John S. McCain III
ELEMENTARY SCHOOL

Executive Summary

John Dewey, at the turn of the 20th Century, put forth a vision for modern education and re-imagined a future in which schools “carefully balance the delivery of knowledge and learning through active inquiry”. John S. McCain III Elementary, the only school to be named after the late senator, embraces and epitomizes these ideals. The school is designed to support the C-STEM curriculum and also fosters social and emotional learning. A community led, collaborative, co-creation process was utilized to establish a design direction, embed the school into its larger context, and set up the school district for future success. JSM III is a learning community-based organization. There are three learning communities initially operated along traditional age-based grade bands. They can easily adapt to an ability-based cohort organized around pedagogies involving teacher facilitated-student directed learning. The learner-centric communities feature multi-dimensional infrastructures that support brain-based learning modalities, and offer a high degree of flexibility, variety, and collaborative opportunities at multiple scales. High performance and biophilic design principles such as ample natural light, views, access to the outdoors, and balance of prospect and refuge, help cater to occupant wellness while creating a solid foundation for higher order learning. The life, legacy, and ethics of Senator McCain are embedded through a branding strategy employing computational design, as traits for students to unpack through the course of their development and growth at the school.

COMMUNITY CONTEXT

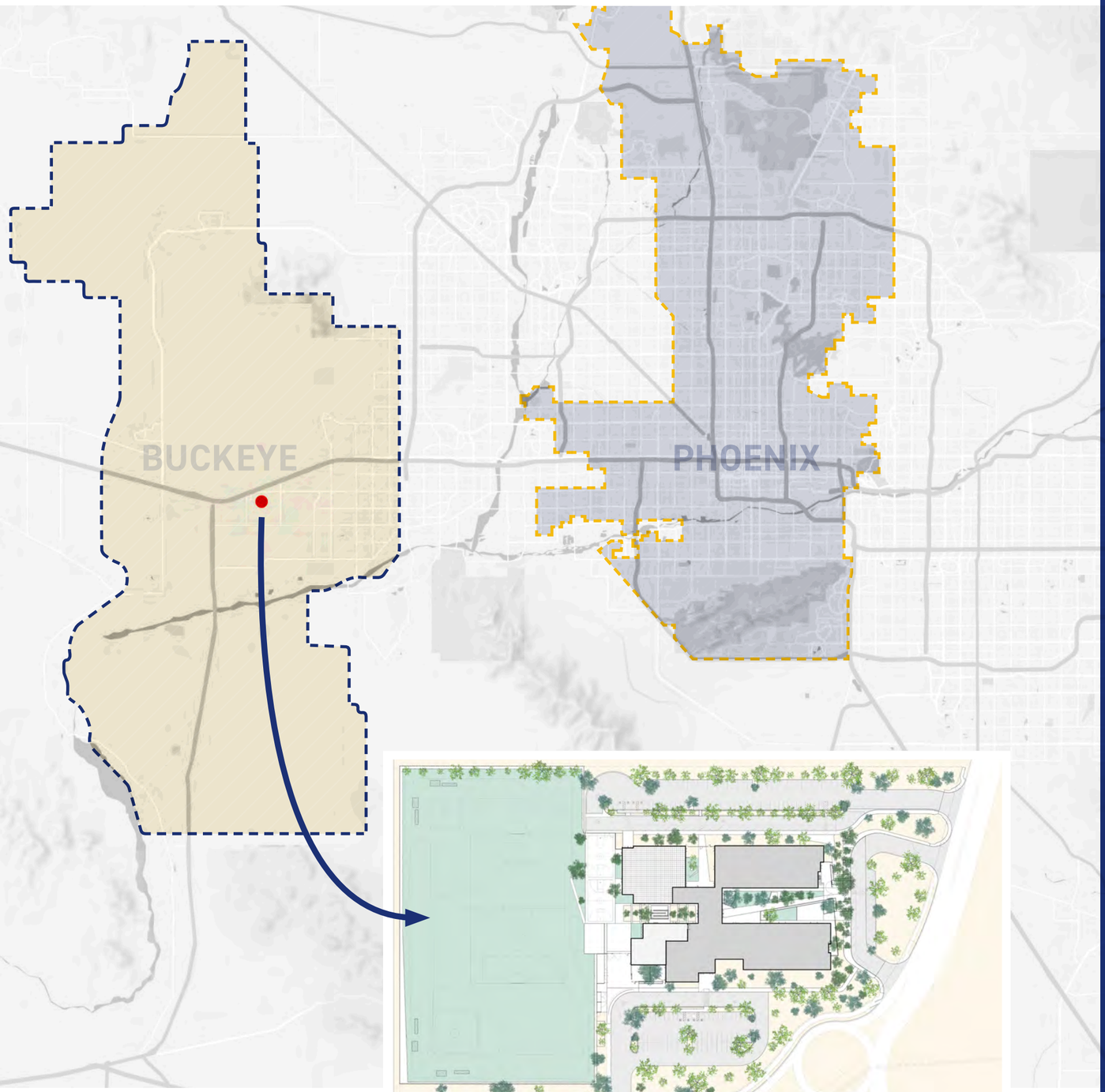
The town of Buckeye was founded in the late 1800's by settlers from the Midwest. The town was incorporated in 1929 and is located 30 miles west of the City of Phoenix, in Maricopa County, the fourth most populous county in the US. The City of Buckeye currently encompasses more than 640 square miles, and by the end of 2020 had a cumulative growth rate of 80%, making Buckeye the fastest growing city in the US for that decade.

SCHOOL DISTRICT

The Buckeye Elementary School District #33 is a K-8 school district that serves the historic and fast-growing community of Buckeye in western Maricopa County. The district serves ~5800 students through nine Title-1 schools. BESD#33 is focused on helping students develop future-ready skills, including critical thinking, design, collaboration, and problem solving. BESD believes all students should be provided with the opportunities that best prepare them to adapt, grow, and adjust to a dynamic and changing world.

STRATEGIC GOALS

- Address the need of growth and educational variety in the community.
- Provide a community hub in a growing city that has very few to limited innovative spaces available for community and student use.
- Provide an innovative, accelerated C-STEM experience for the students of Buckeye, grounded in the humanities.
- Create a school with ubiquitous learning infrastructures.
- Give students heightened access to resources for learning:
  - Highly accessible literacy spaces
  - Highly accessible maker spaces
  - Highly accessible technology
- Effective collaborative learning spaces that allow for supervision and support.
- Spaces to demonstrate/present/perform.
- Opportunities for community use.
- Learner centered physical environment with natural light, age-appropriate colors, variation.
- Building as a teaching tool (coding on the panels, innovation timeline/text based historical graphics).
- Create a space where learning is visible; teachers and students can see and draw on the learning experience of others. Teachers can model for each other while simply teaching, creating an organic opportunity for professional growth.



640
SQUARE MILES
25% LARGER THAN PHOENIX

8.5
PERCENT
FASTEST GROWTH RATE IN AMERICA

K-8
9-ELEMENTARY
2-PRESCHOOL

5875
TOTAL STUDENTS

707
TOTAL STAFF

68
PERCENT
TITLE 1 STUDENTS

STAKEHOLDERS | CITIZENS COMMITTEE

The BESD Citizen's Committee, comprised of over 60 members, met on a biweekly basis in Fall 2018/ Spring 2019 with the primary purpose of unpacking the BESD educational strategic plan and engaging citizen advocates to build consensus and support for upcoming Capital Bond and Budget Override campaigns.

The Citizens Committee operated several sub-committees, one of which was the Facility Standards Committee. This group, including the Architect of Record, were tasked with Community Engagement, Visioning, and Brainstorming with each district school community to develop a rubric for re-imagining education. The committee engaged in discussions about Skills & Dispositions in Learners, Programs/Curricular Options and Experiences that can help build those skills, and then brought focus on facilities to uncover infrastructure gaps. These gaps were translated to projects with budgets some of which figured in the 2018 Capital Bond, and others will be part of future asks of the community.

JSM III SCHOOL STEERING COMMITTEE

The stakeholders who went on the journey to develop John S. McCain III operated at two scales over a three-year period. The original work completed by the BESD Citizen's Committee in the Fall of 2018 served as the foundation for the JSM III specific steering committee. This new committee was comprised of administrators, and a cadre of teachers who would help imagine an environment that would be conducive to implement innovative programs and curricular options, towards fulfilling the profile of the JSM learner.

MAJOR CHALLENGES

As the vision for JSM III began to take shape, it became apparent that the steering committee and district administration were imagining a learning environment that would be a major departure to most schools in Arizona. The success of a facility such as this can only be achieved by actively engaging with the stakeholders to simultaneously give definition to this innovative vision, while building up the foundational knowledge of multi-dimensional learning concepts, and the indispensable role that innovative learning infrastructures can serve in catalyzing learning outcomes.

PROJECT CHALLENGES

The project had to overcome several challenges, the biggest of which was the COVID-19 Pandemic. Major design efforts had to transition to an online format in the spring of 2020, challenging the entire team to still maintain a holistic, community driven/ co-creation process while maintaining safety.

Another major challenge the project had to overcome was the pandemic induced supply chain and labor shortages, and the resulting escalation in costs. The project ended up having to rebid, taking three months out of the construction schedule. In the end, construction had to take place in under 8 months!

