THE JOURNEY
TO FUTURE READY

CDH
ARCHITECTURE

FOREWORD

Education influences social change. It tears down the cycle of poverty and oppression by providing children the knowledge and skills necessary for success in the modern workforce. Yet our educational constructs don't support the way in which most of today's youth consume the knowledge that is being imparted on them.

For more information or to connect with us, please visit our website at www. cdhpartners.com or contact

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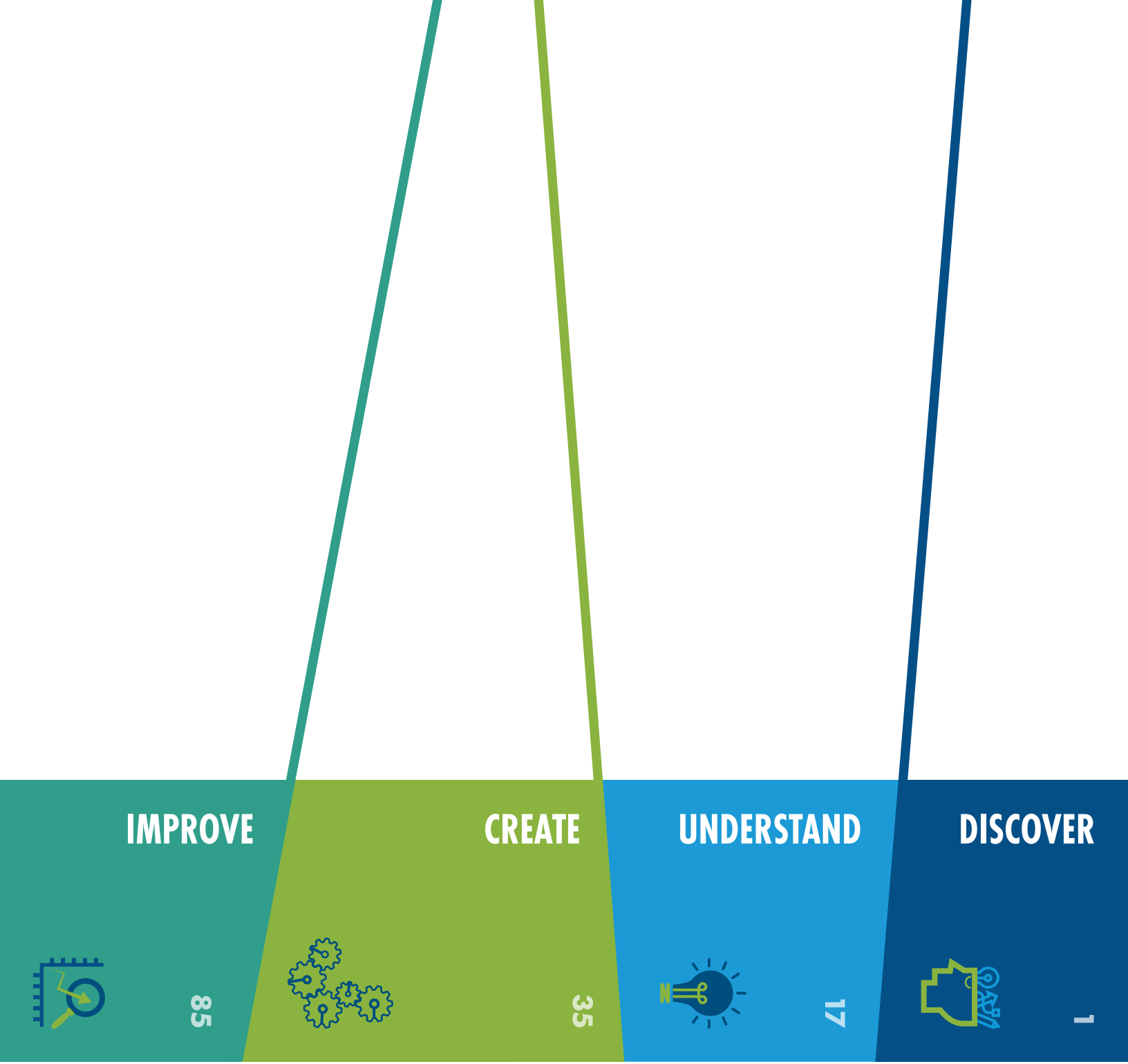
CDH ARCHITECTURE


IMPROVE
85
CREATE
35
UNDERSTAND
17
DISCOVER
1

COME TO DISCOVER

DISCOVER how to intentionally link modern learning environments with interactive learning experiences through execution of a renewed cultural ecosystem.

Generation Z

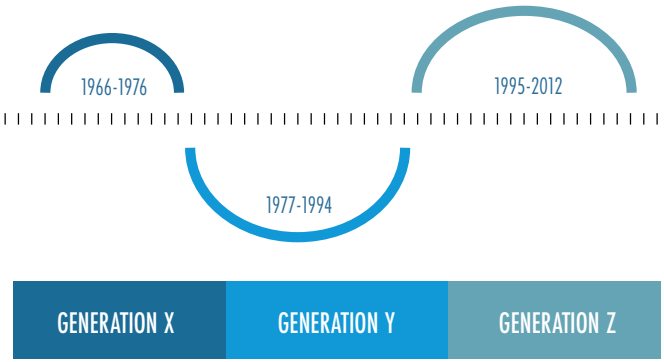
World Economic Forum reports that at 2.52 billion people worldwide, Gen Z (born 1995-2010) represents the largest segment of our 7.7 billion population[1] with an estimated 2.2 billion Generation Alphas (born 2010-2025) following behind.[2] Spending an average of 17 hours per day on digital devices, Gen Z seeks knowledge, connection, and communications through digital platforms and social media.

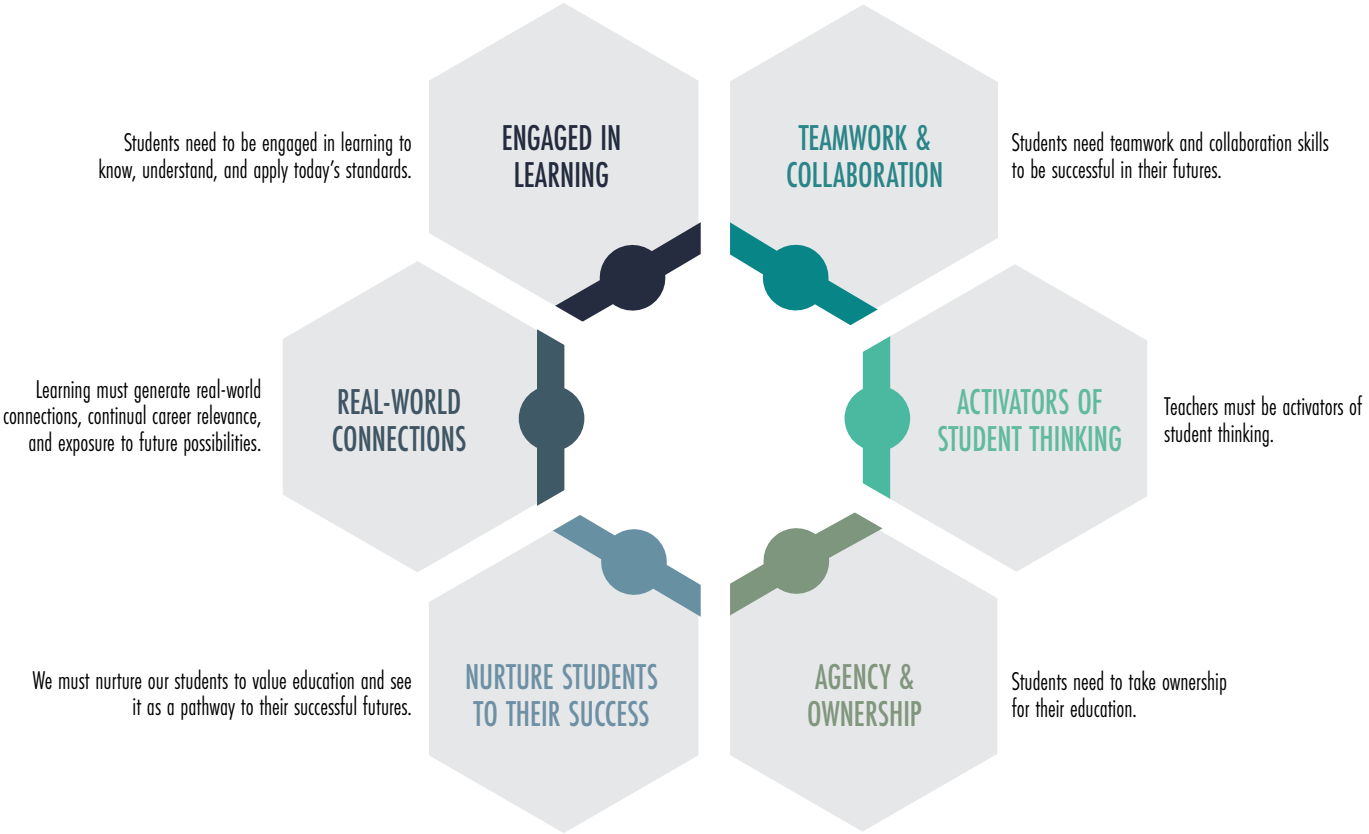
This reliance on the immediacy of knowledge has changed the future of our workforce. The requisites of our future industries include strategic thinking, soft skills, creativity, and the ability to research information, synthesize it, and make something. Employability will be less about what one knows and more about the capacity and desire to learn and apply knowledge.

The influences of the digital world have holistically changed the way Gen Z and Generation Alpha consume information and understand the world. The education model established at the inception of the industrial age – which teaches students facts and figures, organized in orderly rows of desks, with the teacher as the "sage on the stage" of the classroom – is leading to increasingly disengaged students. Gallup reports that in the fifth grade, only 26% of students are disengaged, yet by the eleventh grade this increases to 53%.[3]

"It is time for teachers to see learning through the eyes of their students and for the student to see themselves as teachers of one another."

