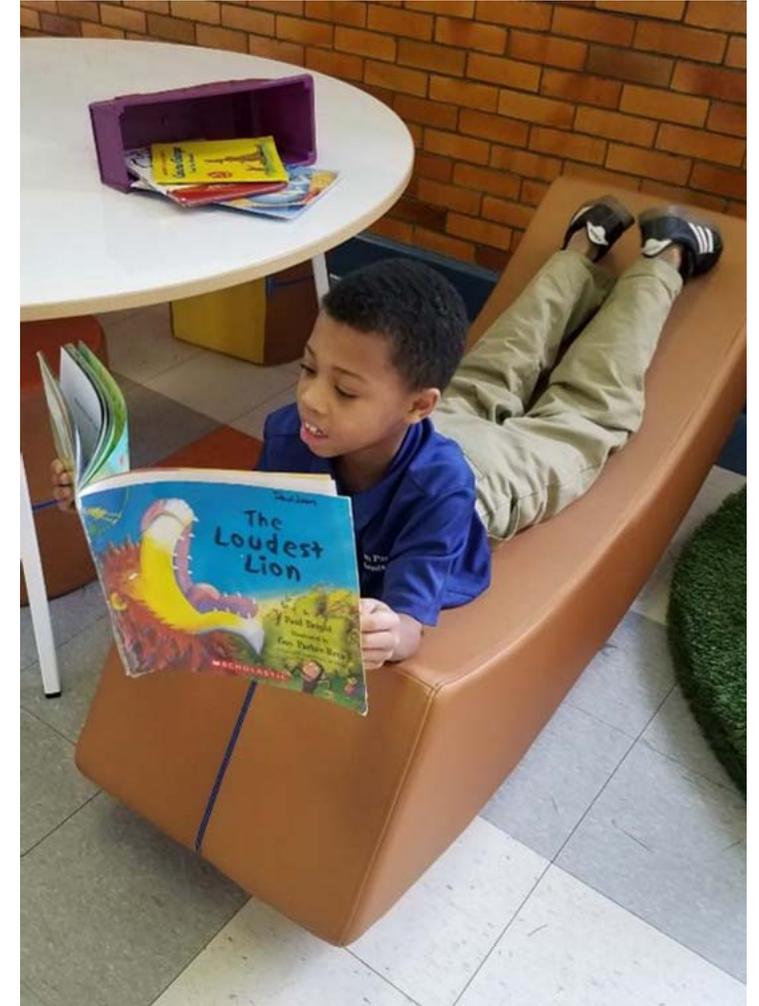


## Themes:

Flexibility  
Movement  
Choice  
Easier Transitions  
Hospitable  
Self-regulating  
Excitement  
Social dynamics



*The space is playful & childlike – they have freedom to enjoy their space. It wakes up all their senses!*



*It has created a hospitable place – not institutional – which is very valuable in building relationships.*

# CREATIVITY



## Themes:

- Flexibility
- Movement
- Choice
- Easier Transitions
- Hospitable
- Self-regulating
- Excitement
- Social dynamics



*Looseness and informality of the space promotes "sense of freedom" and opens up creative thinking.*



*Students use the furniture to create "stage sets" for skits; pirate ships, horses, ... we've seen it all!*

# CREATIVITY

## Themes:

Flexibility  
Movement  
Choice  
Easier Transitions  
Hospitable  
Self-regulating  
Excitement  
Social dynamics

*Great to have a shift from the paradigm of school to a creative space! (SS)*

*Regimented seating arrangements are bad for creativity. (SS)*

*Sitting all day is bad for creativity. (SS)*

*Mobility to move around, gets the blood flowing, allows creative thinking to open up. (SS)*

# SENSE OF OWNERSHIP



SENSE OF OWNERSHIP	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
furniture is easy to move, allowing students to manipulate the environment	•		•	•	•
appreciated the sense of autonomy - the choice to decide how and where they work	•		•	•	
the ability to design their own workspace as a creative exercise	•		•		
Students respect the space	•	•	•	•	•

# OWNERSHIP



## Themes:

Flexibility  
Movement  
Choice  
Self-regulating  
Change in power  
Student-Governance



*Stack-ability of the furniture is really valuable – it's like an unopened box of Legos! It promotes the students "building their own space".*

*Things are more organized and more professional, which positively impacts their behavior – more mature.*

# OWNERSHIP



## Themes:

Flexibility  
Movement  
Choice  
Self-regulating  
Change in power  
Student-Governance



*The more mature space is having a positive impact on students' self-regulation.*