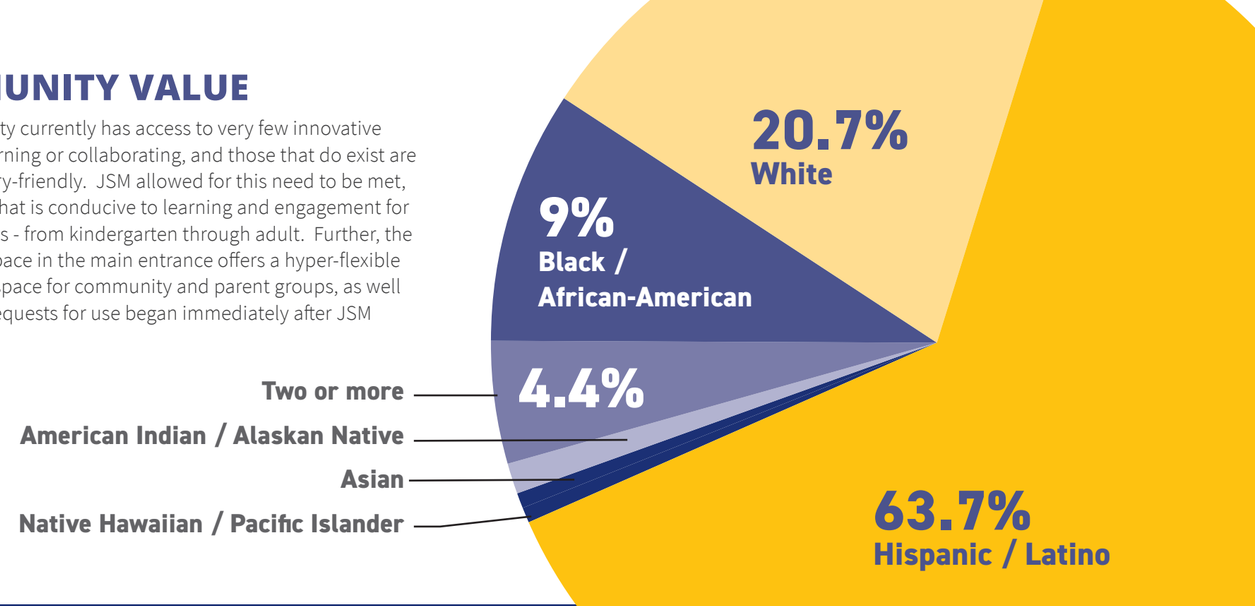
AVAILABLE ASSETS

DIVERSITY: BESD is a diverse school district serving a population that is predominantly hispanic. The district maintains a commitment to remain innovative and assertive in its efforts to bridge cultural gaps, particularly with the Latino community. This is currently an area of focus as the district seeks to engage the community, particularly when it comes to allowing students to see avenues of access to participation in the future economy.

PARTNERSHIPS: Active partnerships with Arizona State University, Buckeye's Family Resources Center, Read Better Be Better Project, Buckeye Education Foundation, Buckeye Lyons Club, Buckeye Rotary, West Valley Arts, Westside Impact, were all assets that the district continues to leverage towards the betterment of the kids. Several of these entireties were represented in both the Citizen's Committee and the JSM Steering Committee.

COMMUNITY VALUE

The community currently has access to very few innovative spaces for learning or collaborating, and those that do exist are not elementary-friendly. JSM allowed for this need to be met, with a space that is conducive to learning and engagement for a range of ages - from kindergarten through adult. Further, the community space in the main entrance offers a hyper-flexible engagement space for community and parent groups, as well as for staff. Requests for use began immediately after JSM opened.



15 ACRE PROJECT SITE

95K GROSS SQUARE FEET

$25.5M CONSTRUCTION COST INCLUDING ROAD CONSTRUCTION

$268 PER SQUARE FOOT

900 TOTAL STUDENTS

7.21 SCHOOL OPENED

SCHOOL + COMMUNITY ENGAGEMENT: VISIONING/PRE-PLANNING

PRE-DESIGN, PROGRAMMING

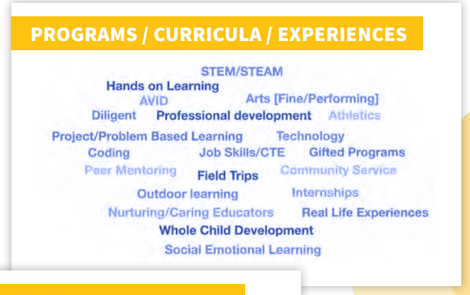
BESD opened a new school in 2017 and quickly realized that the success of an innovative school is not just a factor of the "facility" but how well the underlying concepts driving a school is understood, embraced and practiced by the stake holders. The district consequently committed to a comprehensive, community driven process framework for the design of their next School, JSM III Elementary, which would ensure that the innovative vision for the new school has broad buy-in, is deeply understood and becomes a filter for decision making throughout the process.

The design team worked closely with the school steering committee right at the outset and developed a process based on design thinking steps that would ensure a deep understanding of the project parameters drives the conversation.

SKILLS, DISPOSITIONS VISIONING

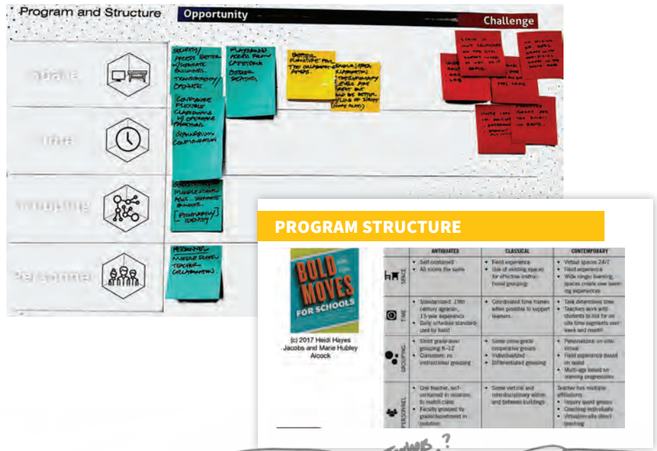
The first part of the process involved visioning meetings with the steering committee in order to develop a specific Profile of the JSM III learner based on the profile of the learner work the district had undertaken earlier. This effort tried to help the stake holders unpack the goals for JSM III and develop a more detailed profile that can be targeted with programs, experiences and curricular options, which by extension will need certain types of infrastructures that will catalyze learning.

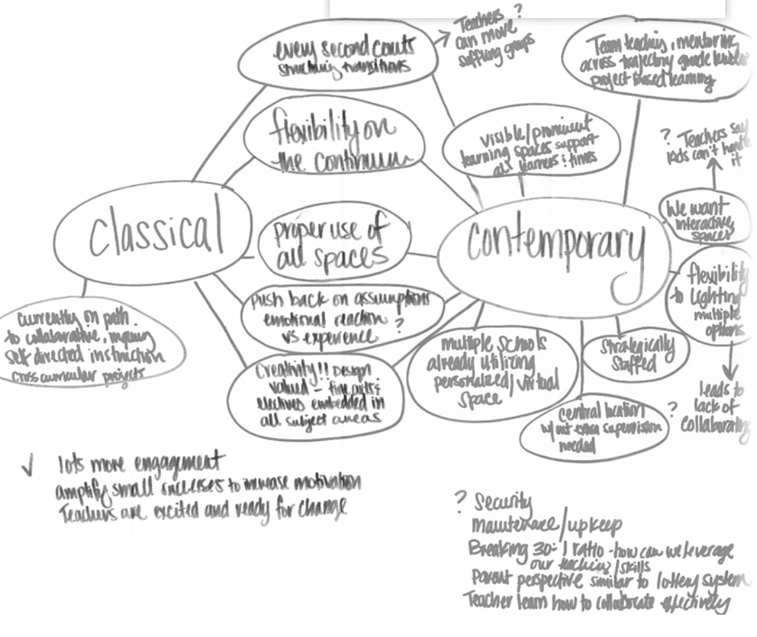
The medium of engagement was live polling, followed by a key design considerations primer, and group breakout session to discuss the outcomes of the polling and how the new school could accommodate certain practices to help achieve results. The goal was to feel the pulse of the room, provide information that would spark a debate, and have the stake holders engage in action oriented discussion.



GAPS ANALYSIS: PROGRAM STRUCTURE FRAMEWORK

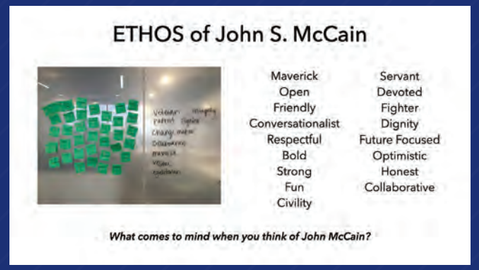
The next engagement was designed to perform a Gaps Analysis to help the stakeholders identify major gaps that may exist when they transition from more of an antiquated to a contemporary school environment. The Program Structure Continuum Framework (Heidi/ Alcock, 2017) was used to help the steering committee visualize gaps in **TIME, SPACE, GROUPINGS & PERSONNEL**.



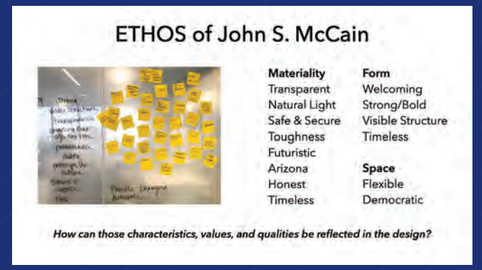


SCHOOL + COMMUNITY ENGAGEMENT: VISIONING/PRE-PLANNING

DIVERGENCE ↔ CONVERGENCE



JSM III would be a school fostering Computational Thinking but also steeped in the humanities, focusing on skills scaffolding. This aspect of the project would have a powerful catalyst - the incredible life, legacy and work of John S. McCain! The design team developed a series of techniques that would help the stake holders better understand how to represent such as powerful personality: not as a memorial, but as a "living document" that would continue to inspire, influence, and engage children for decades to develop their own skills, behaviors and habits to become successful members of their community.

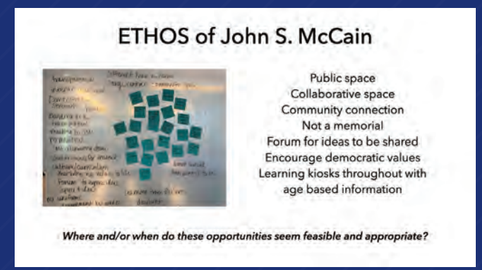


Using this brainstorming technique, the design team first engaged with various stake holders such as the district leadership and the steering committee in divergent thinking and created a broad list of ideas that could represent:

The Ethos of Senator McCain

How the various character traits can be represented/ reflected in/through design

Where can these ideas be incorporated, and in what form?



Then the same stakeholders engaged in group discussions and converged on key ideas from these lists to prioritize and develop an ideas kit of parts that was used to design various aspects/characteristics of the project. Ideas ranged from spatial quality, types of infrastructures provided to facilitate certain activities, graphics, etc.

SCHOOL + COMMUNITY ENGAGEMENT: STUDENT ENGAGEMENT

STUDENT AGENCY

Ensuring that students had significant influence in shaping their own learning experiences was a major goal for the steering committee. Student engagement took the form of a "spatial character" spectrum analysis: understanding how far to turn the dial, in which direction, on aspects of the learning spaces such as Biophilic patterns, Prospect and Refuge, Levels of Openness, Visual Connection to the outdoors.