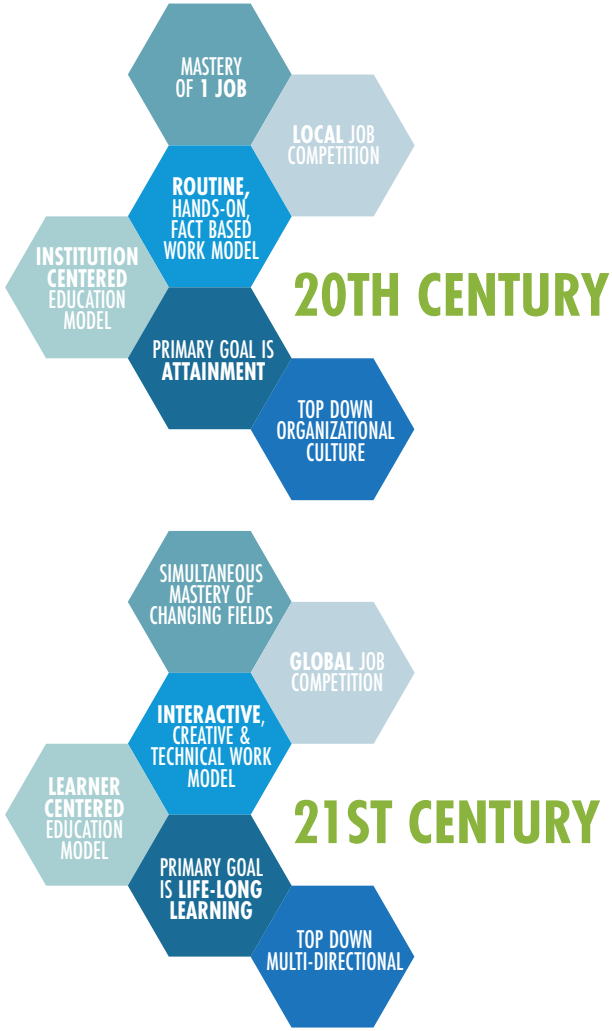
John Hattie, Visible Learning 2009




ENGAGED IN LEARNING
Students need to be engaged in learning to know, understand, and apply today's standards.
TEAMWORK & COLLABORATION
Students need teamwork and collaboration skills to be successful in their futures.
REAL-WORLD CONNECTIONS
Learning must generate real-world connections, continual career relevance, and exposure to future possibilities.
ACTIVATORS OF STUDENT THINKING
Teachers must be activators of student thinking.
NURTURE STUDENTS TO THEIR SUCCESS
We must nurture our students to value education and see it as a pathway to their successful futures.
AGENCY & OWNERSHIP
Students need to take ownership for their education.

Pedagogy + Learning

The education model that established years ago to train young minds for the factory lines and manual labor that awaited them worked well, but today this model is failing our future leaders. To counter this, the educational paradigm is shifting to the inversion of the traditional classroom, positioning the student at the center of learning and teaching. Student collaboration and exploration of curriculum-based concepts are key to developing the skills to support the future workforce and instilling in them the agency and ownership of their learning.



Left: A Student Centric classroom Module

Right: Comparison between 20th and 21st Century workforce skills.


ORAL/WRITTEN COMMUNICATION
COLLABORATION TEAMWORK
CRITICAL THINKING PROBLEM SOLVING
LEADERSHIP SOCIAL-EMOTIONAL
CREATIVE THINKING INNOVATION

Pedagogy + Space

The role of the architect is to define the needs and relationship of the student to the teacher, the teacher to the classroom, and the classroom to the school. The intentional selection of educational strategies creates an acceleration of student learning in their education and becomes an integral component in the design of the learning environment.

During the early phases of design, the project team creates connections with the educators as stakeholders to identify priority learning experiences and define the student experience. By design, spaces will reflect the instructional vision and learning goals. As we redesign the way in which we educate our children, it is also time to revisit the journey by which we define the environments for the changing pedagogy.

Left: A Pro-Social Classroom - preparing students with skills future employers seek.

Holistic Educational Paradigm

How do we define the intended learning experiences that will prepare students for their futures within the schools that we serve? As architects of learning environments in a changing paradigm, the stakeholder engagement process is essential to establish a collective mindset and develop consistency for the way that the school community visualizes the definition of teaching and learning.

Invert the approach to the design of the school. The process should begin with the student. How does the teacher support learning in the classroom? How does the classroom facilitate teaching and learning? How does the school become an extension of the classroom?

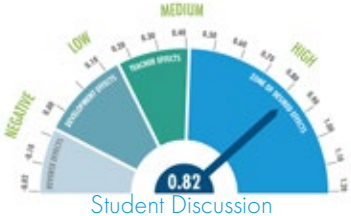
Leveraging neuroscience and evidence-based design allows the architect to create a tool for learning beyond the integration of technology. Insights of the science of learning influence the psychological, social, cultural, and environmental factors of how we learn. Academic models based on interdisciplinary research allow the designers to create effective teaching and learning environments serving as the "third teacher" of the classroom.

Typical Effect Size

Reverse Effect

Collaborative Learning with Peers

Peer Feedback



Student Discussion

Seeking Help from Peers

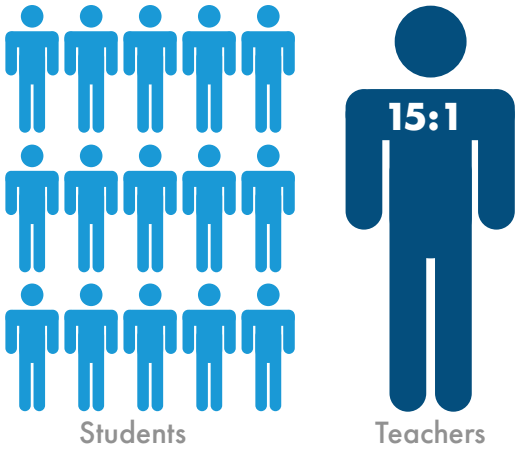
Left: Collaborative problem solving of real-world concepts

Right: Hattie, J (2009).. New York, NY: Routledge Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement

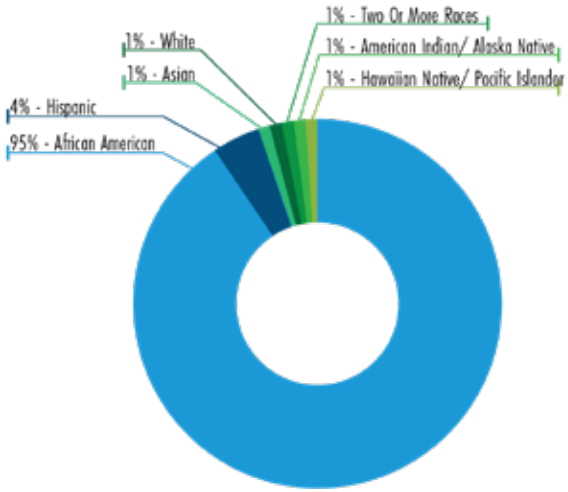

McNAIR
MIDDLE
SCHOOL

Existing McNair

After overcoming childhood of poverty, in 1984 McNair persevered to become the second African American astronaut in history. However, 73 seconds after takeoff McNair and the crew of the Challenger mission tragically perished. Constructed in 1958 as Gordon High School, the campus was renamed in 1986 to honor the memory of Dr. Ronald E. McNair.



Subject	% Proficient	
English	10%	State Avg. 40%
Math	9%	State Avg. 38%
Science	6%	State Avg. 29%
Social Studies	14%	State Avg. 39%



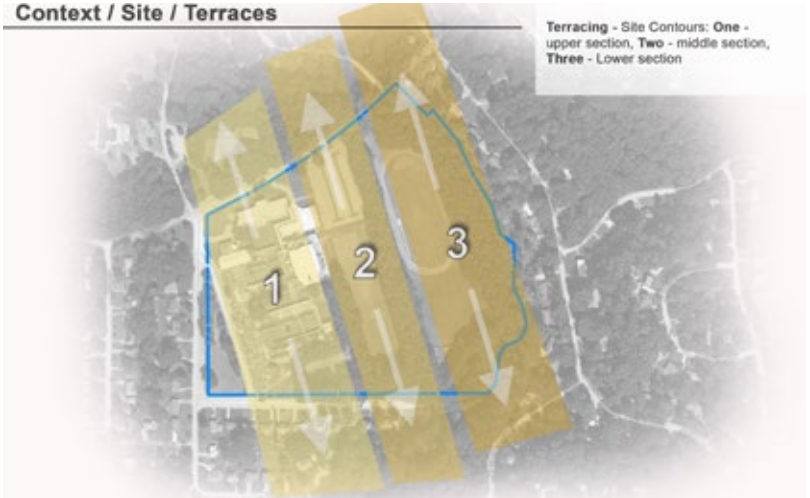
Left: Existing school entry

Right: McNair's Demographic and Statistics


EXISTING PARKING
EXISTING
EXISTING ADMIN
EXISTING GYM
EXISTING PARKING
EXISTING CLASSROOMS
UPPER TERRACE
MID TERRACE
LOWER TERRACE

Existing McNair

Situated on Tilson Road, the 34 acres site of this neighborhood school in Decatur, Georgia, is segmented by three vertical terraces, each approximately eighteen feet in elevation. The siting of the replacement school design responded to the site constraints and the need to maintain a fully-occupied and operational school during the duration of the construction phase.



Left: Existing site plan

Right: Contextual site analysis

Above: Photos of existing school facility.

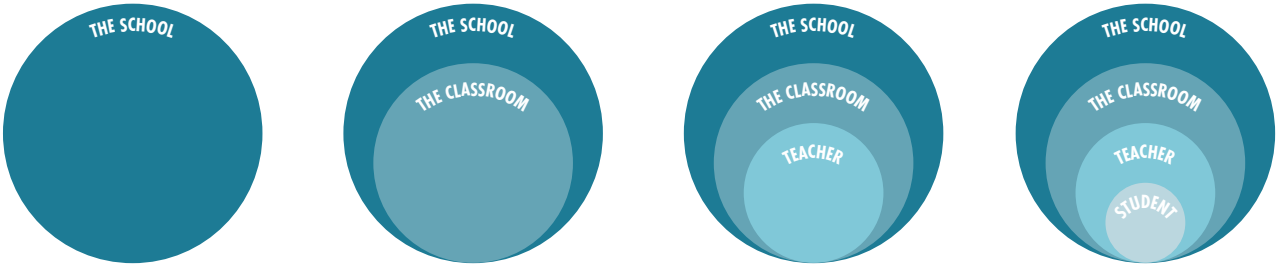

EXIT

SEEK TO

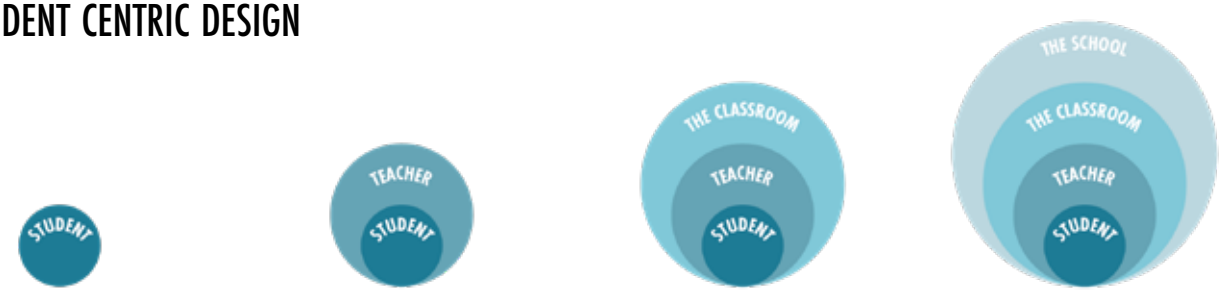
UNDERSTAND

UNDERSTAND opportunities within the design of the micro and macro environments that enhance pro-social skills and relationships throughout the entire school.