*The students really respect the space a LOT!*

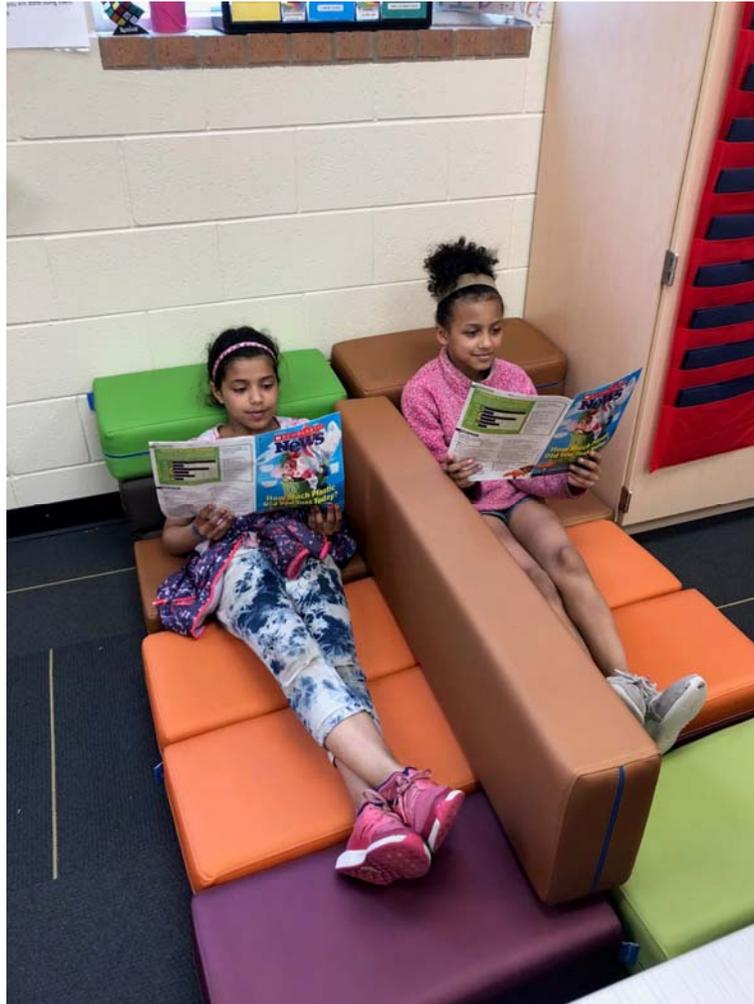
*It's a balance to find a professional relationship with each student when the setting is so relaxed - needs to be tailored for each student.*

# OWNERSHIP



## Themes:

Flexibility  
Movement  
Choice  
Self-regulating  
Change in power  
Student-Governance



*Our kids did all the moving of furniture. We had some lessons on “safe moving.” But it really taught them to be thoughtful about their learning space and take ownership of it.*

# OWNERSHIP



## Themes:

Flexibility  
Movement  
Choice  
Self-regulating  
Change in power  
Student-Governance



*The new spaces, along with our new “flex-learning hour”, has shifted the behavioral paradigm. RHS is trying to give students more autonomy, and maintain rigor.*

# OWNERSHIP



## Themes:

Flexibility  
Movement  
Choice  
Self-regulating  
Change in power  
Student-Governance



*Our students don't feel very comfortable trying new things with the furniture.*



*We're going to try having an "experimentation period" at semester start to get students comfortable trying different configurations.*

# OWNERSHIP

## Themes:

Flexibility

Movement

Choice

Self-regulating

Change in power

Student-Governance

*We've seen BD students here who are often the first ones finished with their assignment – in the right environment, they're extremely focused! (SS)*

*Easier for students to set up their own workspace (SS)*

*Love the Genga Blocks! Very useful for personalizing space. (SS)*

*Kids really prefer to make their own workspace, rather than sitting at tables that are already set up. (SS)*

*Easier to move and reconfigure furniture with NN stuff. (SS)*

*Kids really prefer to design their own work space, rather than sitting at tables that are already set up. It makes it "theirs". (SS)*

*Some sit in same place every day, some switch it up; supports notions of personalization and ownership. (GPE)*

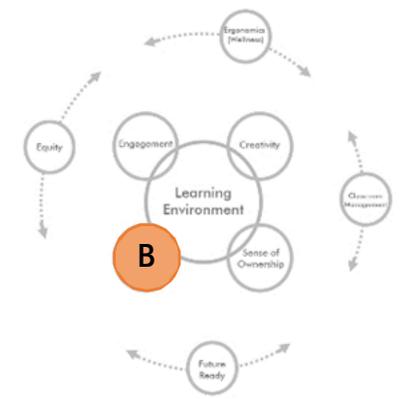
*A teacher's desk, in rows and columns, is a symbol of power and control. (GPE)*

*We've been allowing kids to self-monitor rather than follow rules. (GPE)*

*Like the stools and not the low tables; kids prefer sitting at tall work stations – makes them feel more grown up. (GPE)*

*We're planning to be more intentional in asking students to reconfigure the room to support new activities – get's them in the mindset as future teachers to manipulate the room. (KU)*