The design team developed several boards with representative images from internal and peer projects representing the various spectrum of schools as noted by Heidi/Alcock in their Bold Moves book, and had students in all grade levels: K-2, 3-5 and 6-8 react to academic spaces, athletics, food and media commons, outdoor spaces, etc.

Student reaction was documented using emoji stickers capturing likes, dislikes and indifference . The design team found that reaction to various spatial traits varied by the age group of kids engaged. This information was documented and used in fine tuning the design as it evolved. Students were once again engaged in later stages, but this time in Virtual Reality as they had a chance to walk through their school and react to the character of various spaces, colors, and infrastructure such as furniture, interactive panel boards, breakout spaces, etc. Student representatives were also called upon to present to the governing board on this engagement, the feedback they provided, and their impressions of the new space.

SCHOOL + COMMUNITY ENGAGEMENT: CO-CREATION PROCESS - EARLY DESIGN

STAKEHOLDER CO-CREATION

The design team continued the co-creation and collaborative process during schematic design using an interactive group charrette process using of physical program blocks comprising of the various components of the project including buildings, fields, access and parking. These manipulable objects provided the steering committee members the opportunity to design their very own arrangement of program spaces and organize the school exactly as they would like.

This activity was carried out in a world cafe format where steering committee members were placed into one of three groups. Here the committee members were able to democratically design a program arrangement that suited the design goals of the group members.

This activity yielded three different arrangements, and though they did not translate literally into the school's final program arrangement, the reasoning and deduction that informed them helped to inform the design team of the most pressing issues in the minds of the steering committee members.

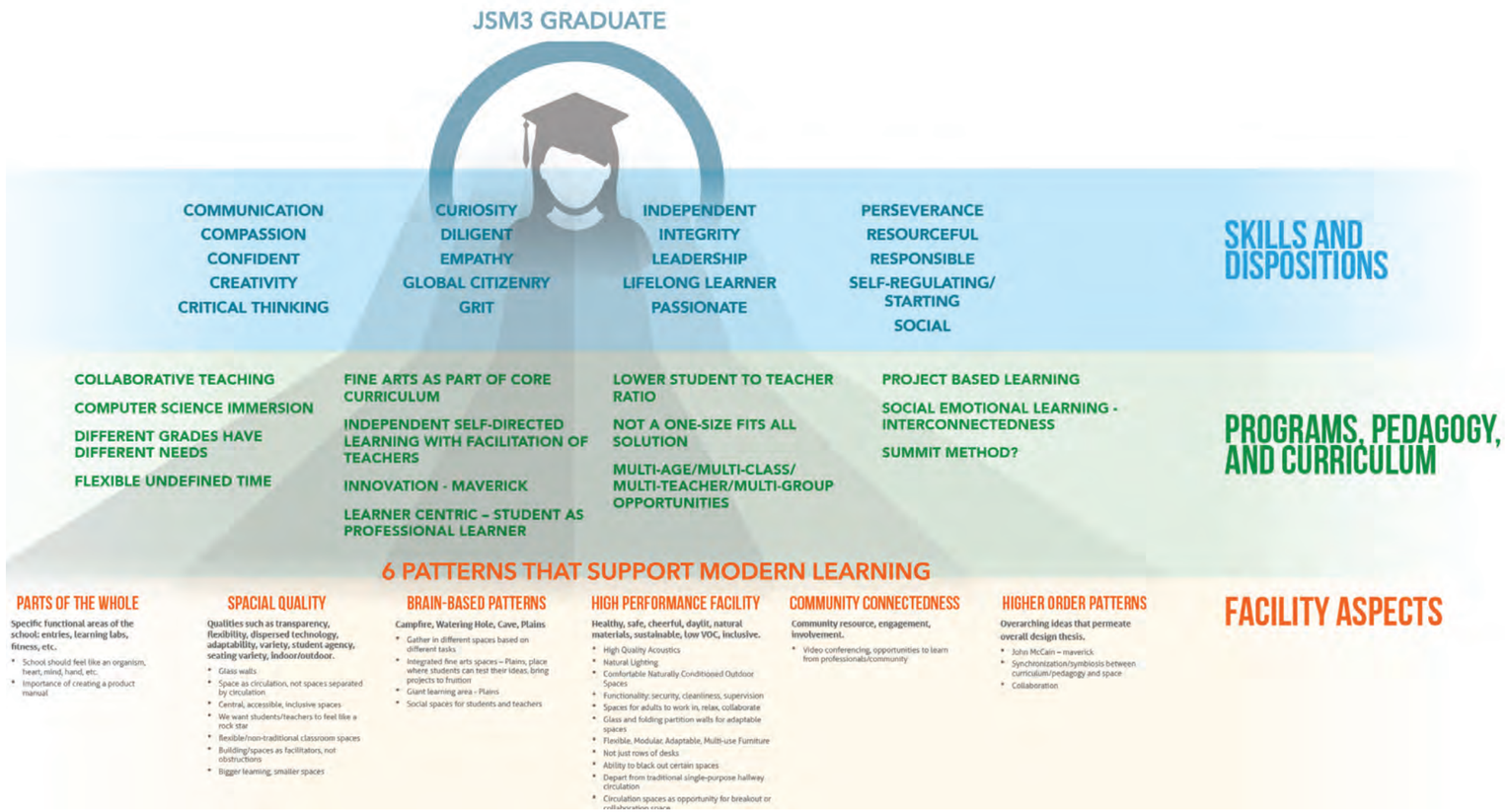
With these crowd-sourced program arrangements the design team was then able to make a more informed series of decisions as they approached the design of a definitive program diagram. From the arrangement of the site, to parking and queueing arrangements, to the arrangement of the classrooms and main axes of circulation in the project, the design of these elements was fully informed by the outcomes of this community design exercise.

SCHOOL + COMMUNITY ENGAGEMENT: WORLD CAFE FEEDBACK

STAKEHOLDER VIRTUAL WALK-THROUGHS

The community driven co-creation process continued through later design stages with the type of communication architectural team had the opportunity to work on the development of the schematic design of the school, it was imperative to report back to the community steering committee. This occasion allowed the architectural team to assess if the outcomes of this first iteration of schematic design were well-aligned and achieved the goals set forth by the community steering committee in previous sessions.

In order to qualitatively assess both the successes and shortcomings of this first design iteration, the architectural team collected a series of comments from the steering committee members about their first reactions to this first design. We also asked them to assess potential opportunities that a space such as the one presented might provide for students and educators. From these varied comments, the architectural team was able to identify at a greater level of detail what elements of the design helped to serve the needs of the community and end-users of this school and which elements hindered these needs.



JSM III SPECIFIC PORTRAIT OF THE GRADUATE

BESD was engaged by the design team early on through community engagement in the redesign process, a Portrait of the Graduate for their learner so that the team could begin with the “end in mind” when it comes to the needs specific stakeholders, and how they interface with the district desire to transform learning. As part of this process, the design team engaged various school communities in a series of charrettes at each site to design a “Portrait of a Graduate” that aligned with the communities values, beliefs, and hopes for the future. From that work, the design team assisted the district in honing that vision: the knowledge, skills, and dispositions that will serve the learners of BESD. The conversations that occurred during these meetings were robust and allowed the design team to continually center the work around the concept of an unknown future and what hard and soft skills were essential for confronting that which we do not fully know. The idea of future proofing was prevalent throughout, as the site teams sought to identify those things which would serve any context, such as computational thinking or effective communication. As further part of the effort, each school community was engaged in school redesign sessions using the newly-formed portrait of a graduate. This process allowed the community to re-imagine learning and learning spaces and create a “wish-list” of physical redesigns to support modern patterns of learning and learning environments.

BESD VISION, MISSION & GOALS

- Staff, in partnership with the community, will encourage all students to reach high levels of achievement by engaging in an innovative, stimulating, and rigorous program designed to prepare students for an unknown future.
- Learners shall be supported to become self-reliant learners who master the basics as well as develop the skills to compete in a rapidly evolving world.
- Skills in communication, interpersonal relationships, technology, research, problem solving and critical thinking.
- Facilitate the development of students who exhibit positive character and are civically engaged in the world around them.

BESD BELIEFS

- Every student is unique, so learning should be dynamic, flexible and engaging.
- Learning should be integrated rather than isolated.
- Students, parents, community members, and schools share responsibility for learning.
- Students should have choices in how they learn and how they present what they know.
- Students should be provided regular and productive guidance
- Assessments should provide insights not only of student progress but also of instruction and curriculum.

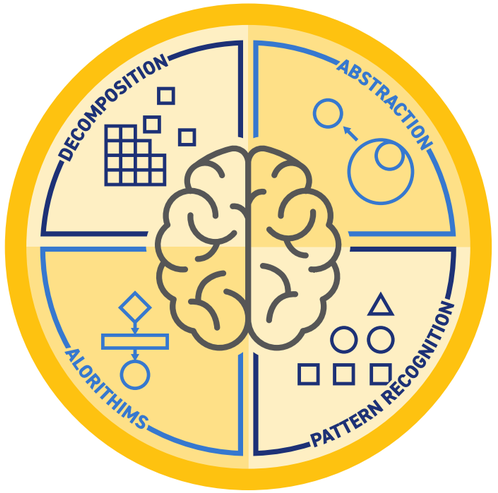
JSM III AS A PROOF OF CONCEPT

BESD envisioned the new JSM III as an opportunity to create a tightly integrated learning environment that serves a ubiquitous learning model consistent with the district’s mission, vision and value pillars.

The future being both uncertain and unwritten, how can learners be prepared to participate in a new economy that increasingly trades in information, data, and skill sets that have not yet even been clearly defined? By focusing not only on the technology of today, but also by developing the universally applicable skills and thinking that will drive whatever emerges tomorrow. Explicit instruction on computational thinking provides students with a future-proofed learning profile and allows them greater ability to adapt to the tools of tomorrow. Or, better yet, to simply create those tools, themselves.