TEACHER CENTRIC DESIGN



STUDENT CENTRIC DESIGN



RE-IMAGING LEARNING

Serving as role model, expert, and inspiration for learning and collaboration for our young learners, the educator must and will always play a dominant role in the classroom. As the facilitator of knowledge and collaboration, the teacher combines the learning sciences with digital innovation and is charged to create the learning experiences that keep pace with the digital and soft skills demanded by the workforce. The teacher is the mentor of our youth with the power and privilege to affect the future of our society, supporting our future businesses and transforming global communities.

Responsible for creating the vision for learning, identifying the priority learning experiences and defining the desired space for learning, the teacher becomes the thought leader for the design process. In the new pedagogy of teaching and learning, the design of the facility must support the paradigm shift from teacher-centered learning to student-centered learning.

Left: Re-imagine Learning to design the environment around the users' experience.

Top Right: A teacher-centric classroom with the teacher as the thought leader.

Bottom Right: A Pro-Social classroom preparing students with skills that future employers seek.

"We want our students to be creative"

"We want our kids to think and collaborate."

"We want to work together to learn."

"We learn better from one another."

"For me, I want to see them love learning and be engaged

WHAT TEACHERS AND STUDENTS WERE SAYING . . .


We want our students to be content proficient.


Lots of windows for light with a beautiful view outside.


We need places to work outside our classrooms. It's stifling in here.


We want a welcoming entrance.


We want to be challenged, not bored.


Looking outside helps us think.

District Vision

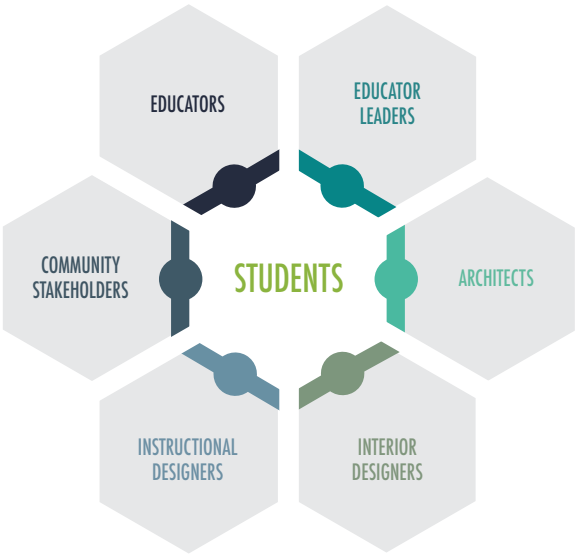
To **inspire** our **community of learners** to **achieve educational excellence**

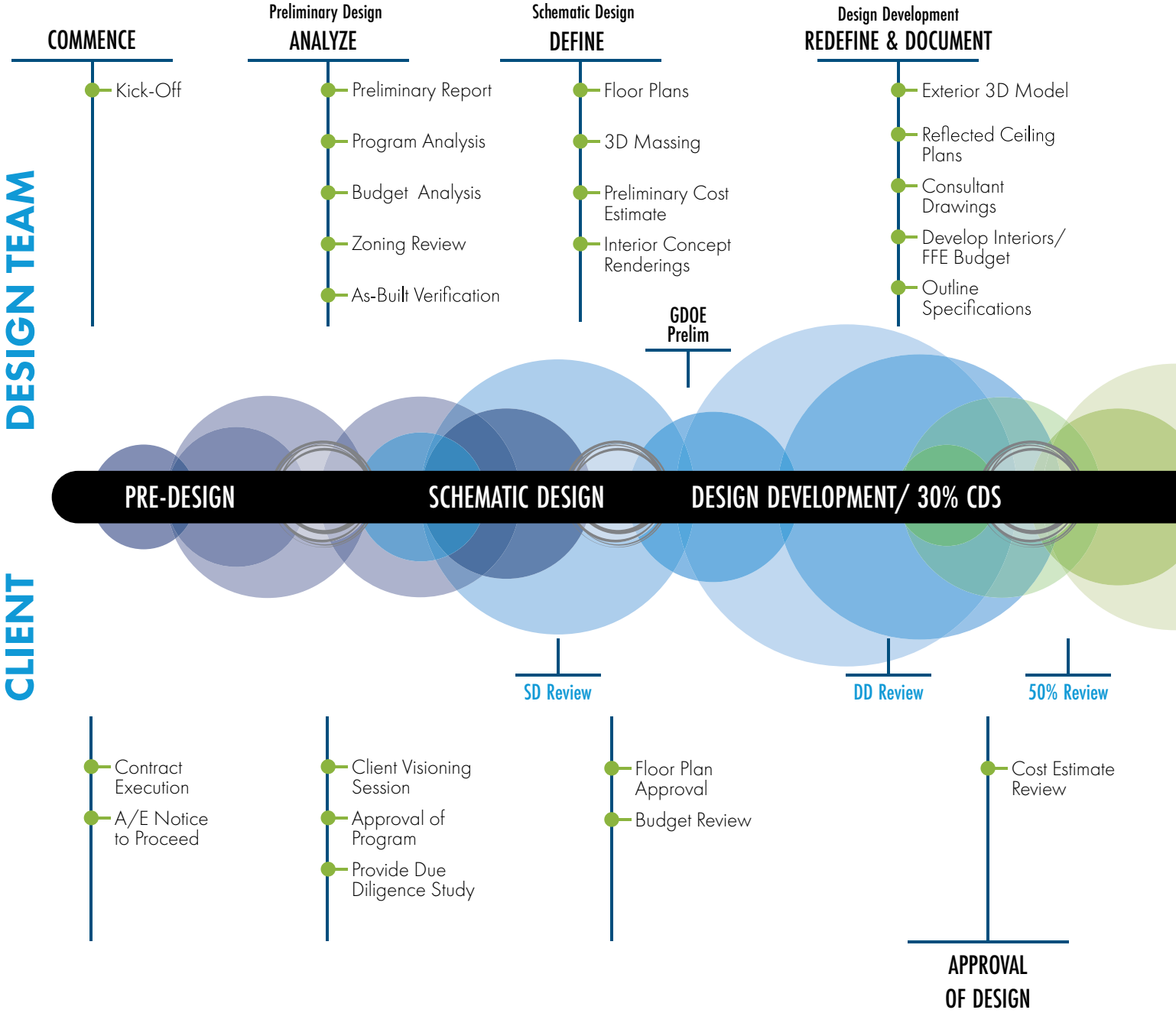
Instructional Vision

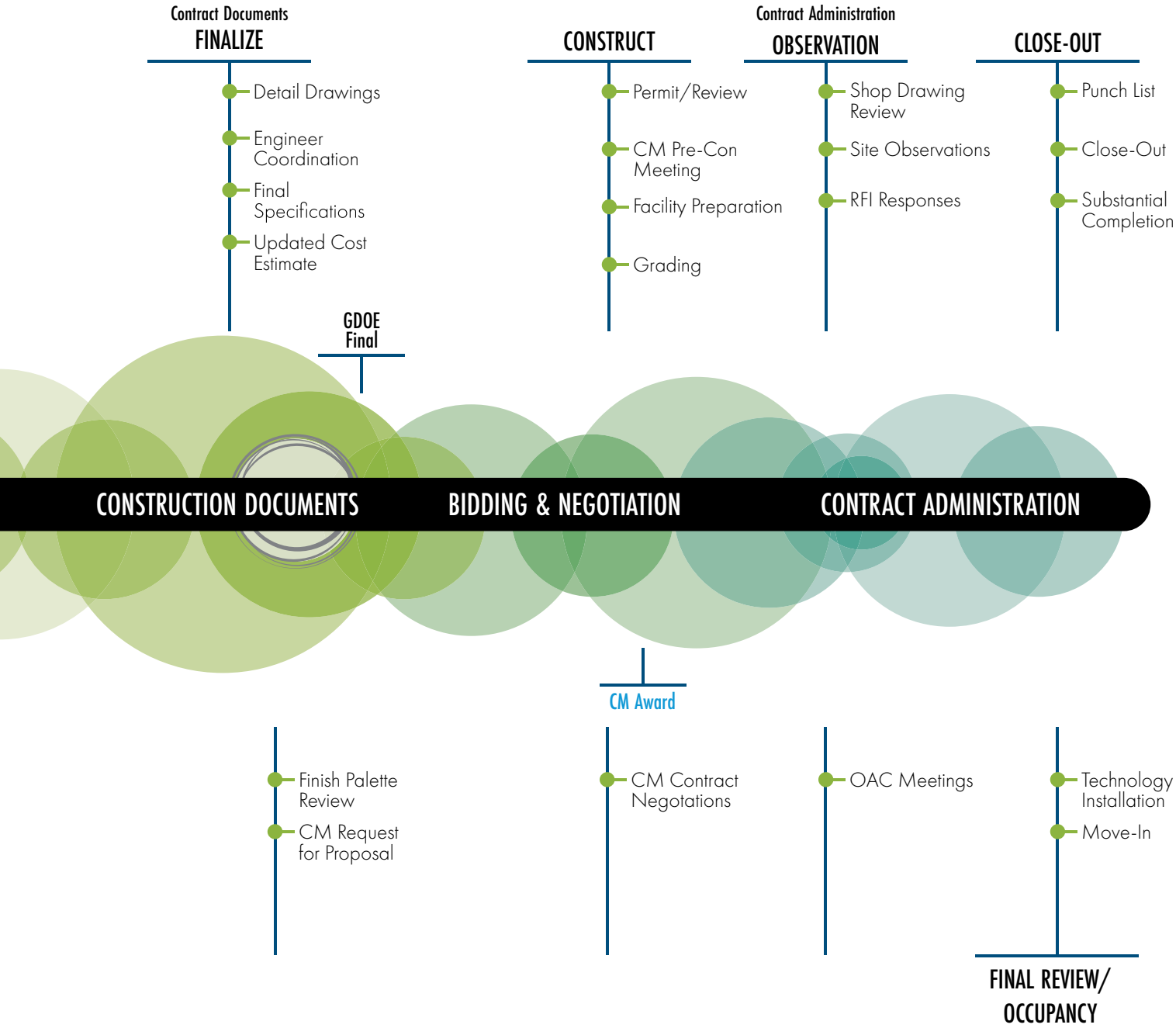
Students will be **active learners**, thinking and collaborating with peers to **solve real-world problems** while developing a love for learning in a **safe environment.**

CRAFTING A SHARED VISION

The learning environment is only a tool used by students and teacher to establish a successful education model. It is a resource to the implementation of a changing educational pedagogy that is sweeping our schools. Too often the assumption is that the built environment will define success. This postulation has definitively led to the failure of cultural renewal in many of our schools. The modernization of the learning experience must belong to the leadership of the district and the school community.