# SENSE OF BELONGING



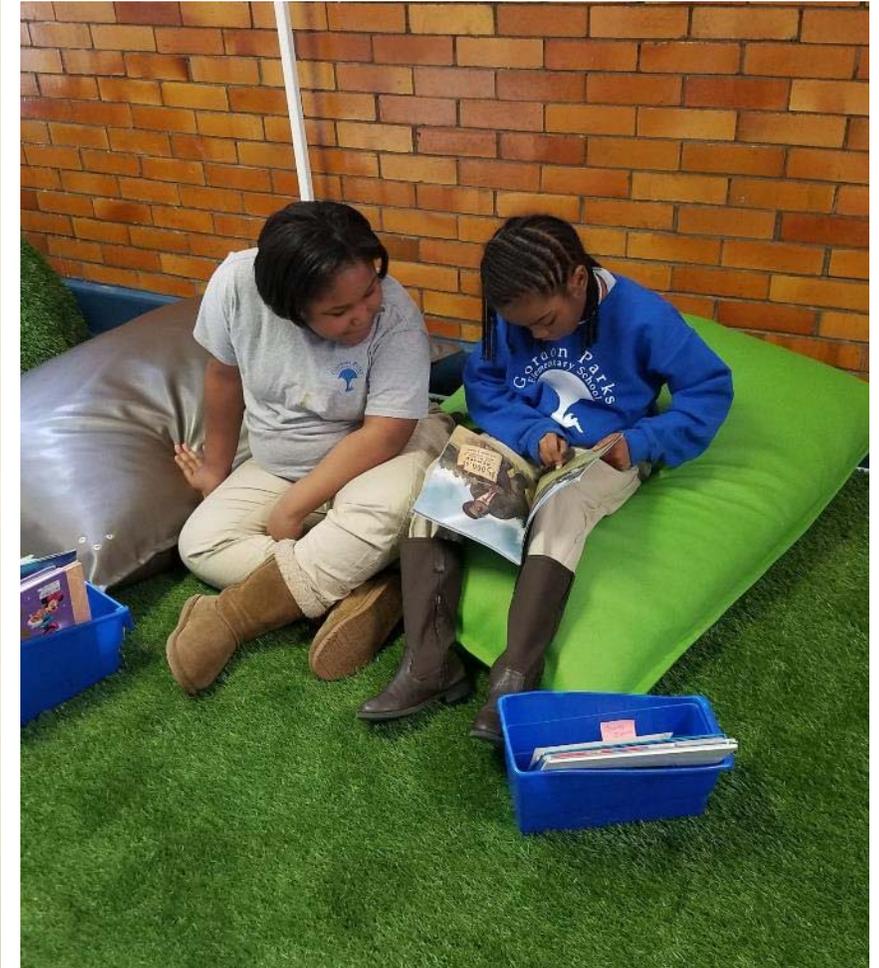
SENSE OF BELONGING	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
promotes positive school relationships; easier when students work in teams and teacher can get close to students	•	•	•	•	•
non-hierarchical space supports sense of equity within the room	•	•	•	•	•
self-selected seating raised issues of student isolation - led to inclusion practices		•	•		
students with 504's, IEP's, and special needs fit in more comfortably		•	•		•
The space makes the students feel valued	•	•	•	•	•
described the new spaces as 'casual,' home like', 'refreshing', 'relaxed'	•	•	•	•	
feels like a hospitable place	•	•	•		
larger groupings of furniture foster cliquish behaviors				•	•

# BELONGING



## Themes:

Choice  
Hospitable  
Self-regulating  
Social dynamics



*We had a student feeling ostracized - If we had picked their seats we wouldn't have noticed – helps point out a student is having trouble making friends.*

*The space is very hospitable – not institutional – which really helps build relationships.*

*The kids really feel valued in this space.*

# BELONGING



## Themes:

Choice  
Hospitable  
Self-regulating  
Social dynamics



*One student who has a 504 wasn't sure the furniture was going to work out for him – he likes to be by himself. In the end, he had an awesome semester. The flow of the classroom allowed him integrate in a way that was comfortable for him.*



*The furniture made it more evident which students were dealing with feeling ostracized – the furniture brought it to light so we could address it with protocols and conversations.*

# BELONGING



## Themes:

Choice  
Hospitable  
Self-regulating  
Social dynamics



*Larger furniture can foster cliquish behaviors, raised awareness of inclusive practices.*

*Excited because faculty can get close to students – promotes positive school relationships.*

# BELONGING

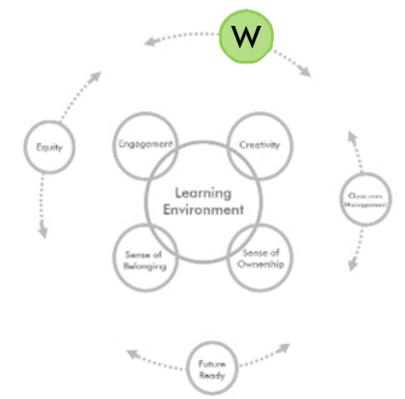
*Our relationships with students are improved with the new classroom...& these are essential to belonging. (GPE)*

*Students are more supportive to one another (already in place with UDL, more pronounced with furniture). (SFE)*

## Themes:

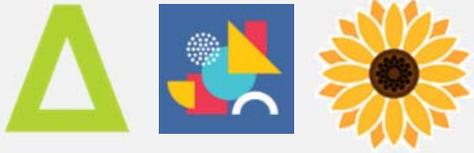
Choice  
Hospitable  
Self-regulating  
Social dynamics

# ERGONOMICS & WELLNESS



ERGONOMICS AND WELLNESS	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
teachers enjoy moving around the classroom - lots of physical movement	•	•	•	•	•
supports variety of seated and standing postures, more ability to change posture frequently	•	•	•	•	•
supports student movement throughout the learning space	•	•	•	•	•
Height adjustability of tables is important		•		•	
"wobble boards" are a favorite-keep students alert	•	•	•	•	
decreased stress	•		•	•	

# ERGONOMICS



## Themes:

Movement  
Choice  
Variation

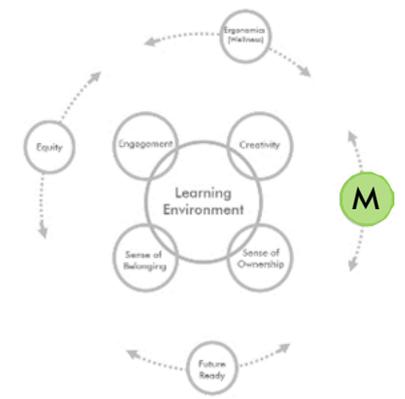


*Offers more choice on preference in postures (sitting to standing).*

*[The instructor] likes to be up doing active work.*

*Get a little bit of workout moving furniture around – it gets kids blood flowing which is healthy for their attention restoration.*