COMPUTATIONAL THINKING

The curriculum for JSM III was based on Coding and Computational thinking. This is acknowledging the fact that today's learners have to see the world through different perspectives, using different skill sets, and employing different strategies to resolve different kinds of problems. To do this, students must develop both Human Cognitive Skills and Computational Thinking abilities. They must leverage tools such as coding or algebraic thinking to attack relevant challenges, but also must understand the world, the context of the challenge, and how to successfully collaborate with others, in order to fully navigate everything from school projects to helping in their own community. Neither skill-set can be fully leveraged without the power of the other. From skilled computational thinking emerges specific problem-solving abilities. Fully developed human cognitive abilities allow for empathy, cooperation, and the understanding of the human condition, including our own.



COMPUTATIONAL THINKING STEPS

Computational thinking consists of four component abilities: decomposition, pattern recognition, abstraction, and algorithms.

- **Decomposition:** Breaking down complex problems
- **Pattern Recognition:** Connecting problems to others or similar experiences
- **Abstraction:** Identifying important or relevant information
- **Algorithms:** Creating or following rules to solve problems

At JSM III, students would code to solve a real world challenge, or to give life to a motionless robot intended to provide a service in the school. They may deconstruct a famous event in history, such as the invasion of Normandy or Washington's crossing of the Delaware River, through extensive research, information analysis, and descriptive writing. Or, they may employ all of these skills simultaneously in order to propose solutions for a local community need.

Whether through coding, traditional algebraic thinking, statistical analysis, or other computational skills, learners engage in creating mental frameworks that allow them to analyze and problem solve, persevere, and iterate for improvement. They design and they create. They think deeply about problems and provide multiple solutions.

At JSM III, learners practice becoming the drivers of the future economy by using and developing the tools of both today and tomorrow, while developing the skills of forever.

HUMAN COGNITIVE SKILLS: HUMANITIES THROUGH HISTORY

The study of humanities has long been a cornerstone of education. Whether through the lens of language arts, history, or other human disciplines related to creating, relating, or understanding the story of "us," humanities provides learners with a framework with which to relate to, and communicate about, the world. At John S. McCain III Elementary, history takes center stage as the gateway to the study of, and discussion about, the human condition. Senator McCain often spoke of when, as a young prisoner of war, he "fell in love" with the United States, by better understanding what the nation was and what it could yet become. Indeed, there is much to love about our great nation and the world of which we are a part; the story of America is one that has only been told once. As we celebrate ourselves, each other, and the positive-interdependence of our circumstances, we must possess a deep understanding of our shared past and the moments that shaped our reality, today. Further, we must use our vast skill sets to explore these topics through literature, writing, discussion, civil debate, and critical analysis.

At John S. McCain III Elementary, students can expect an embrace of this exciting journey through time in a way that brings the past to life and permeates their school experience.

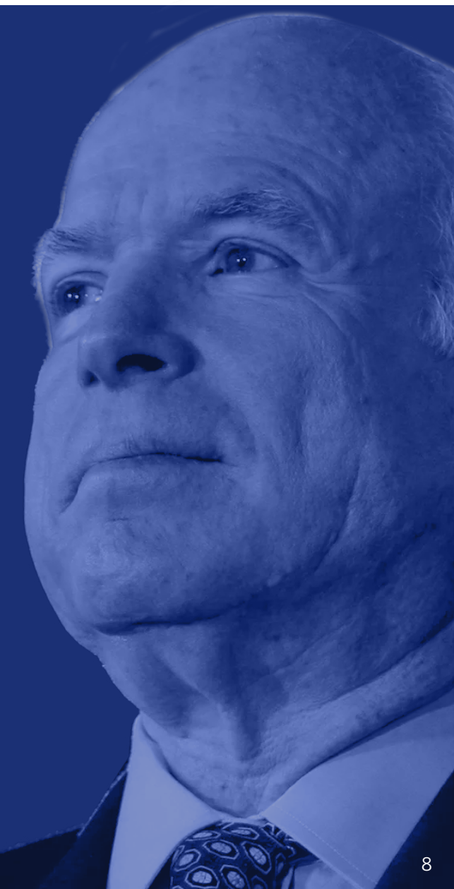
For a full learning experience, students need access to more than just history, language arts, and C-STEM. As avenues for growth and expression, art, music, social emotional learning, collaborative skill development, and physical education must also be strategically incorporated into the school's program design.

At JSM III, rather than learning these topics in isolation,

students will experience enhanced integration across the curriculum, with opportunities to leverage technology in new ways to express their ideas, solutions, and amplify their voice. It has been said that artistic creation and design are skills that will resist being automated or outsourced, and we embrace the opportunity for students to represent their learning in creative ways. This might include the composition of music through a digital music program, designing the marketing material of a student-created solution, or the platforming of a respectful and enlightening debate through the creation of a podcast. Technology has provided limitless opportunities for expression, however, knowing how to correctly leverage those tools is essential.

Nothing characterized Senator John S. McCain III's legacy more than his commitment to public service, character, and honor. He was famous for his ability to disagree, but treat others with dignity and respect.

- At JSM III, students will learn the powerful importance of character and how to engage with others in productive and positive ways.
- They will learn how to debate, discuss, and potentially fiercely disagree, without attacking the integrity of others.
- They will learn the importance of taking interest in their school, neighborhood, city, state, nation, and world, at large.
- They understand that they matter. That they can make a difference.
- That "Character," as the senator once said, "and character alone, will make your life happy or unhappy."
- They will learn that they are responsible for who they are to become and that they can depend on their experience at JSM III to provide them the tools necessary to live up to their own high standards.



THE WHISPERS OF HEROES PAST AND VOICES OF TOMORROW

At John S. McCain III Elementary, students will engage deeply and meaningfully in the study of history to better understand the nature of the world that was and is. Further, they develop computational skills to help them shape the world that will be. JSM III is a computational thinking school that also understands the essential power of human cognitive skills. It is a school that believes that the study of humanities is equally necessary for students to develop empathy, collaborative skills and critical thinking, providing their imagination an endless path to discovery and expression.

Learners embrace the awesome responsibility of being civic-minded participants in their communities and in democracy, itself. They take responsibility for their actions, but fearlessly takes risks, own their mistakes, and seek to improve on the next leg of their journey in life.

The staff of John S. McCain seek to amplify and leverage the whispers and echoes of our past heroes, in order to help shape the important voices of tomorrow; and seek to create an environment that embraces a good challenge, values character, and never stops believing.

MEMORABLE GOALS

All of the precepts and concepts that would drive the design strategy for JSM III were distilled into four memorable goals that would act as filters for design decisions going forward. These goals were used to determine major as well as seemingly minor detailed aspects of the project.

01 INNOVATION/COMPUTATIONAL THINKING
- Design will focus on the cultivation and nurturing of an innovation mindset and computational thinking in kids through the various spaces, administration and operation of the school facility

02 LEARNER-CENTRIC ENVIRONMENT
- Create an inclusive, learner centric school environment that tightly integrates a technology immersion curriculum, and pedagogies that foster next generation skills and focuses on whole child development.

03 HIGH PERFORMANCE LEARNING ENVIRONMENT
- Create a safe, healthy, energy efficient, sustainable learning environment that emphasizes occupant social, emotional, physical well-being, supports the exercise of student agency and

04 SPIRIT OF JOHN S. MCCAIN
- Design to embody the spirit, life, legacy and work of JSMIII

ORGANIZING FOR PERSONALIZED LEARNING

Personalizing, differentiated instruction and learning is a critical goal for the design for JSM III. The design therefore sought to create learning environments that are tightly integrated with curricular and pedagogical objectives, and offer opportunities for differentiation and personalized learning. The steering committee embraced brain-based learning models, the most famous of which put forth by educational theorist and futurist David Thornburg. The design team worked to distilled brain based learning metaphors such as the **campfire**, **cave**, **watering hole**, **swamp**, and **plains**, into spatial infrastructure, all of which in some capacity can be organized into some form of a learning community that provides multi-dimensional learning opportunities that can span the age-ability spectrum. The design team's approach was to create a learning infrastructural field overlaid with Learner Centric Design Principles such as Flexibility, Collaboration, Variety, Novelty, and Multi-Dimensionality.

EMPHASIS ON THE WHOLE CHILD

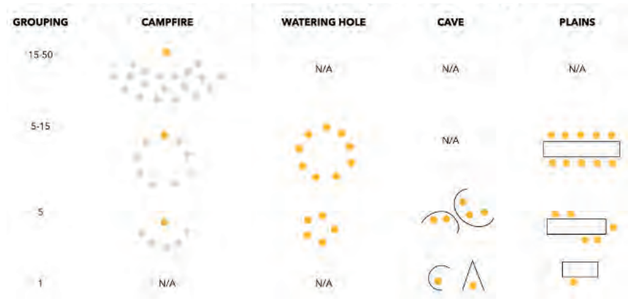
The steering committee also embraced a whole child emphasis for the new JSM III School. The focus on humanities and the life and legacy of John McCain was a solid foundation to build towards nurturing the whole child. The design for the school created opportunities for kids to engage not just in academics, but social emotional learning, athletics, the arts and to exercise agency in numerous ways as part of developing identity and a sense of belonging.

LEARNING COMMUNITY ORGANIZATION

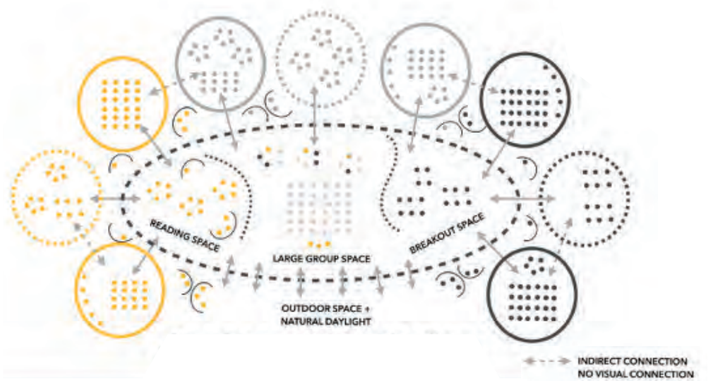
The forces of obsolescence are constantly at work in education: even most school facilities feel obsolete as soon as the first year of occupancy, and only more so thereafter! The design team emphasized how essential it is to build in flexibility to accommodate evolutions in curricular objectives to suit the ever-changing needs of students.