DESIGN TEAM
COMMENCE
Kick-Off
Preliminary Design
ANALYZE
Preliminary Report
Program Analysis
Budget Analysis
Zoning Review
As-Built Verification
Schematic Design
DEFINE
Floor Plans
3D Massing
Preliminary Cost Estimate
Interior Concept Renderings
Design Development
REDEFINE & DOCUMENT
Exterior 3D Model
Reflected Ceiling Plans
Consultant Drawings
Develop Interiors/ FFE Budget
Outline Specifications
GDOE Prelim
PRE-DESIGN
SCHEMATIC DESIGN
DESIGN DEVELOPMENT/ 30% CDS
CLIENT
SD Review
DD Review
50% Review
Contract Execution
A/E Notice to Proceed
Client Visioning Session
Approval of Program
Provide Due Diligence Study
Floor Plan Approval
Budget Review
Cost Estimate Review
APPROVAL OF DESIGN

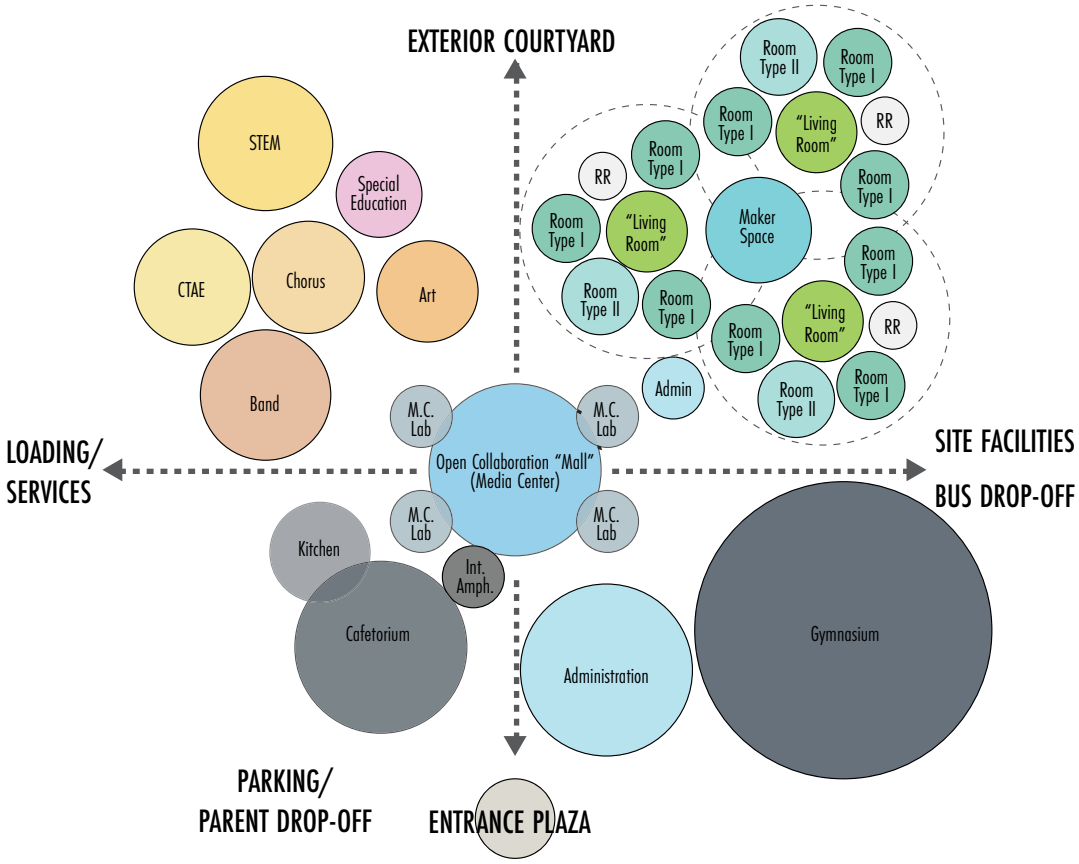

Contract Documents
FINALIZE
Detail Drawings
Engineer Coordination
Final Specifications
Updated Cost Estimate
GDOE Final
CONSTRUCT
Permit/Review
CM Pre-Con Meeting
Facility Preparation
Grading
Contract Administration
OBSERVATION
Shop Drawing Review
Site Observations
RFI Responses
CLOSE-OUT
Punch List
Close-Out
Substantial Completion
CONSTRUCTION DOCUMENTS
BIDDING & NEGOTIATION
CONTRACT ADMINISTRATION
CM Award
Finish Palette Review
CM Request for Proposal
CM Contract Negotations
OAC Meetings
Technology Installation
Move-In
FINAL REVIEW/ OCCUPANCY


Thinking
creative
Space
Good Idea
question
idea
E=mc²
Engineering
Invent
Knowledge
business
growth
Solution
Learning
Study
ecology
Innovation
ideas
Renewable
energy
Education
research
Science
Chemical

CREATING A NEW MINDSET

As key stakeholders in the process, teachers and staff, community, industry, and foundational leaders; district and school leadership; and initiative champions are essential voices in the design and implementation of a facility plan that aligns with the established vision of learning. As the facilitator of making this vision a reality, the architect initiates the process of creating a collective mindset to align goals of teaching and learning.

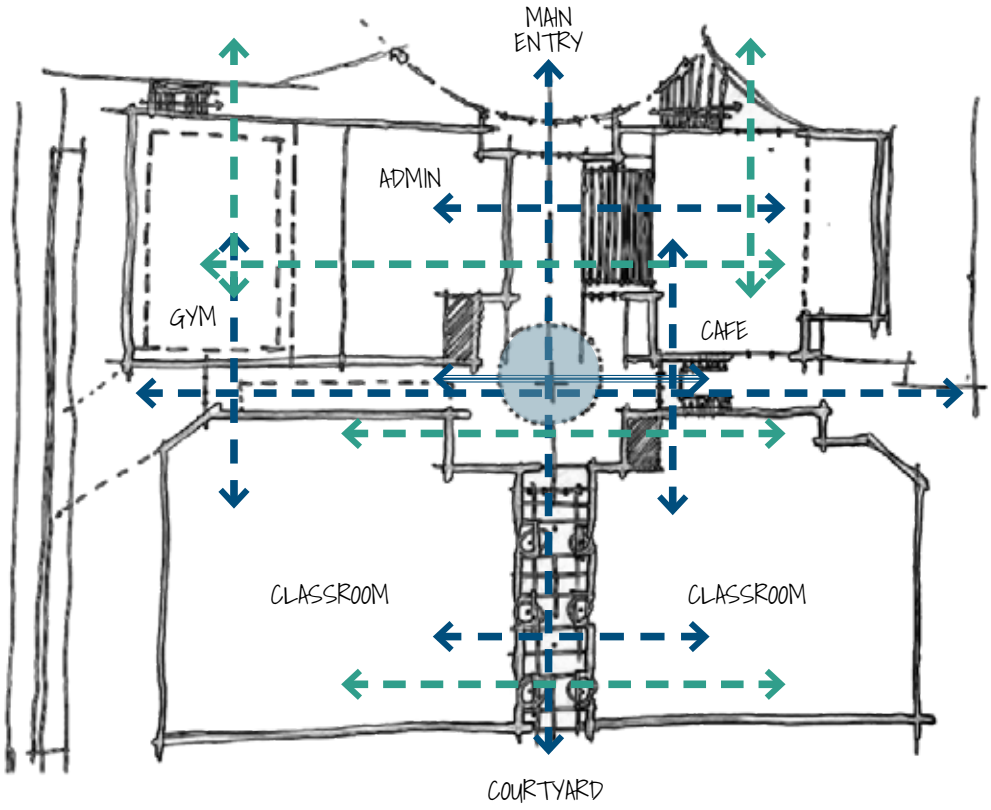
Right: Stakeholders actively collaborating at the initial design charrette during the Programming Phase.

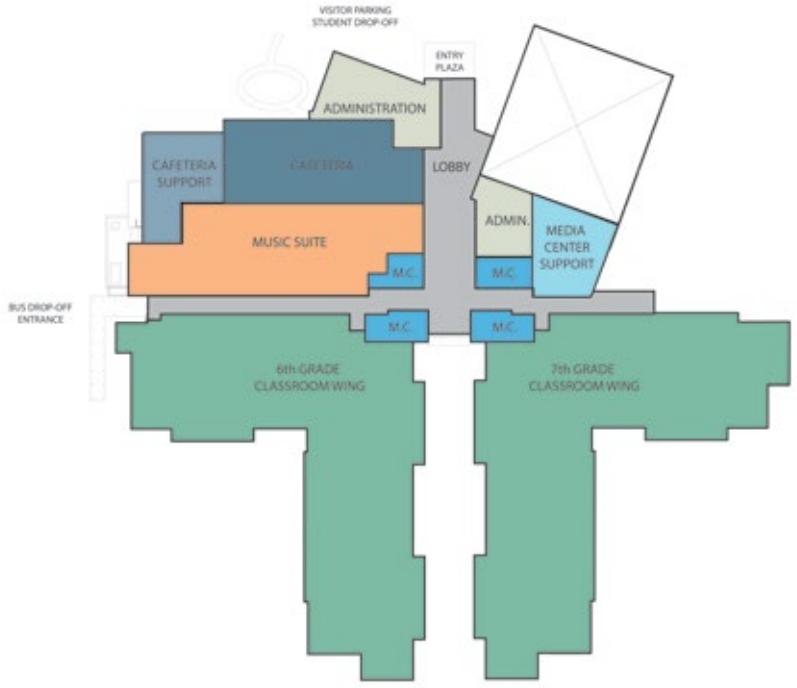


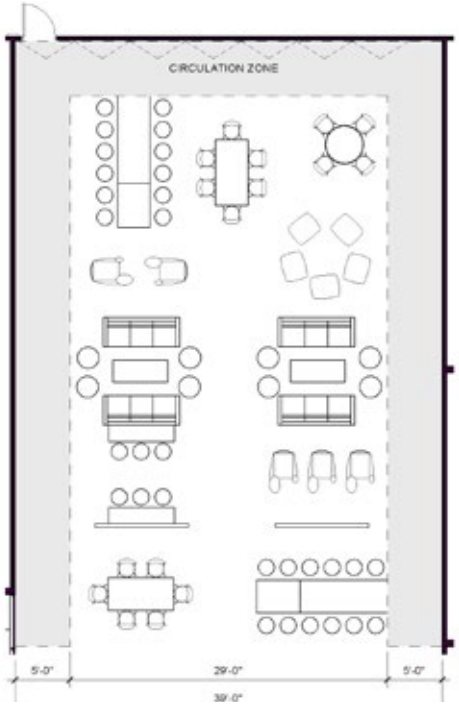
PROGRAMMATIC SPACE DIAGRAMS

Much like a traditional school, the classroom wings are organized by grade levels with three team each. The "Homes" (teams) are structured around six classrooms (5 + 1 Science), a "Living Room" or common collaborative space in the corridor outside each "Home", and a shared "Maker Space".