# CLASSROOM MANAGEMENT



CLASSROOM MANAGEMENT	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
mature space shows respect for students, which fosters more responsible behavior	•	•	•	•	
established ground rules at the beginning of the semester-students come up with the rules		•	•		•
teacher can access each student more easily	•	•	•	•	•
supports positive school relationships, more positive interaction among students	•	•	•	•	•
more fluid space throughout the room-easier to navigate to student teams	•	•	•	•	•
teachers discover new arrangements left by previous classes - a learning opportunity					•
supports a lot of different pedagogies - allows the teacher to "explore" different methods		•	•	•	•
larger groupings of furniture foster cliquish behaviors (booths, benches)				•	•

# CLASSROOM MANAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Efficiency  
Organization  
Easier Transitions  
Self-regulating  
Change in power  
Student Governance



*Easier to transition activities and move furniture to support these activities.*

*Encourages 'best behavior' - the more responsibility you allow students, the more responsible they act.*

*New furniture offers more flow through the classroom – easier to navigate to all the student teams to check on their progress.*

# CLASSROOM MANAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Efficiency  
Organization  
Easier Transitions  
Self-regulating  
Change in power  
Student Governance



*This class helps me be the best version of myself, I need to be comfortable with the fluid teaching.*

*- Teacher*

*We intentionally didn't want too many expectations – too many rules. This has allowed us to spend less time enforcing the rules.*

*Effective classroom management happens because of relationships, and it's hard to develop relationships with every student in a traditional classroom.*

# CLASSROOM MANAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Efficiency  
Organization  
Easier Transitions  
Self-regulating  
Change in power  
Student Governance



*Students couldn't always sit with their friends – they had more arguments from being around each other too much, and they talk too much.*



*Students came up with their own rules for the seating areas. These rules have addressed kids who felt ostracized. Each day they start in a different place. "This is not your spot for the day – just your spot for that subject".*

# CLASSROOM MANAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Efficiency  
Organization  
Easier Transitions  
Self-regulating  
Change in power  
Student Governance



*I try to construct an environment in the class that promotes positive interaction – I can affect the student interaction by designing the room configuration.*



*The space encourages 'best behavior' - the more responsibility you allow students, the more responsible they act.*

# CLASSROOM MANAGEMENT



## Themes:

Flexibility  
Movement  
Choice  
Efficiency  
Organization  
Easier Transitions  
Self-regulating  
Change in power  
Student Governance



*“When I came in. I said wow! I’m going to need a new wardrobe to teach in this space. I need more active wear!”*

*The space made me more joyful about teaching – felt much more playful. “The furniture brings me joy!”*

# CLASSROOM MANAGEMENT

## Themes:

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Student Governance

*Once they get started on their challenge, they're super engaged. No proactive management needed. (SS)*

*Larger furniture can foster cliquish behaviors, raised awareness of inclusive practices (RHS, KU, SFE)*

*We only have one rule; "Respect one another." This makes management of the environment much simpler and student-directed. (SS)*

*good flow of sightlines throughout space, helps with the way furniture is laid out and height of furniture is just right. (SS)*

*Very organic use of the space and where students sit – if there's a problem, we simply ask them to move. (GPE)*

*Elementary classes needed rules/etiquette. (GPE)*

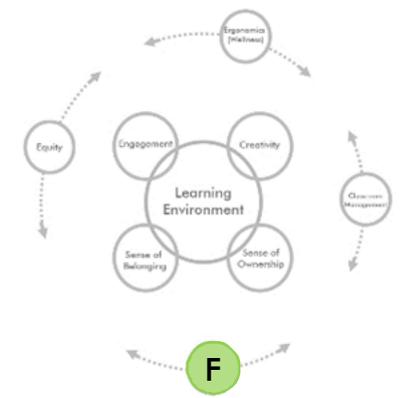
*Our relationship with the students is more of a partnership which positively effects management. (GPE)*

*We have no seating chart – except for substitute teachers where they just have a place they start the day, then they can move around from there. (SFE)*

*I'm on my feet a lot – I love being able to move around the classroom. (KU)*

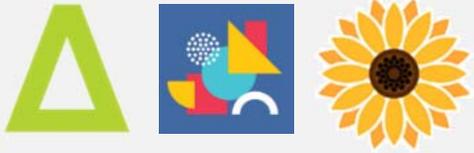
*Booth setup (like a restaurant) didn't work well – students would get in a little foursome – supports cliquish behaviors. (KU)*

# FUTURE READINESS SKILLS



FUTURE READINESS SKILLS	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
easier for students to work in groups	•	•	•	•	•
promotes positive interactions among students, positive school relationships	•	•	•	•	•
supports development of self regulation	•	•	•		
supports effortful control	•	•	•		
playfulness of space promotes healthy social interactions	•	•	•		
allowing variability in the classroom allows students to discover how they learn best (metacognitive skill development)	•		•		