- A learning community-based organization is the ability to travel across the spectrum of learning, and one that can function not just today but tomorrow and adapt with such changing needs.
- JSM III features three learning communities that are intended to start as an age and standards based organization: K-2, 3-5 and 6-8.
- The learning community is designed as an infrastructural field that provides multi dimensional learning opportunities at various scales.
- This offers variety both in qualitative terms (Brain-based paradigms), and quantitative terms (grouping sizes).
- This offers staff a great deal of flexibility to traverse the spectrum of learning and offer competency based, differentiated and personalized learning as appropriate to the learner needs.

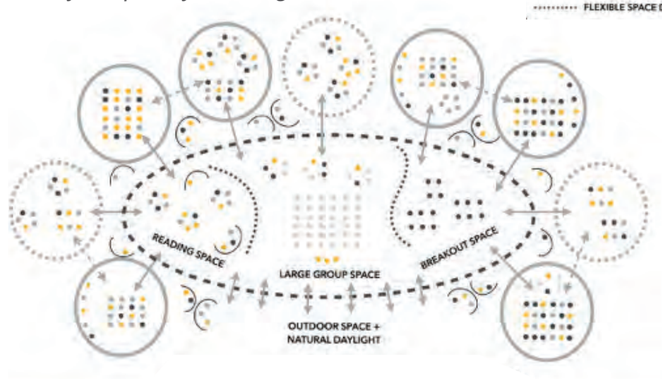
Archetypal learning Space Diagrams

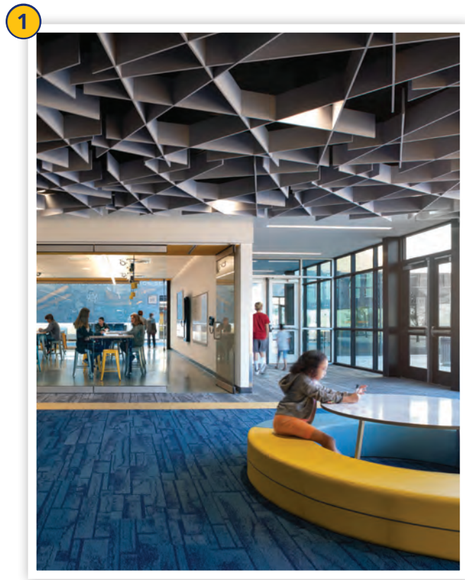


Age Based Organization



Ability/Competency Based Organization





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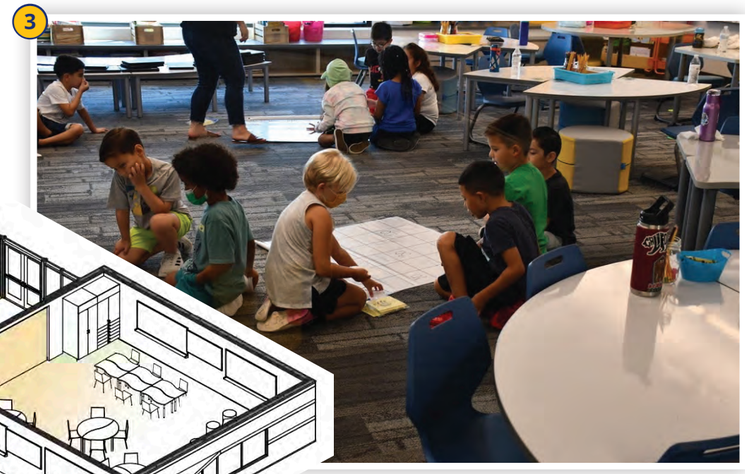
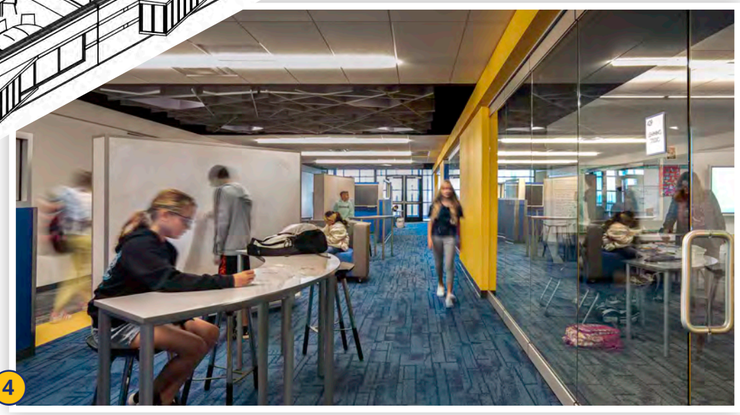
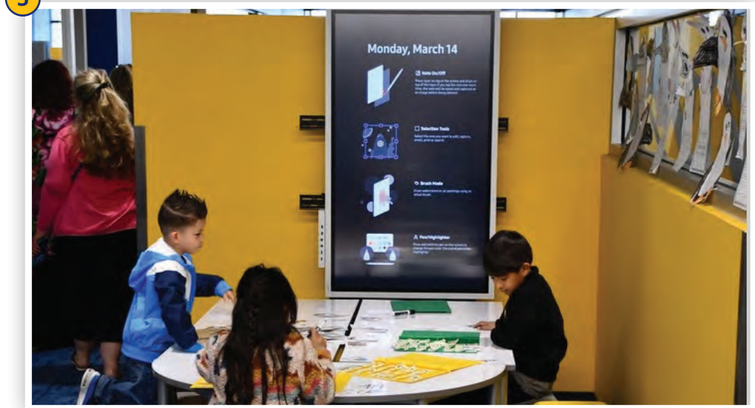
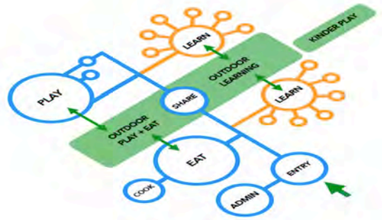


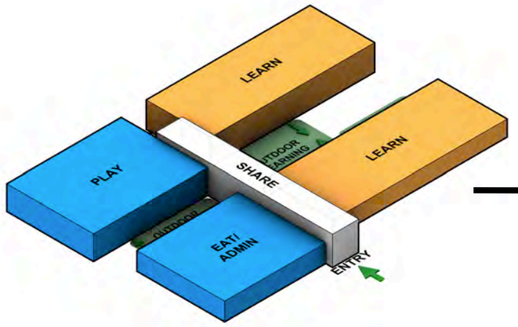



Monday, March 14

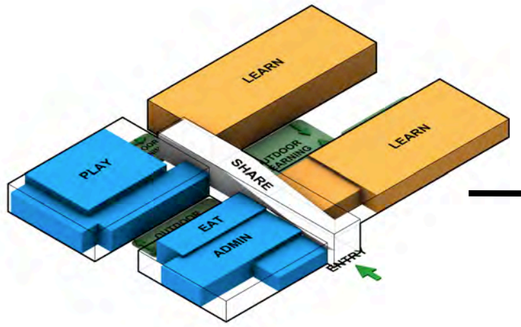
EDUCATIONAL ENVIRONMENT : HOW THE LEARNING ENVIRONMENT SUPPORTS THE CURRICULUM, THROUGH A VARIETY OF TEACHING AND LEARNING STYLES



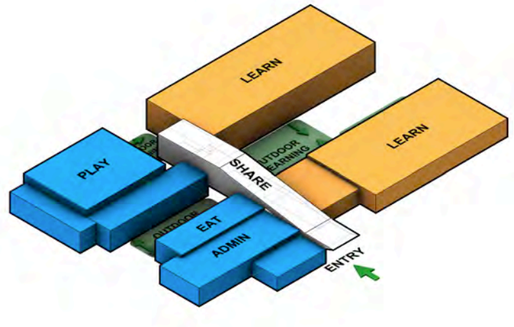
Programmatic Diagram



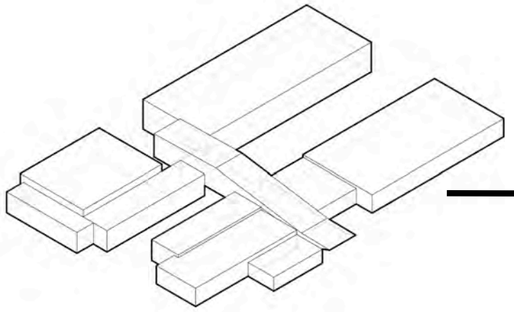
Organizational massing showing academic and communal spaces, sky bridge as connector



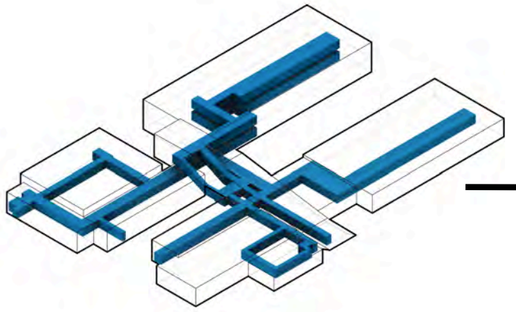
Massing articulated to invoke conceptual drivers



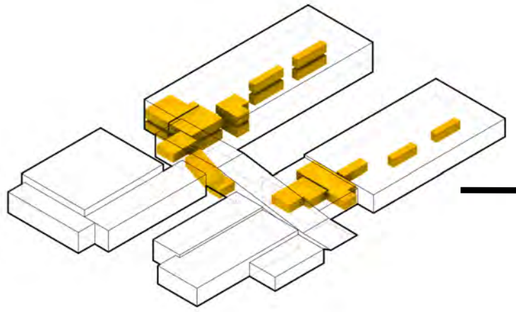
Building Volume



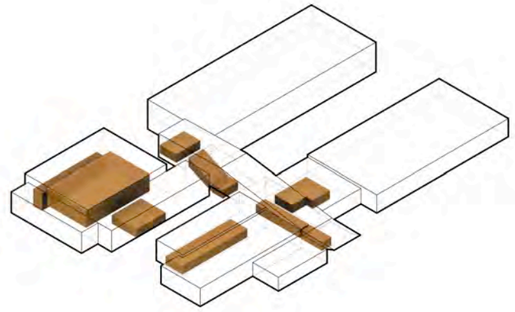
Building Shell



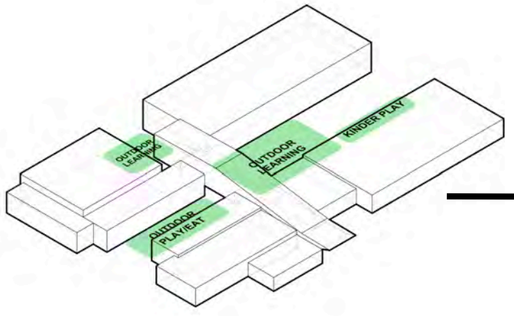
Circulation spine as an armature that connects various space infrastructures