The classroom wings are organized by grade levels. Each grade's classroom wing includes three team clusters. Each cluster is intended to break down the scale of the school into smaller "Homes" (clusters). Each team cluster has six classrooms (5 + 1 Science), a common Breakout collaborative space ("Living Room") off of the corridor, access to a shared "Maker Space" and group restrooms located per cluster. Each grade level wing is overseen by an Administration office and a Teacher Collaboration Workroom. This layout responds to the need for student-centered education designed for learning, not for "discipline", which promotes collaboration and interdisciplinary education.


MAIN ENTRY
ADMIN
GYM
CAFE
CLASSROOM
CLASSROOM
COURTYARD

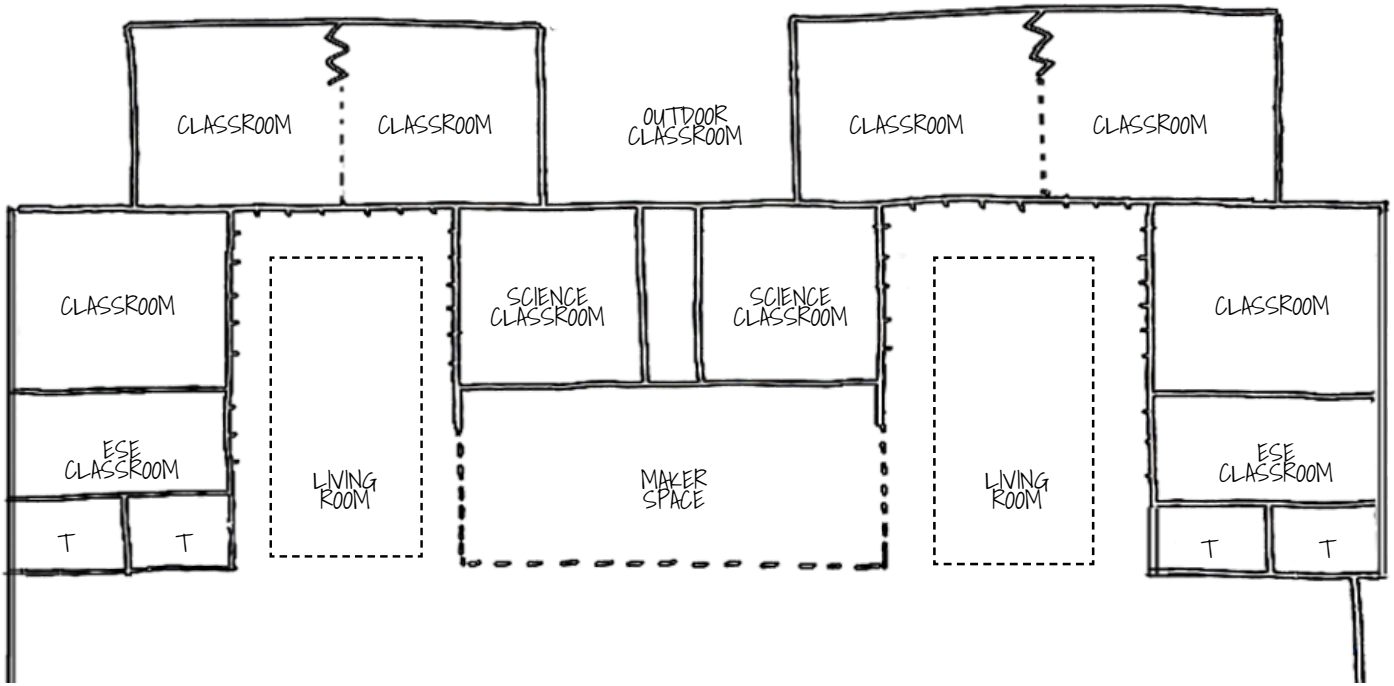

VISITOR PARKING
STUDENT DROP-OFF
ENTRY PLAZA
ADMINISTRATION
CAFETERIA SUPPORT
CAFETERIA
LOBBY
ADMIN.
MEDIA CENTER SUPPORT
MUSIC SUITE
M.C.
M.C.
BUS DROP-OFF ENTRANCE
M.C.
M.C.
6th GRADE CLASSROOM WING
7th GRADE CLASSROOM WING



CLASSROOM PODS AND THE "LIVING ROOM" CONCEPT

As designers, we are challenged to look for opportunities outside the walls of the classroom that broaden the learning environment. The design of the residual spaces in the corridors create found places for small group collaboration, maker spaces for exploration and innovation, and learning plazas to support non-traditional learning in unique spaces throughout the school.

The concept of the "Living Room" is in response to the student interviews in which our team heard from multiple voices the need to feel safe. When asked where they felt the most secure, the students resounding said in their living room at home. From this proclamation, we created the concept of the "Living Room" as a central collaborative space where students could congregate and thrive together in the safety and security of "Home" or team pods.


CLASSROOM
CLASSROOM
OUTDOOR CLASSROOM
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SCIENCE CLASSROOM
SCIENCE CLASSROOM
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MAKER SPACE
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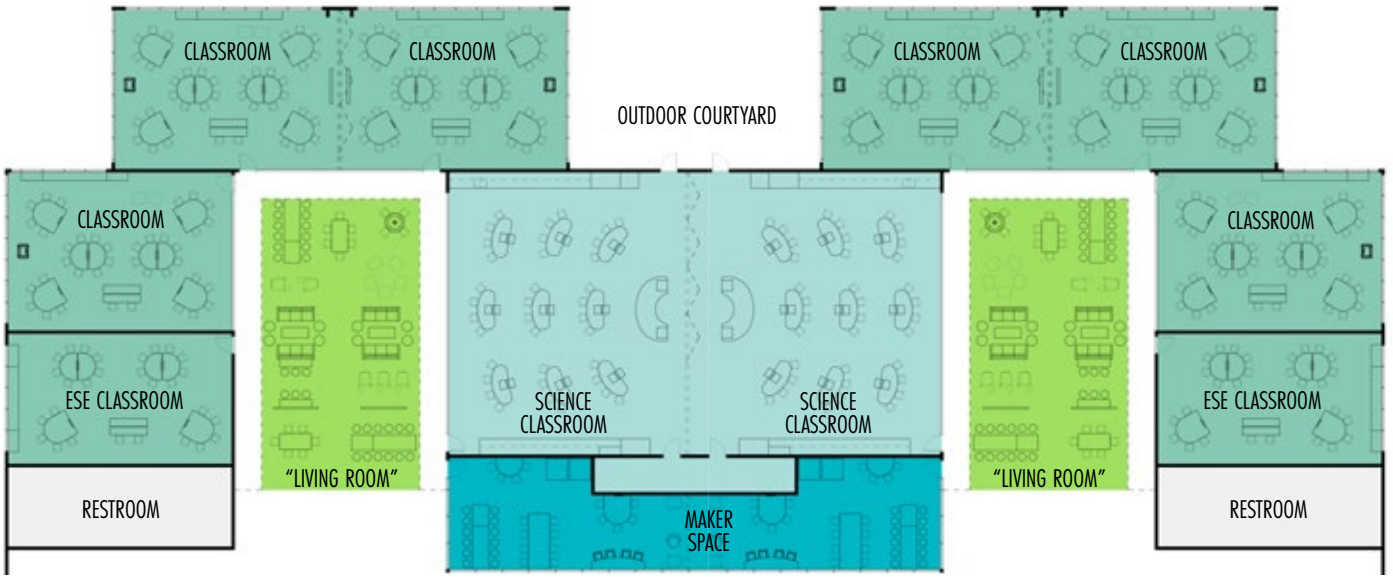
CLASSROOM
CLASSROOM
OUTDOOR COURTYARD
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ESE CLASSROOM
"LIVING ROOM"
SCIENCE CLASSROOM
SCIENCE CLASSROOM
"LIVING ROOM"
CLASSROOM
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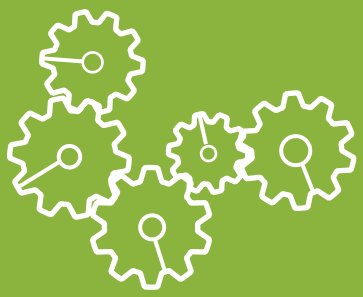
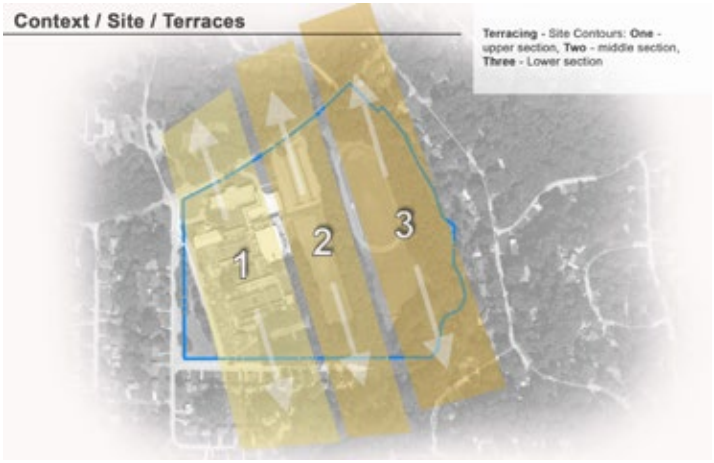
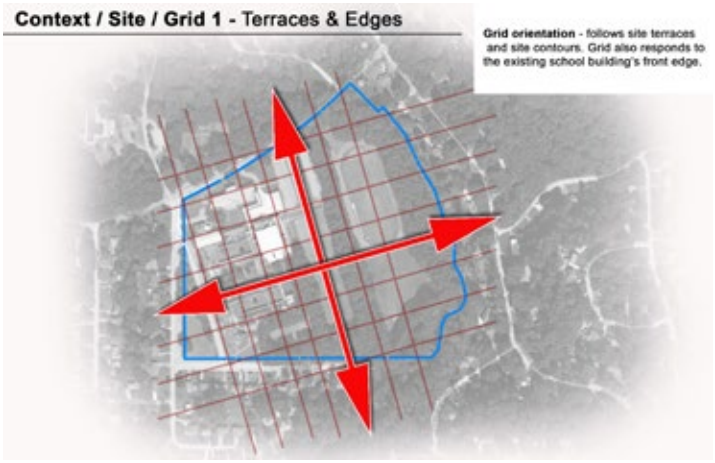
RESTROOM
MAKER SPACE
RESTROOM

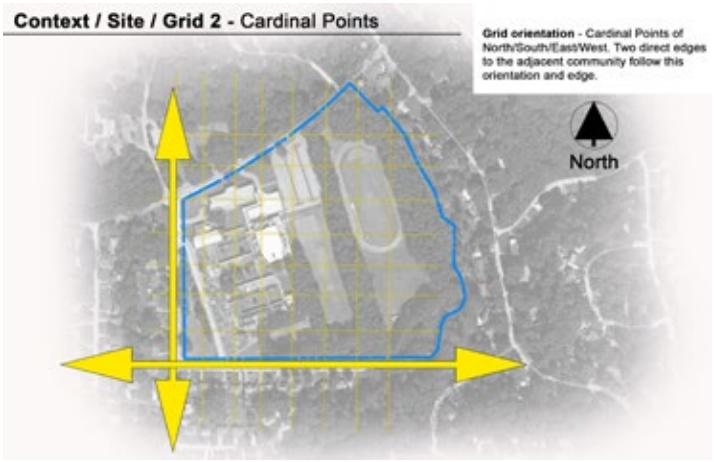


ACT TO CREATE

CREATE concepts for facility design to support the shift from teacher-centered to student-centered learning through shapes, materials, and colors that support collaboration.