# FUTURE READY

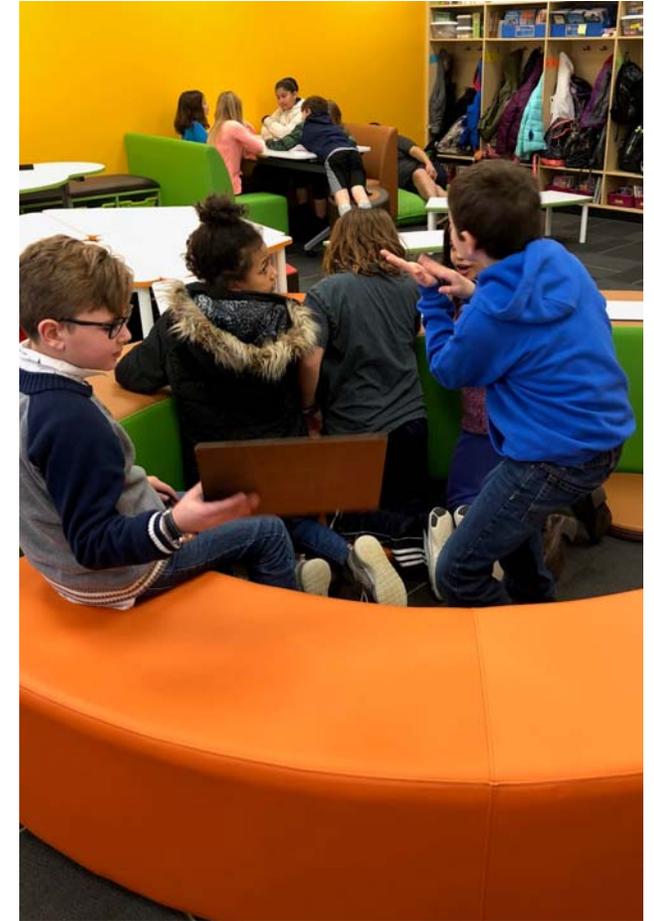


## Themes:

Self-regulating  
Social dynamics  
Change in power  
Student-Governance  
Soft Skills Development



*The more mature space influences students to step up their game. They begin to develop the skills that are critical upon graduation; effortful control, development of school relationships, participation, etc.*



*Giving students options for variability allows them to discover how they learn best (Metacognitive skill development).*

*Playful, childlike – promotes healthy social interactions.*

# FUTURE READY



## Themes:

- Self-regulating
- Social dynamics
- Change in power
- Student-Governance
- Soft Skills Development



*Easier for students to work in groups, and build the social skills that comes with that. (RHS)*

*Our students are traditionally very quiet and reluctant to share their thought and backgrounds. This space helps them open up. (KU)*

## FUTURE READY

### Themes:

Self-regulating  
Social dynamics  
Change in power  
Student-Governance  
Soft Skills Development

*Previously we'd have materials set out. Now materials are kept in clear drawers, and students access them when needed – it all helps them become self-directed learners. (SS)*

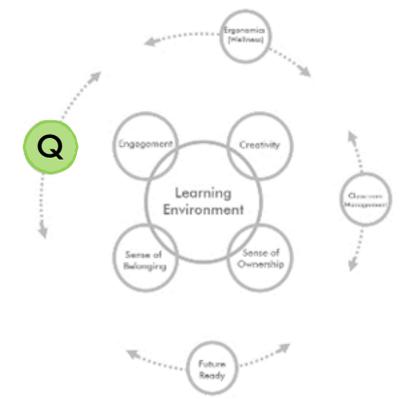
*The students need to behave in the classroom to get permission to come to the hive (in the hallway) – teaches them self-regulation and effortful control. But we didn't want hive to be incentive, if you'd benefit from the space by having some quiet time, then you should be able to go there. (GPE)*

*Allowing kids to self-monitor rather than follow rules. (GPE)*

*It's almost impossible to do group work in a traditional classroom – just so difficult to arrange in teams. (RHS)*

*The students learned more and interacted more – it's good for future elementary teachers that need to interact more. (KU)*

# EQUITY



EQUITY	STEAM Studio	Gordon Parks Elementary	Sunflower Elementary	Rockhurst High School	KU School of Ed
each student has increased interaction with teacher	•	•	•	•	•
increased interaction with other students	•	•	•	•	
improved ability to meet in small groups	•	•	•	•	
teachers moved around the classroom more than in previous classrooms - better access to each student	•	•	•	•	
space supports variability - meeting each student at their current readiness level	•	•	•	•	•

# EQUITY



## Themes:

Flexibility  
Choice  
Self-regulating  
Change in power  
Self-regulating  
Social dynamics  
Change in power  
Student-Governance

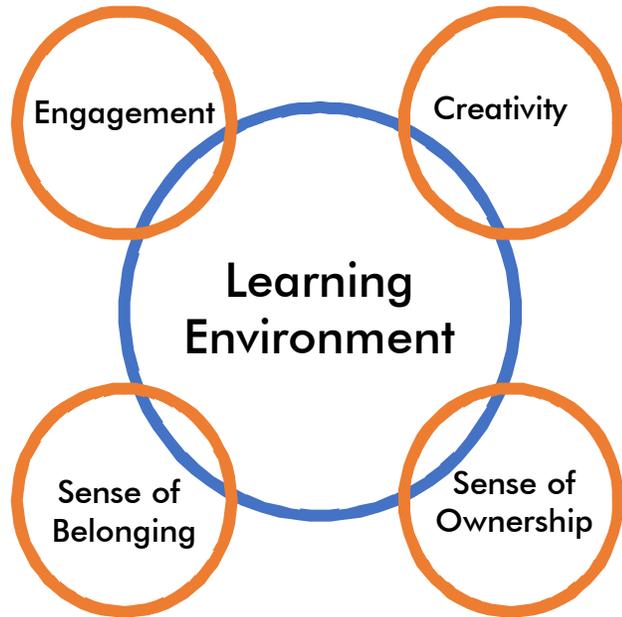


*The casualness of the space brings the feeling of bringing the outdoors inside - this is desirable.*