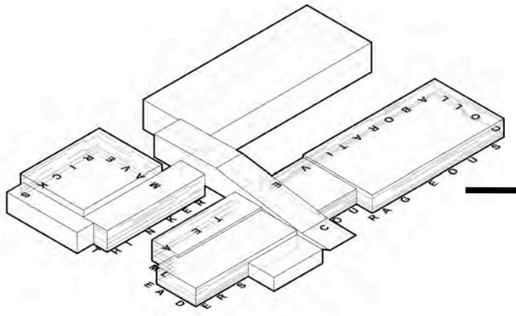
Collaborative, Flexible Spaces of varying scales along the connectors



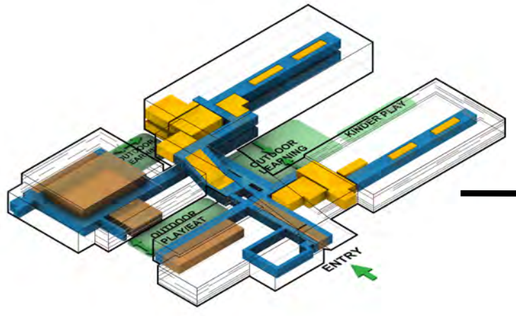
Dedicated Community & Education Assembly Spaces



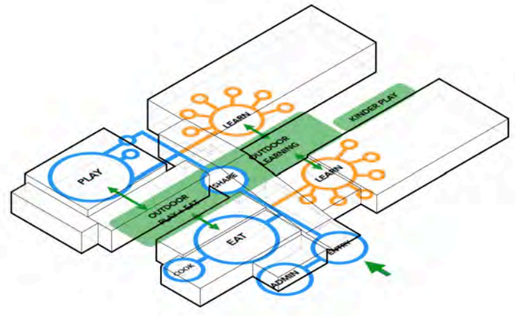
Outdoor Learning Infrastructures provide "Friction Points" that engage with all areas of the school



Binary Code Embedded in Building Shell



Combined Circulation and Education Spaces

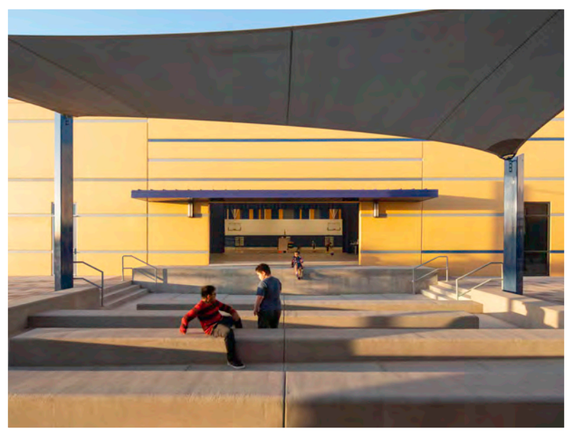


Overlaid program diagram and built forms illustrating consistency

BENEFITS OF ENGAGING WITH OUTDOORS

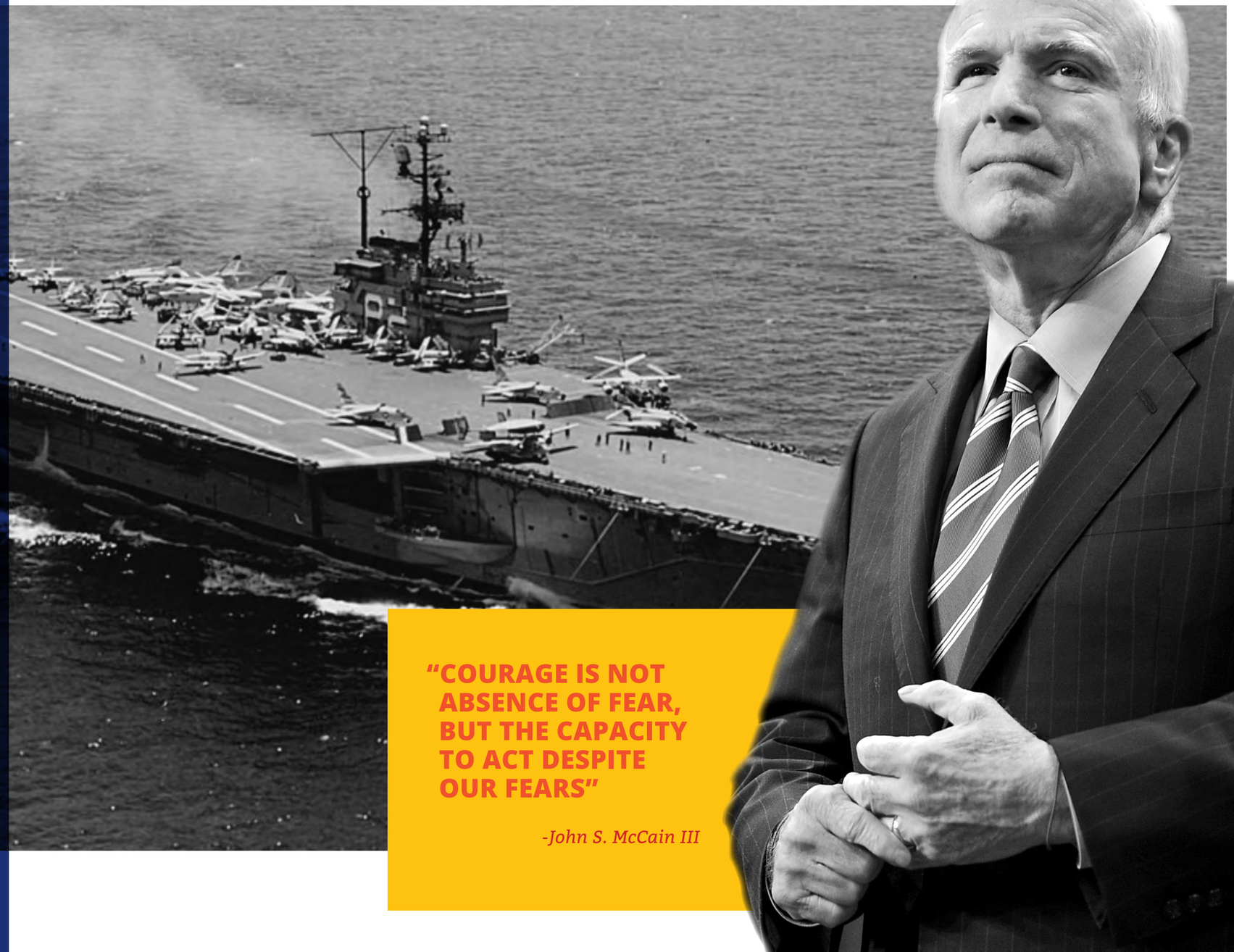
Outdoor learning and connection to the outdoors was a feature design strategy to incorporate the known physical, physiological and psychological benefits of engagement with the outdoors. Every learning hub such as the learning communities, academic and social commons are provided with adjacent outdoor learning spaces that provide both structured and unstructured opportunities to engage with outdoors. Strategic use of building forms and shade structures help extend the “outdoor learning” season into the shoulder months and provide teachers with a wide variety of flexible use options for their learners.

- **HANDS ON EXPERIENTIAL LEARNING:** The Art yard is an example of such a space that provides immediate outdoor component to the Art learning studio to kids can engage in outdoor production, sculpting and 2d art.
- **ACTIVITIES THAT CREATE ENGAGEMENT** with landscape in structured or unstructured ways such as gardening, planting, nature inspired play, etc., allow kids to exercise social emotional skills such as collaboration, persistence, patience, perspective taking, etc. are provided as “friction points” adjacent to indoor spaces.
- **STRUCTURED ACTIVITIES:**
  - **Outdoor Amphitheater:** Event space that provides outdoor community and school use during comfortable shoulder months
  - **Outdoor Academic Learning Gardens:** Are available from learning community commons and can be used to engage with nature, kids can observe seasonal changes, research and document fulfilling various content area requirements (science, PE, LA)
  - **Classifying:** Depending on the type of life events introduced kids can learn to classify animate, inanimate, botanical, zoological and other aspects in the learning gardens.
  - **Measuring:** Could be an extension of the first two, or could be totally different.
  - **Communicating:** Students can keep a science journal to note their outdoor observations and use the journal during class discussions.
  - **Inferring:** Students can use their senses to investigate a plant or animal outdoors and then make a conclusion about why that living thing is able to exist in the schoolyard, or draw a conclusion about other places students would find those plants or animals.



Senator McCain was a fighter pilot in the United States Navy long before beginning his legendary political career. The design direction for the school would seek to find a parallel to the design of the A-4 Skyhawk fighter jet that he flew in the Vietnam War, and the aircraft carrier from which it took flight.

On the plane, the wings provide the necessary lift to take flight, and the tail section provides both stability and direction. At John S. McCain III Elementary, computational thinking can be thought of as the ability that can provide lift, while the human cognitive skills provide control, stabilization, and directionality. A set of wings is not particularly useful without the control provided by the tail section, nor can a tail section take flight without the lift provided by the wings. John S. McCain III Elementary will help launch students to new heights and bright futures.