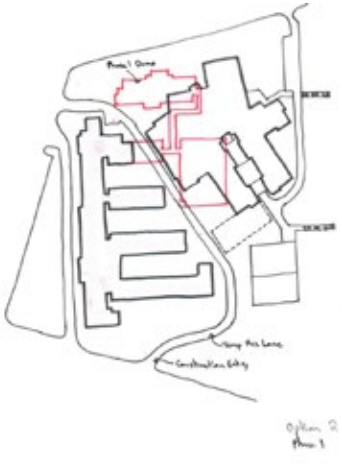


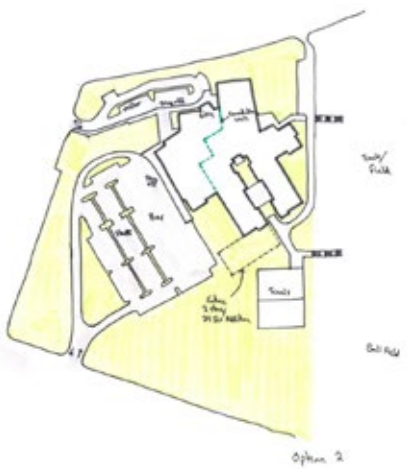
SCHEMATIC DESIGN

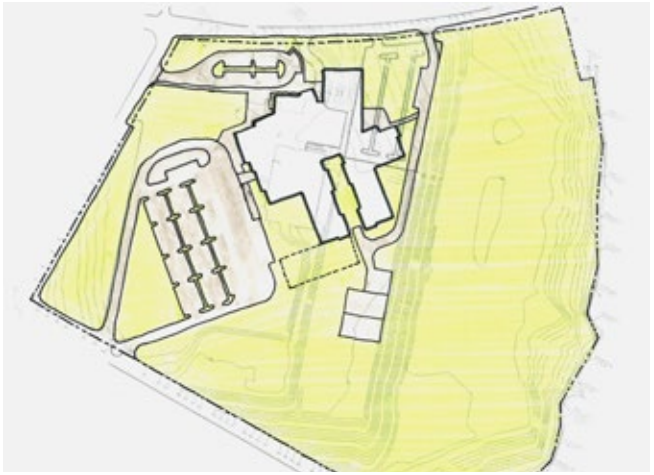
Designed for 1,200 FTE, with a 1,600 FTE core capacity, the new McNair Middle School facility houses 6th, 7th and 8th grades and the associated programs of a district middle school. The design was situated on the terracing site in such a way as to create multiple points of interest, but interior and exterior. The team also studied many options for the building's placement during the design process. The final design provides a grand presence off of Tilson Road for the community.

Other initiatives outlined by the district and the CDH design team were to strive to improve the overall building performance. With this, the team incorporated system performance measures in the design to provide an energy efficient building to achieve performance that will lower the school's overall operating and maintenance costs.

Initial Site layout concept.







Site plan layout studies.

Initial conceptual renderings.

SITE PLAN

1. Main Entrance and Student Drop-off
2. Visitor Parking
3. Community Garden
4. Kitchen Delivery
5. Bus Drop-off
6. Mechanical Yard
7. Teacher and Staff Parking
8. Bus Parking
9. Outdoor Learning Plaza
10. Collaboration Courtyard
11. Art Terrace
13. Amphitheater
14. Track and Field
15. Softball Field


WALLINGFORD DRIVE
TILSON ROAD
1
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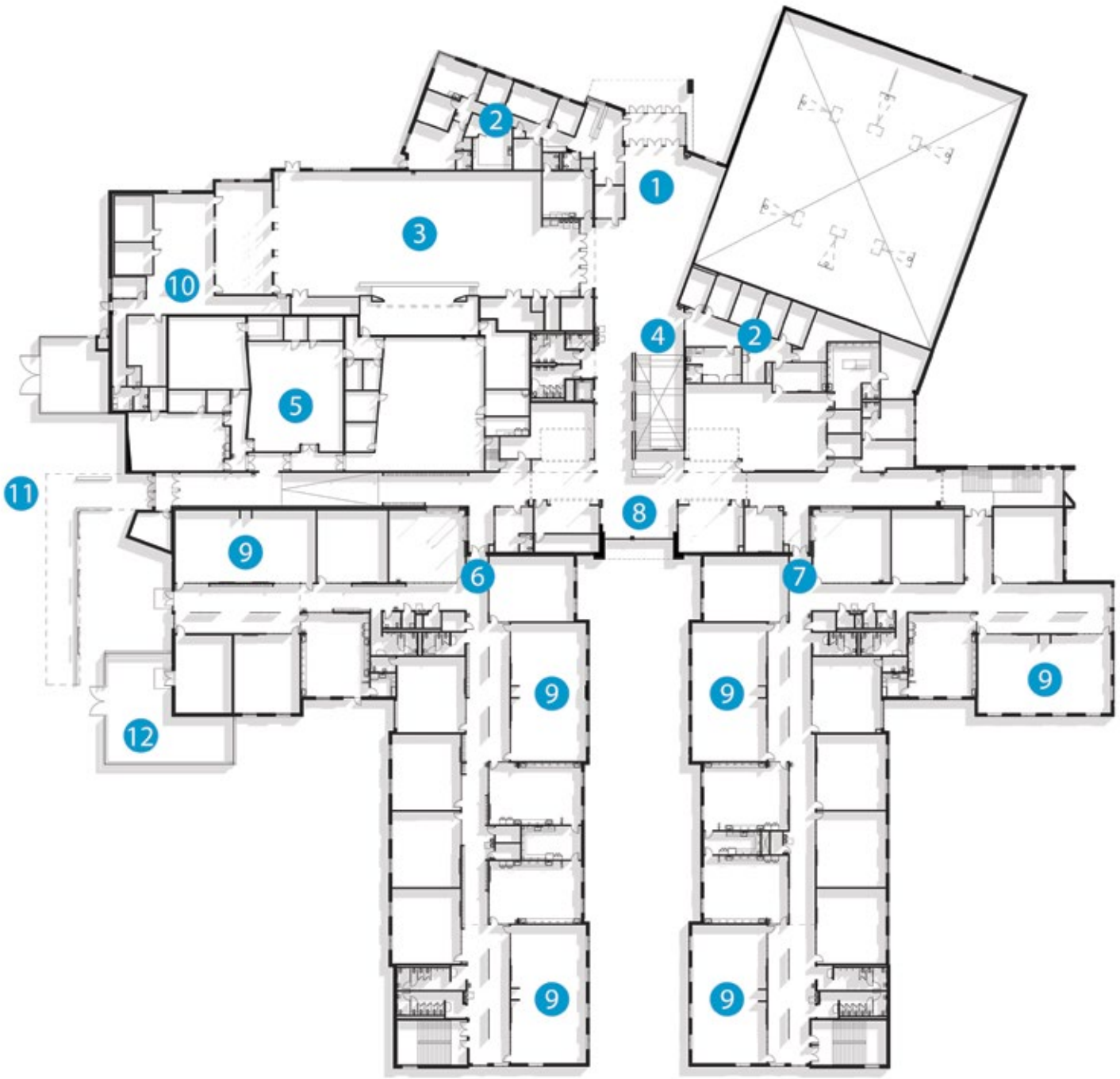
MAIN LEVEL PLAN

1. Front Entrance
2. Administration Offices
3. Cafeteria with Platform
4. Collaboration Stairs
5. Music Suite
6. 6th Grade Wing
7. 7th Grade Wing
8. Media Center Commons
9. Flexible Classroom with Breakout Space
10. Kitchen with Access for Delivery
11. Bus Drop-Off
12. Mechanical Yard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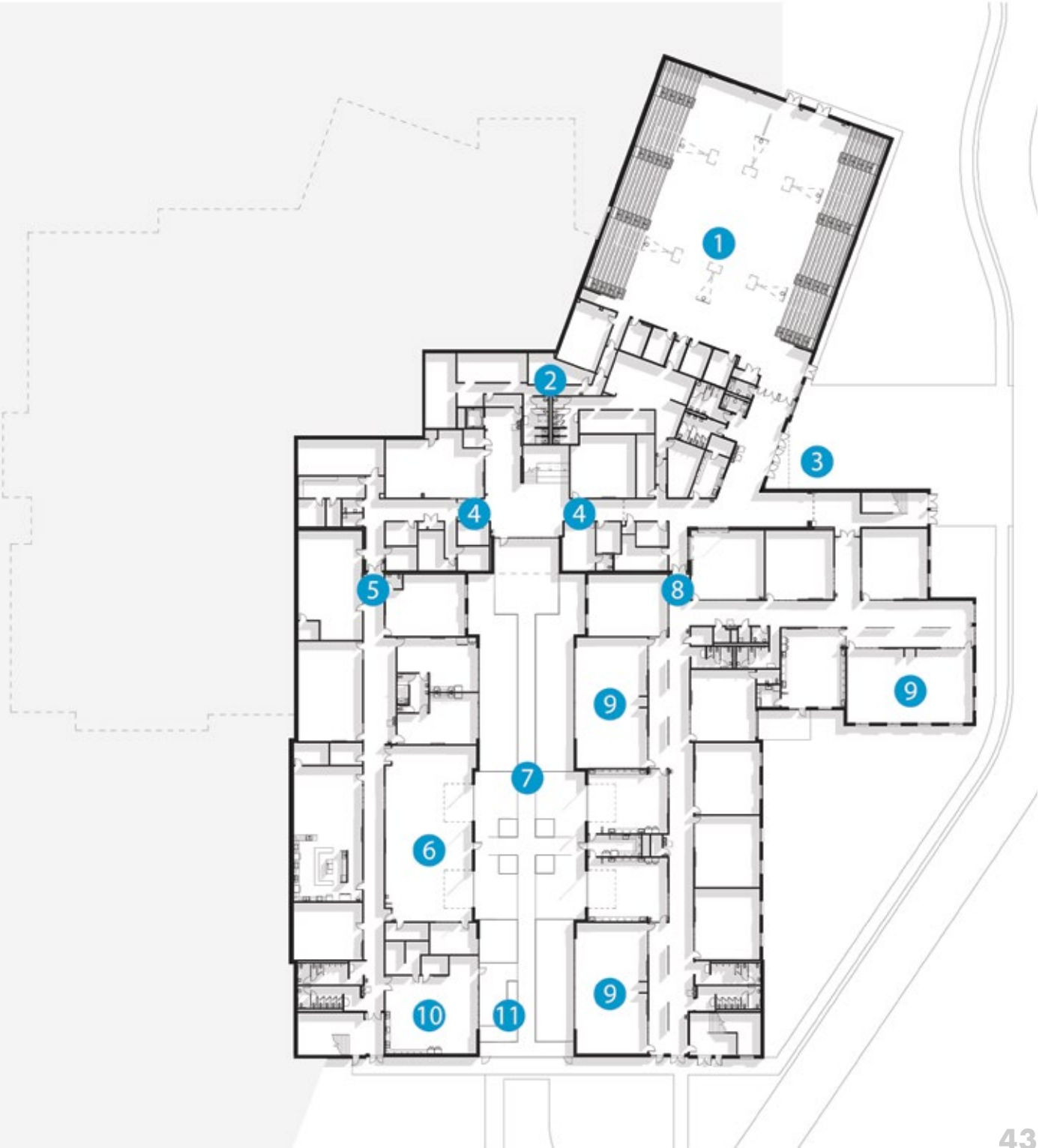
LOWER LEVEL PLAN