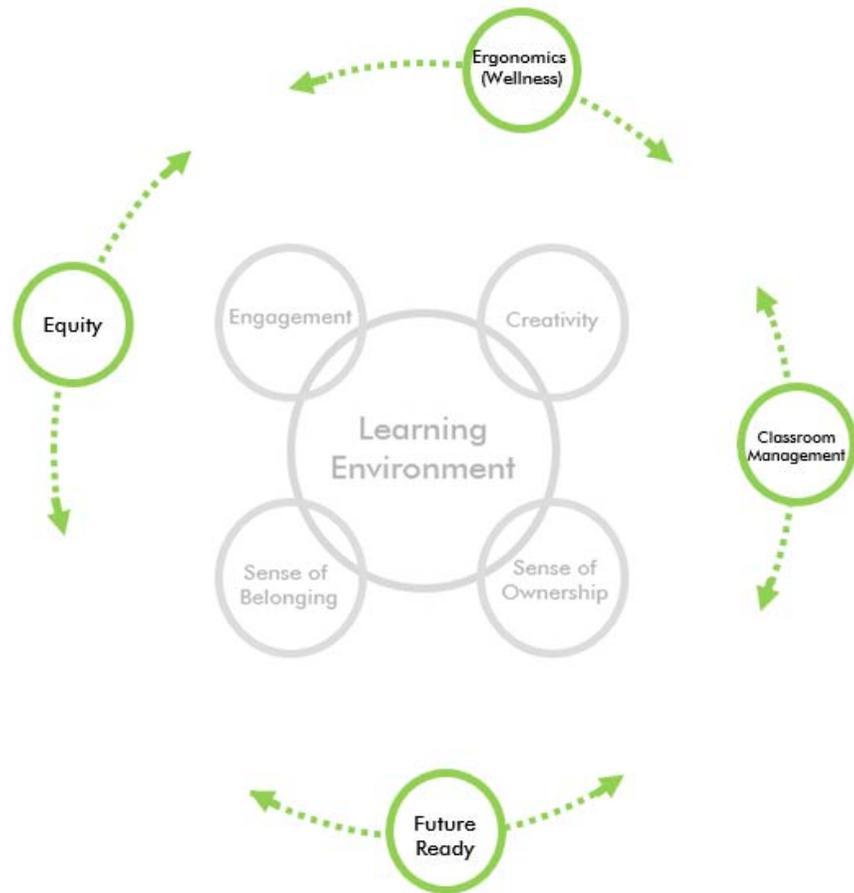
*A lot of times students choose to sit at the teacher table. It's not punitive, but welcomed. Kids became more aware of equity. You don't have that opportunity when all the tables are the same and there's a strong hierarchy in the room.*

# SUMMARY – KEY TAKEAWAYS:



- **STUDENT ENGAGEMENT**, a key indicator of student success, was improved across all age levels
- **CREATIVITY** was impacted most when students were given more autonomy to “own” the space. The impacts of creativity were more noticeable at the younger grade levels.
- **SENSE OF OWNERSHIP** is omnipresent given the mobility and adaptability of the furniture. Classroom management practices were a large indicator on how much these features translated to perceived student ownership.
- **SENSE OF BELONGING** was universally improved across all age levels. The casualness put students more at ease. The adaptability of the spaces supported school relationships, leveled hierarchies, and supported a “personalized fit” for each student.

# SUMMARY – KEY TAKEAWAYS:



- **ERGONOMICS & WELLNESS:** universally, the ALE's supported more movement throughout the day, more changes in posture, and more adjustability. These aspects benefitted students as well as teachers.
- **CLASSROOM MANAGEMENT:** It's easy to debunk the myth that ALE's are more challenging to manage – the opposite is true based on user feedback. Teaching in an ALE can take more energy for teachers. ALE's offer more pedagogical freedom for teachers and more discovery of teaching methods that work best for them and their students.
- **FUTURE READINESS SKILL DEVELOPMENT** saw greater impacts at the elementary level, less so at high school and college.
- **EQUITY** of access to learning was enhanced by these spaces that support variability in teaching and learning methods. The ability for the teacher to access each student and the elimination of "a front row" also support student equity in the classroom.

## OTHER OBSERVATIONS

The research study classrooms are:

- more supportive in accommodating service animals.
- able to flex to accommodate more students. *“We could easily have book buddies and my class (45 kids in lieu of 25). We could also fit all 3 4<sup>th</sup> grade classes in Krista’s room! Very comfortably! (90 kids!). They did this when they had a guest speaker.”*
- highly utilized for studying after class and after school – they’re adaptive to support other uses.