"COURAGE IS NOT ABSENCE OF FEAR, BUT THE CAPACITY TO ACT DESPITE OUR FEARS"

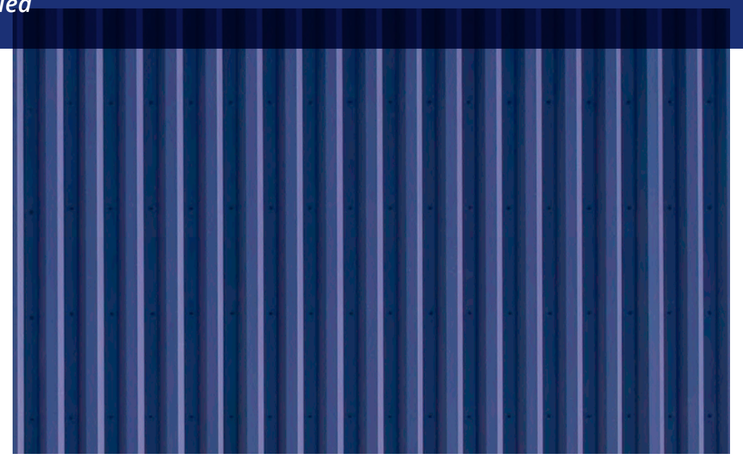
-John S. McCain III

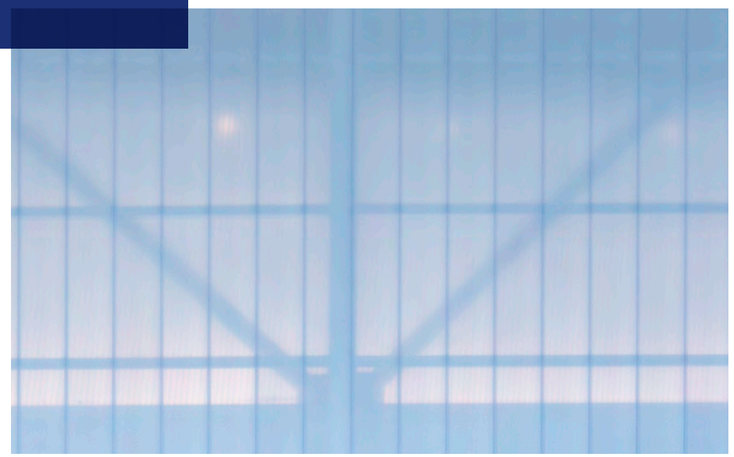
GROUNDING

YOUNGER: Molded, Cast, Formed

SOARING

OLDER: Grouped, Organized, Assembled





The design team's first departure towards anchoring the concept of Taking Flight was the choice of materiality and tectonics. Much like an Aircraft carrier is the grounding component of naval aviation, the idea of using materials that anchored kids to their communities was explored.

Concrete as a material possesses the ability to anchor, but is also plastic, that can be cast, molded and formed - much like the minds of younger kids. This was the material of choice for the K-2 learning community.

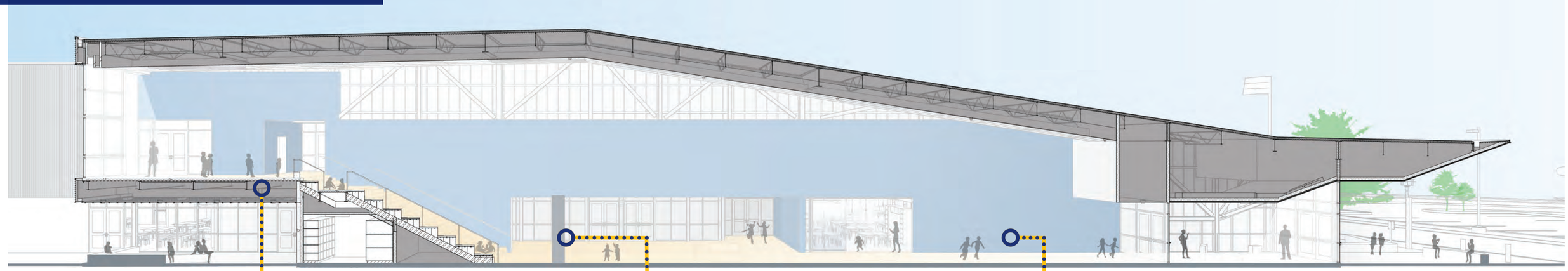
As kids age, and Take Flight, they develop personalities: individuality, and for kids of the 3-8 age group some level of grouping, assembling and organizing is required to achieve positivity.

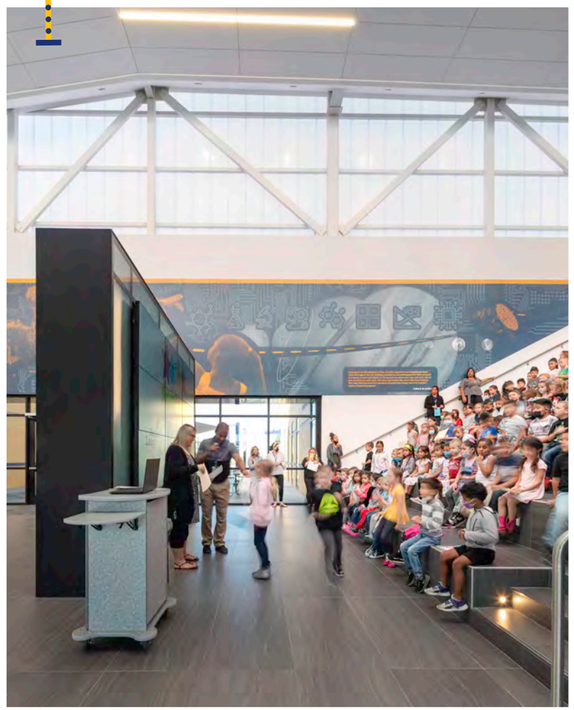
Assembly of systems such as metal panelized systems, storefront, translucent paneling systems were all used to attribute kids beginning to take flight in their lives and were used in the other two learning communities.

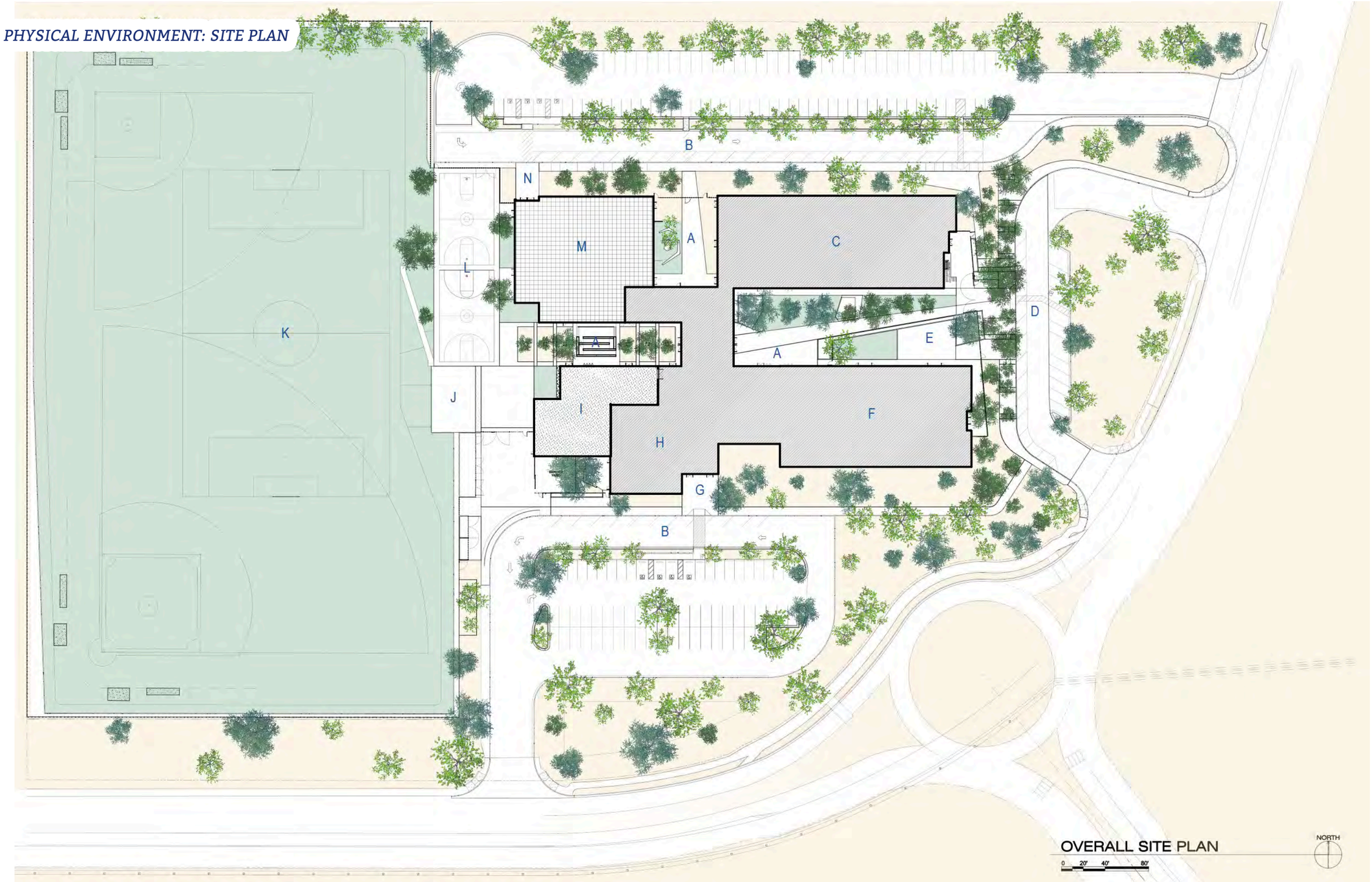
THE SKY BRIDGE

The Sky Bridge is an armature that connects, organizes and gives life to the concept of Taking Flight: Grounding & Soaring

The sky bridge is both a school space and a community space. It is defined, yet open ended. It connects yet it creates distinct zones. It inspires, catalyzes, and centralizes the concept of taking flight. It brings together the notion of grounding and soaring. Coding & computational thinking are interlaced with a reading of the humanities in the way the space embodies the life, legacy and work of Senator McCain. In short, the sky bridge is action, it is dynamic, it moves: it is a verb, formalized.