1. Gymnasium
2. Locker Room
3. Gymnasium Plaza
4. Administration Offices
5. CTAE Wing
6. Technology and Prototyping Lab
7. Collaboration Courtyard
8. 8th Grade Wing
9. Flexible Classroom with Breakout Space
10. Art Classroom
11. Art Terrace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DESIGN PROCESS

Collaborative inquiry and learning necessitate the design of spatial opportunities that respond to a range of learning styles. The built environment has the power to support the learning culture of a holistic education paradigm. The integration of color psychology, technologies, and a variety of furniture configurations that support different activity, group sizes, sitting/standing configurations, and seating arrangements all of which support the collaboration and student success.


DEPENDS ENTIRELY ON HOW WILL YOU
THEM AND HOW BADLY YOU WANT THEM

"THIS BUILDIN
BE A GAME

G'S GOING TO CHANGER"

- Principal Ronald B. Mitchell

The front entrance design for McNair Middle School commemorates the collaboration process with a welcoming learning plaza to greet students and the community.

Jim Roof Creative, Inc.

COLLABORATION STAIRS

The Learning Commons and Collaboration Stair highlight the connections created for students to collectively explore learning and opportunities for exploration in their school.

Jim Roof Creative, Inc.

Students and teachers alike, enjoy the amphitheater stairs for collaboration and additional instructional space outside the classroom.

Jim Roof Creative, Inc.

DE-CONSTRUCTED MEDIA CENTER

As the "heart of the school", the Media Center is designed to promote student engagement and collaboration. By placing the traditional programs of the media center in hubs around a central circulation area, the design creates a "common" learning area for students to learn in a highly collaborative environment.

The media center serves as the heart and hub of the school. It promotes the use of space as an integral part of a student's daily education through features like smaller production labs with readily accessible technology. Glass garage-style doors open onto the main circulation area to encourage a more fluid, collaborative style of teamwork.

Jim Roof Creative, Inc.

CLASSROOM PODS AND THE "LIVING ROOM" CONCEPT

Each classroom wing is themed for each grade level and includes three pods of six classrooms each. Within each pod of classrooms, there is a "living room" outside of the classrooms that promote small group collaborative work.

The colored theme also assists with wayfinding throughout the school, culminating together at the collaborative stairs and the 'heart' of the Media Center.

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Welcoming you at each grade level entrance is a Maker Space celebrating innovation and exploration.

Jim Roof Creative, Inc.

Breakout spaces serve as centers for activity and collaboration -- an extension of the surrounding classrooms making use of what would otherwise be stagnant corridors. During the charrette process, the community fittingly coined the term "living room" to describe these relaxed and engaging environments.

Jim Roof Creative, Inc.

During the programming phase, an increase in windows that allow more natural light quickly rose as a high priority. The school's design has successfully incorporated this request in numerous strategic areas. Pictured here are views to the exterior overlooking the newly turfed field.

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Left: An increased amount of windows throughout the corridors allow opportunities to see the active process of learning taking place. Each classroom wing is themed with its unique color and each wing has its own Maker Space at the intersection with the main corridor.

Right: Corridors are no longer just two walls, but rather multiple instances where the corridor opens up to include the "living room" breakout spaces.

Jim Roof Creative, Inc.

A collaborative environment is easily achieved by opening the operable partitions between two classrooms. The partition and the tables are also a dry-erase material for additional writing surfaces.

Jim Roof Creative, Inc.

The exterior courtyard between the classroom wings is overlooked by the Media Center's soft-seating area and main circulation area. Glass overhead garage-style doors open to provide additional instructional space for the science and technology classes and the art terrace.

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View of Engineering and Technology lab with glass garage-style doors opening to exterior courtyard space.

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View of eighth-grade Science classroom with glass garage-style doors opening to the exterior courtyard space. The connection to the exterior space makes it easier for students to make direct connections to the natural environments with what they are learning inside the classroom.

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View of Cafeteria that also serves as the auditorium. The platform space connects directly to the music suite classrooms. Glass garage-style doors open up to reveal the bright servery lines and kitchen.

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View of the lower level Gymnasium entry. Large expansive windows at the second level allow for the administration offices to have a wide range of views to the exterior for increased security.

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Left: View of approach to main entry plaza.
Right: End of classroom wing overlooking the field and gym entry plaza.

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View of gymnasium with retractable bleachers and goals.

Jim Roof Creative, Inc.

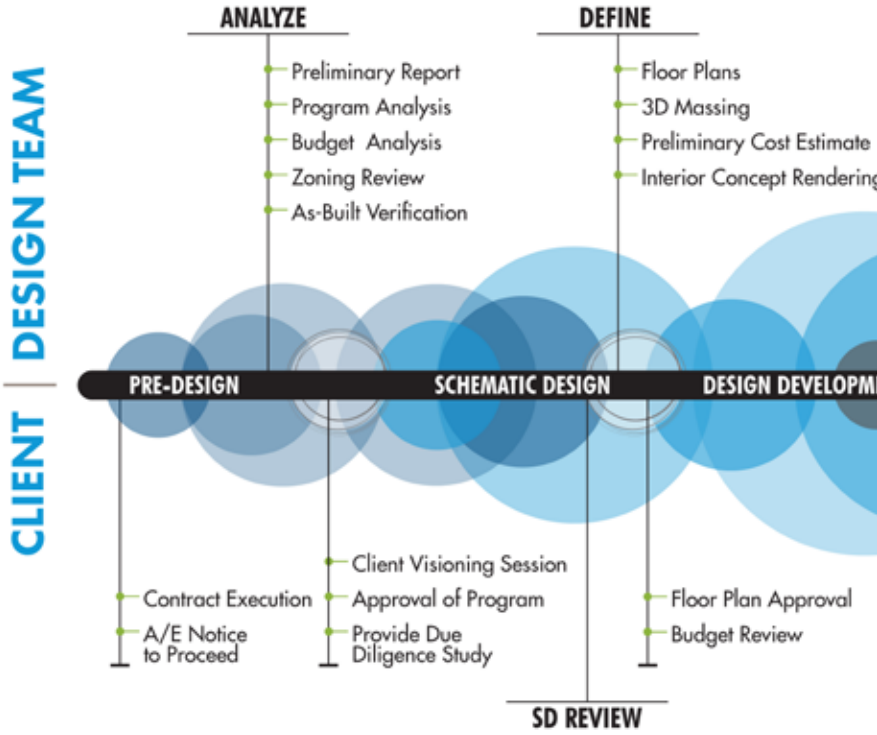
ENGAGE TO IMPROVE

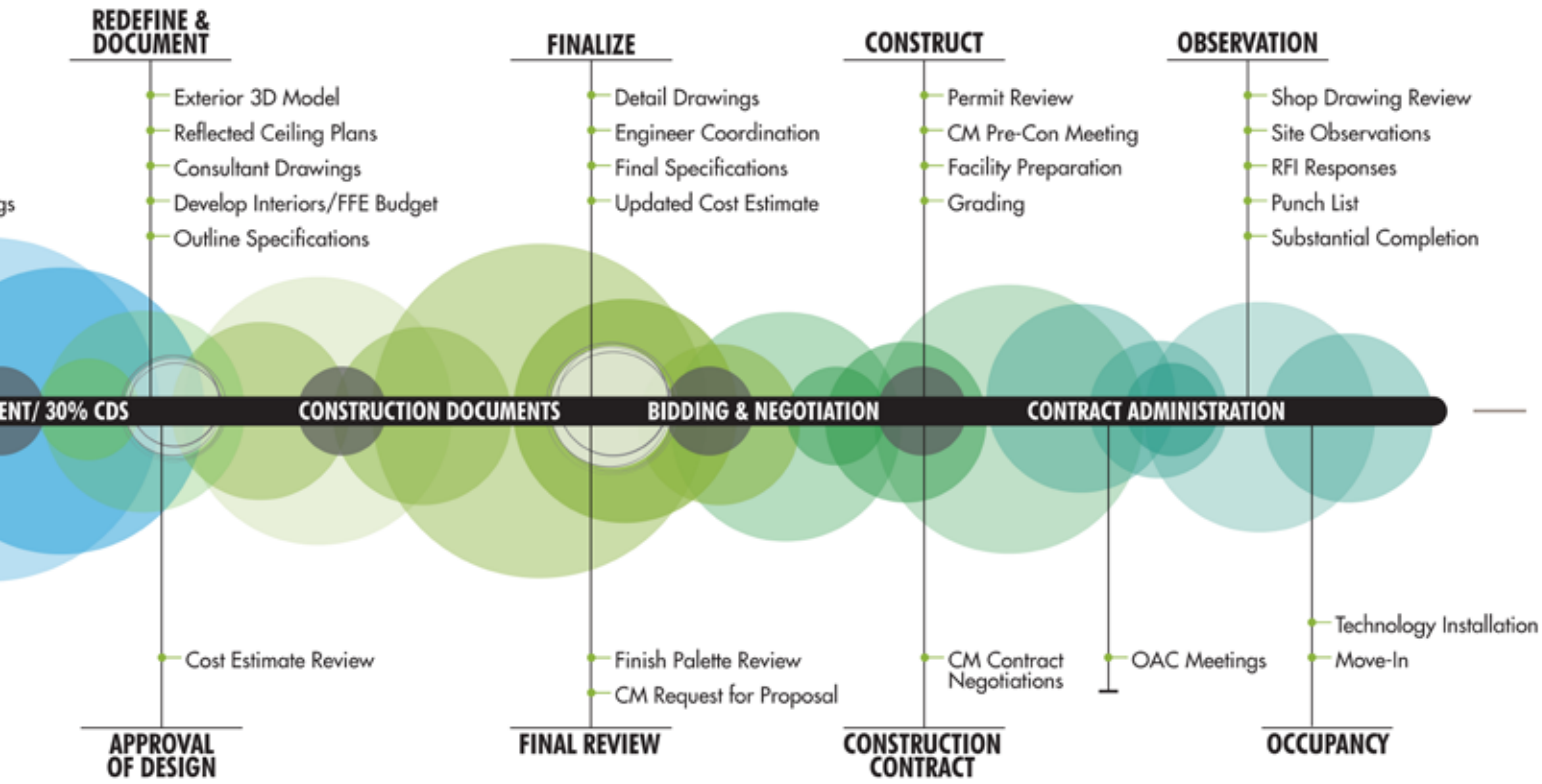
IMPROVE well-being through foundational neuro-science research that promote well-being through the application of daylight and color theory.