# LEARNING CURVE

## Adaptive changes moving forward:

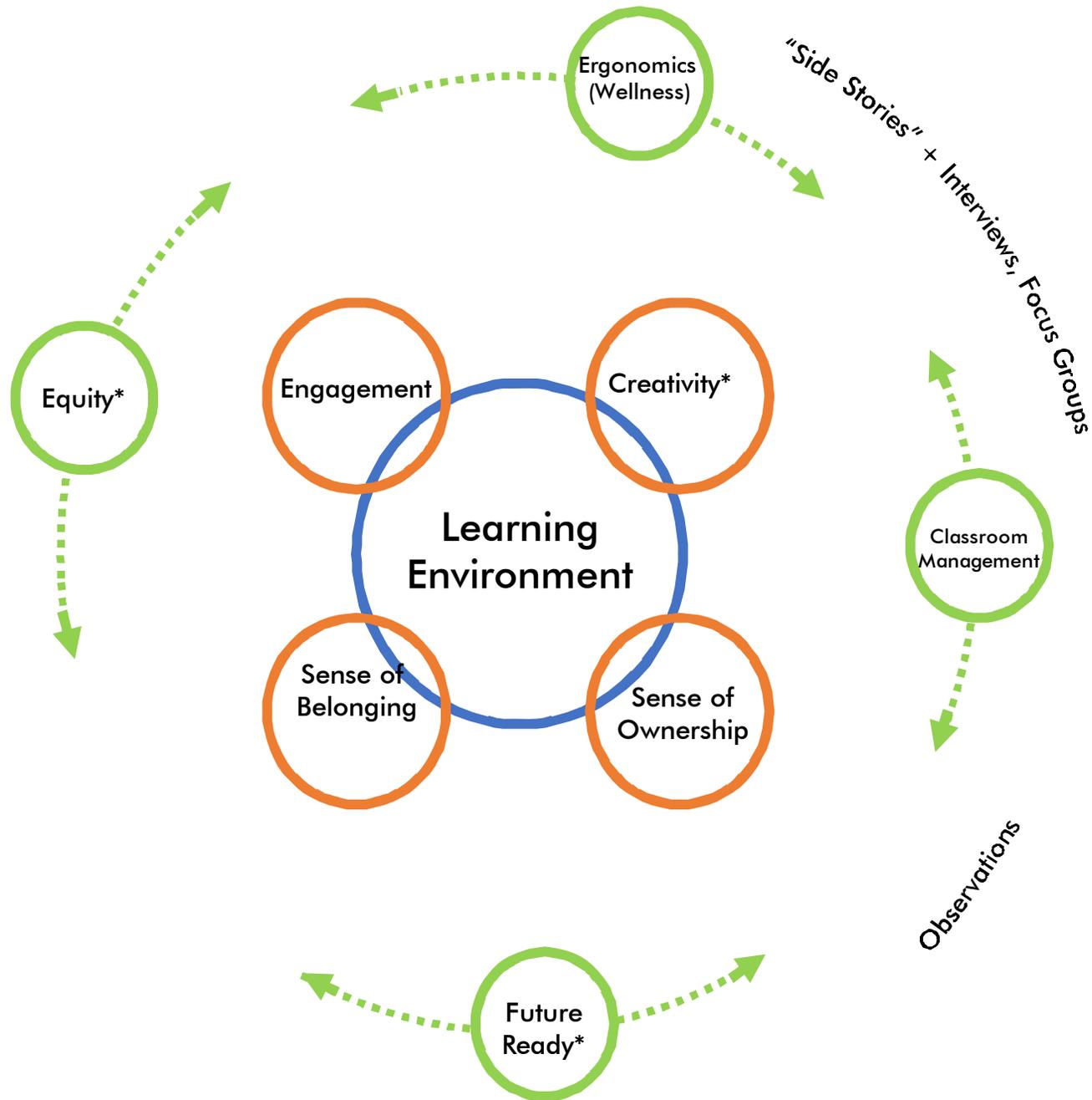
- Some instructors desired an orientation session on how to use of the spaces (older grade levels; RHS & KU)
- Students appreciated more traditional furniture for traditional lecture based classes and teaching styles – the alignment of pedagogy and space design is important but should not expect to approach space design as “A Field of Dreams” – simply building it does not ensure “they will come.”
- Train facilities staff on safe keeping and re-setting the rooms (RHS)

5

What's Next

# Parallel Research Efforts

- Running additional measures on their own:
  - Rockhurst H.S.
    - Steelcase Perception Surveys
  - Gordon Parks Elem.
    - Trauma Smart Program Evaluations
  - Sunflower Elem.
    - Universal Design for Learning pilot work
  - KU School of Ed.
    - Universal Design for Learning pilot work
  - STEAM Studio
    - Metacognitive Development & Self-Regulation Skill Development



**\*NOTES:**

**Creativity**  
 Complex Problem Solving  
 Innovative Thinking  
 Design Thinking

**Future Ready**  
 Meet's Portrait of a Graduate  
 Workforce Readiness  
 Transversal Skills:  
 collaboration,  
 communication, empathy,  
 grit, risk taking, etc.

**Equity**  
 Equity of access to learning  
 Equity of access to services &  
 programming  
 Equity of individual student  
 needs being met  
 Equity of access to  
 technology & resources