PROJECT SCHEDULE

As a contrasting process to the development of the design, educational commissioning as a parallel to the design has proven to change the teaching methodologies in a new education model supported by the learning environment. Educational commissioning is a multi-faceted training and coaching program for the educator leading up to and after occupancy in the new space.

Training must include a commitment from academic leaders and school administration to implement and support the changes in the teacher pedagogy. Professional development for the educator and administrator is critical to the successful evolution of the teaching models. Coaching within the learning communities reinforces the initiatives of the change in philosophy and provides the educator with the tools required to change the management of the classroom. Additional one-on-one sessions for individualized training offers the development of teaching strategies to support the styles and personalities of the teacher, while encouraging activities that increase student engagement.




REDEFINE & DOCUMENT
Exterior 3D Model
Reflected Ceiling Plans
Consultant Drawings
Develop Interiors/FFE Budget
Outline Specifications
FINALIZE
Detail Drawings
Engineer Coordination
Final Specifications
Updated Cost Estimate
CONSTRUCT
Permit Review
CM Pre-Con Meeting
Facility Preparation
Grading
OBSERVATION
Shop Drawing Review
Site Observations
RFI Responses
Punch List
Substantial Completion
ENT/ 30% CDS
CONSTRUCTION DOCUMENTS
BIDDING & NEGOTIATION
CONTRACT ADMINISTRATION
Cost Estimate Review
APPROVAL OF DESIGN
Finish Palette Review
CM Request for Proposal
FINAL REVIEW
CM Contract Negotiations
CONSTRUCTION CONTRACT
OAC Meetings
Technology Installation
Move-In
OCCUPANCY

REFLECTIVE TOURS

Pilot classrooms become laboratories of design and learning for teachers. These spaces provide opportunities for the teachers to offer insights into the design based on experiences from the classroom. The continued inclusion of the teacher leaders throughout the design and construction process fosters the creation of the classroom and school as a tool for learning. It permits the architect to integrate concepts of the modernized learning environments and offers the teacher and students emphasis on the professional development received.

Reflective tours of the school prior to occupancy provide educational leaders and teachers an opportunity to explore their new learning environment. Following the tours, planning sessions allow the teachers to utilize the professional development to strategically plan the layouts and utilization of their individualized classrooms to align with the vision and learning goals defined prior to the commencement of the design.

SUSTAINABLE FEATURES

Multiple sustainable features were incorporated into the site and building design that aim to positively impact the students. Everyday, these features are becoming more and more commonplace in "future-ready" facilities and environments.

SOLAR EXPOSURE
Low-e Tinted glazing

NATURAL ENVIRONMENTS
Exterior views from each classroom

SUSTAINABLE MATERIALS
Acoustic partitions

NATURAL ENVIRONMENTS
Glass overhead sectional doors allow for connection to exterior instructional courtyard

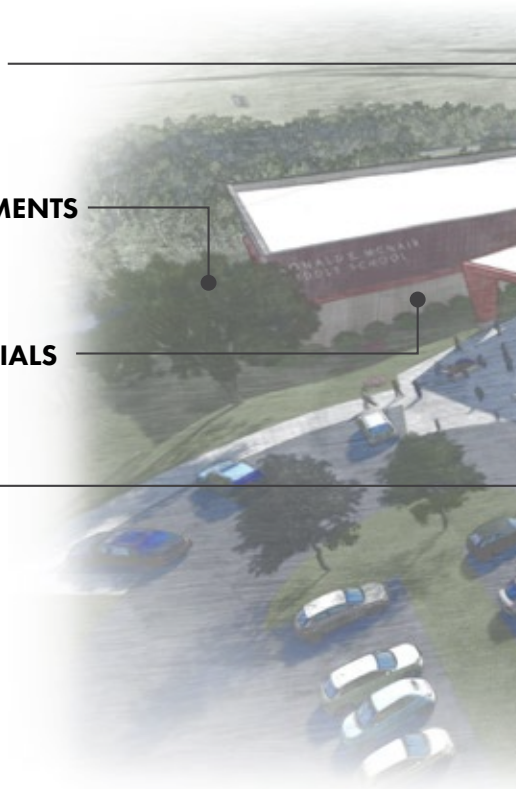
ENERGY REDUCTION
Occupancy sensor LED lighting fixtures

WATER REDUCTION
Water bottle fillers

NATURAL ENVIRONMENTS
Accessible route to fields

SUSTAINABLE MATERIALS
Epoxy flooring in locker rooms

SAFETY
Security vestibule with protected glazing



SOLAR EXPOSURE
Ceramic Frit glazing at
southern exposure

NATURAL ENVIRONMENTS
Outdoor amphitheater

SUSTAINABLE MATERIALS
Impact resistant walls

SAFETY
Security surveillance cameras

WATER REDUCTION
Automatic flushing
Low-Flow fixtures

CLEANABILITY
"Airport" style restrooms

CLEANABILITY
Electric hand dryers

SOLAR EXPOSURE
Motorized roller
window shades

LANDSCAPING
Drough resistant landscaping

Social impact cannot be driven by architecture alone. It comes through partnerships and engagement with the stakeholder around a collective vision for learning. This vision guides the renewal of the educational model for our communities and our students. The built environment has an immense influence on the learning culture and holistic educational paradigm. In conjunction with our educational leaders, architects are empowered to align the built environment with the impact on our future.

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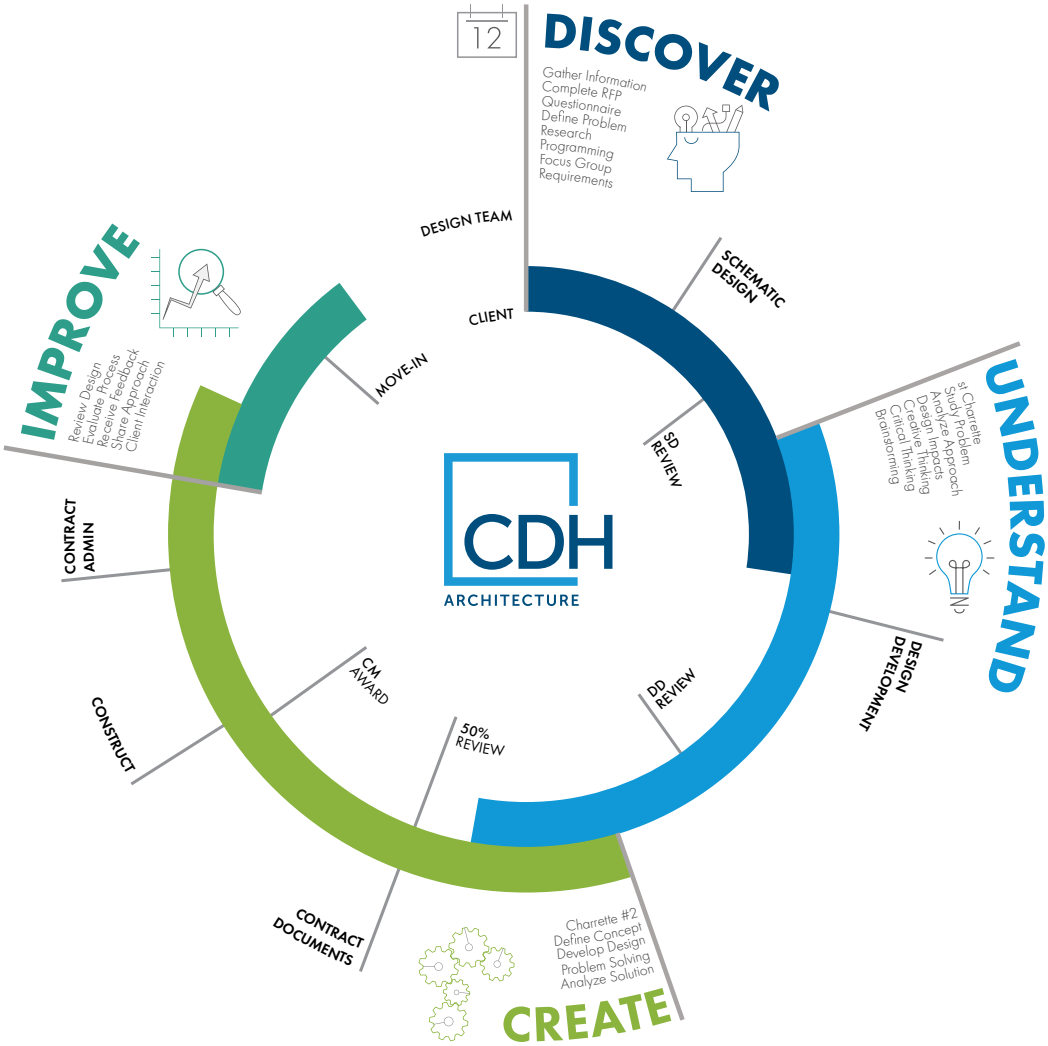

The CDH Architecture + Research Studio infuses our passion for student-centered learning into our designs for private and public K-12 learning environments. Every day, our designs impact over 750,000 students, encouraging collaborative learning and exploration. Our purpose-driven spaces support the evolving needs of K-12 education facilities. We develop effective, engaging and flexible environments where students can thrive.

We look forward to working with you!

"Whether or not you reach your goals in life depends entirely on how well you prepare for them and how badly you want them."

Ronald E. McNair, American Physicist and
NASA Astronaut