**Sense of Belonging**  
 Respect  
 Stress  
 School Relationships  
 Choice

**Sense of Ownership**  
 Choice

# RESOURCES:



CHANGING THE WAY  
EDUCATION IS DELIVERED  
THROUGH PLACE AND  
PEDAGOGY

gouldevans

GOULD EVANS

IDEA KITS

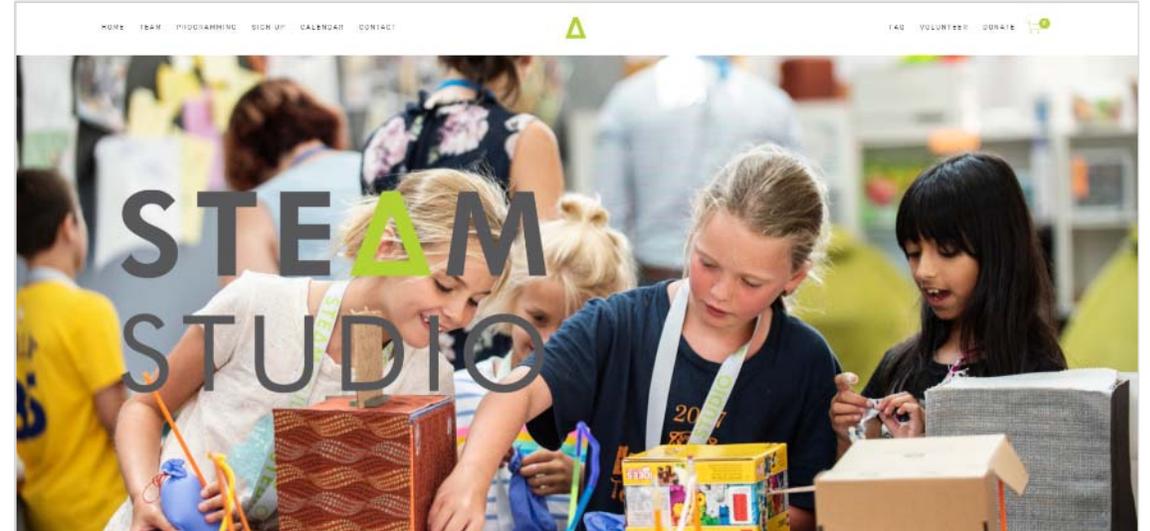
STEAM STUDIO

[GouldEvansEducation.com](http://GouldEvansEducation.com)

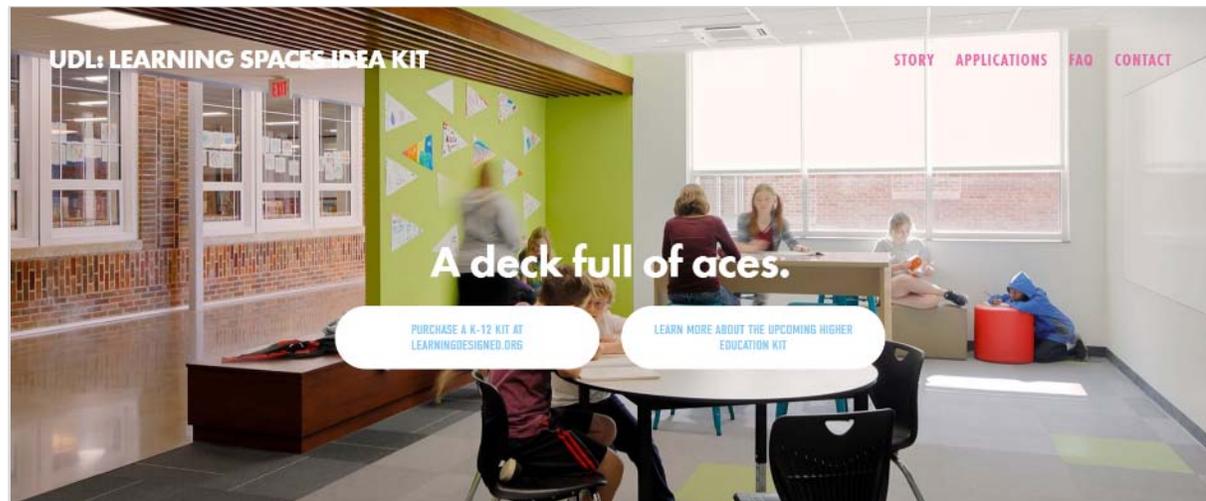
# RESOURCES:



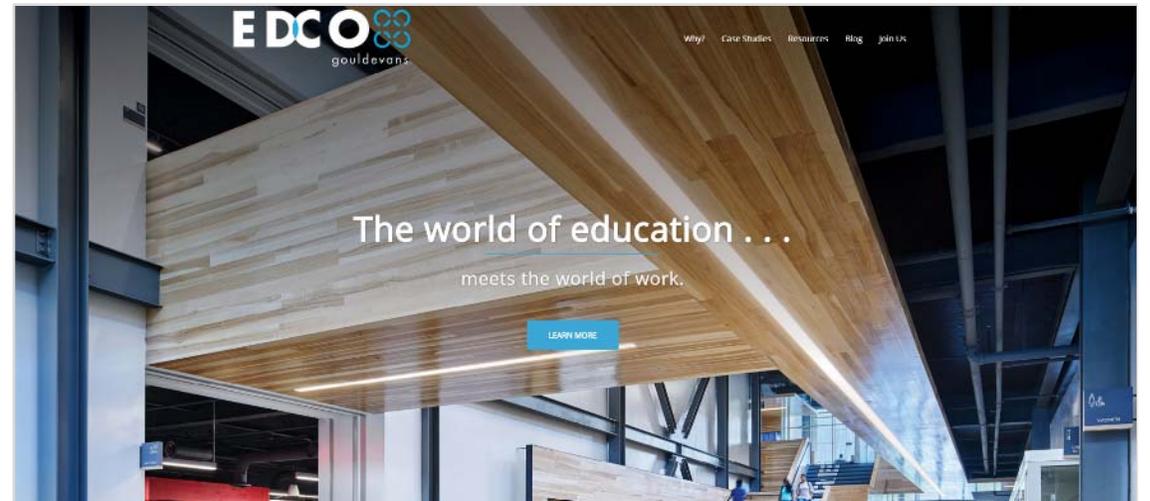
[NorvaNivel.com](http://NorvaNivel.com)



[STEAM-Studio.org](http://STEAM-Studio.org)



[UDLIdeaKit.org](http://UDLIdeaKit.org)



[GouldEvans-EDCO.com](http://GouldEvans-EDCO.com)

# QUESTIONS, DISCUSSION:



# Academic Research:

How Intelligent Furniture Applications Affect Student Success