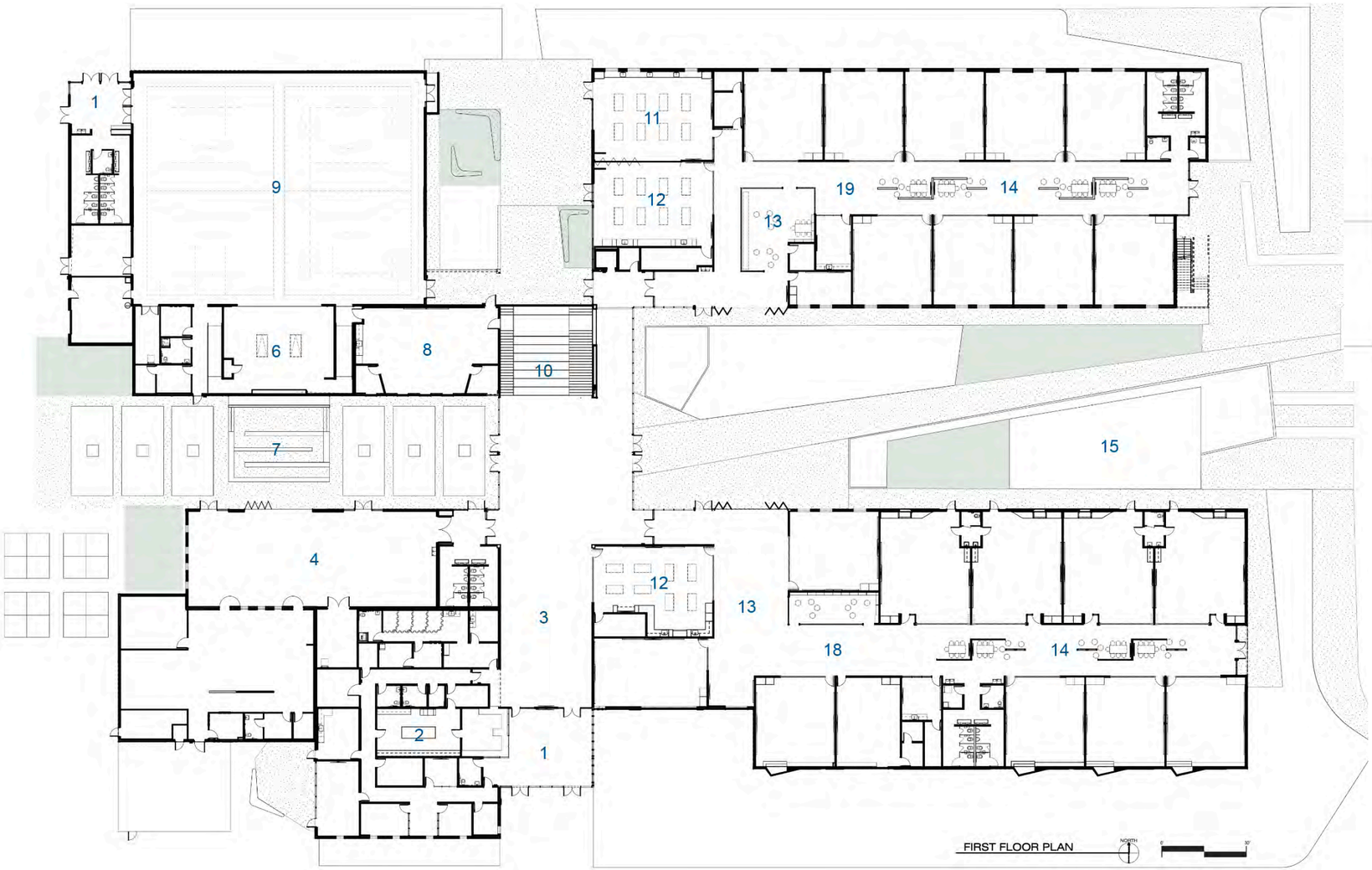


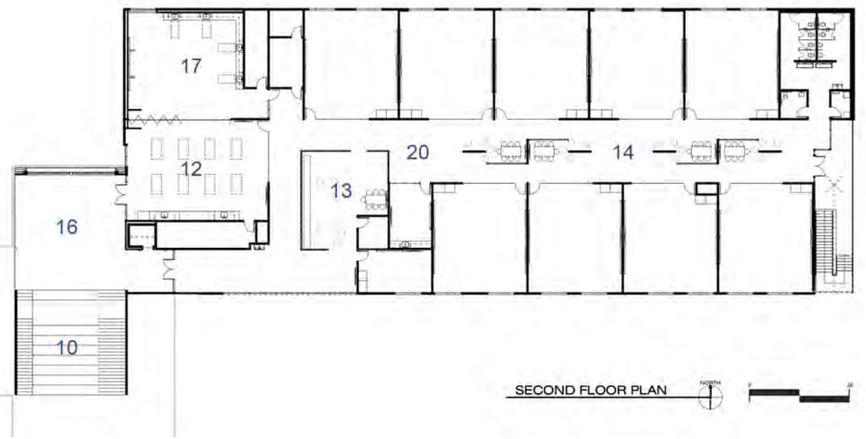




SITE PLAN KEYNOTES

A. Outdoor Learning Courtyard
B. Parent Drop Off
C. 3-5/6-8 Learning Studios
D. Bus Drop Off
E. Kindergarten Playground
F. K-2 Learning Studios
G. Main Entry
H. Administration
I. Food Service
J. Playground
K. Playfields
L. Basketball Courts
M. Gym
N. Gym Entry





FLOOR PLAN KEYNOTES

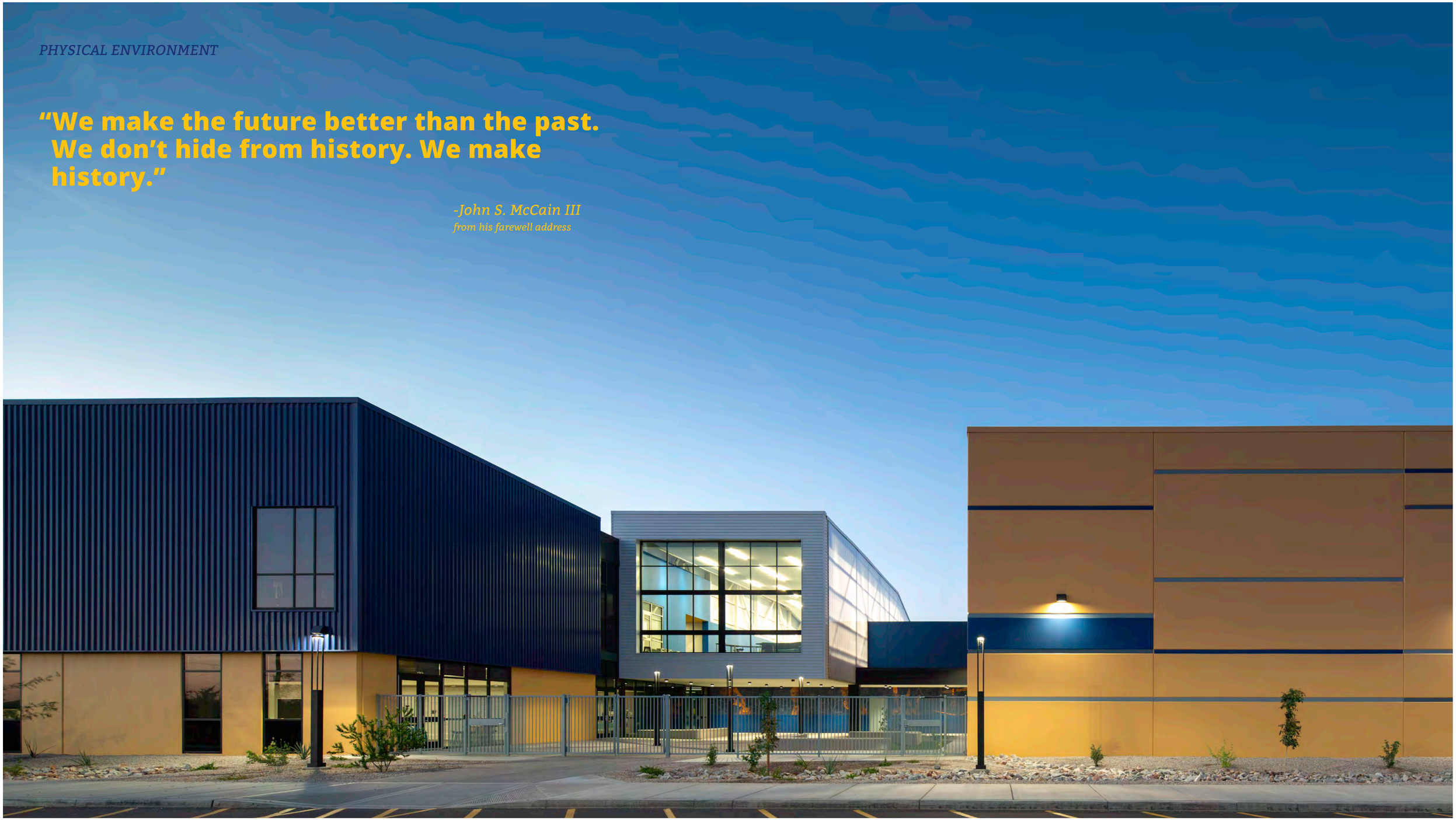
1. Entry Lobby
2. Administration
3. Community Hub
4. Food Court Commons
5. Playground
6. Platform
7. Amphitheater
8. Music/Band
9. Gym
10. Learning Stairs
11. Flex Art
12. Maker Space
13. Multi-Use Space
14. Digital Commons
15. Kindergarten Playground
16. Breakout Space
17. Science Lab
18. K-2 Learning Studios
19. 3-5 Learning Studios
20. 6-8 Learning Studio

“We are three-hundred-and-twenty-five million opinionated, vociferous individuals… but we have always had so much more in common with each other than in disagreement.”

-John S. McCain III
from his farewell address

“We make the future better than the past. We don’t hide from history. We make history.”

-John S. McCain III
from his farewell address



PHYSICAL ENVIRONMENT: UBIQUITOUS LEARNING

The interior graphics presented a unique opportunity to fulfill multiple design goals in the project. The design team set out to create opportunities for learning that were layered and invited exploration. Throughout this exercise the design team was careful to avoid being too obvious or literal while embodying the ideals of computational thinking and maintaining the spirit of John S. McCain.

This process was carried out through a series of co-creation exercises between the architectural graphic design team and the school district leadership. The result was a series of images that embedded both written speeches and hidden computational methods into a graphic mosaic that assembled an elongated scroll that could be unraveled on the walls of key spaces such as the main wall of the sky bridge as well as throughout the learning communities.

My fellow Americans, whom I have gratefully served for sixty years, and especially my fellow Arizonans,

Thank you for the privilege of serving you and for the rewarding life that service in uniform and in public office has allowed me to lead. I have tried to serve our country honorably. I have made mistakes, but I hope my love for America will be weighed favorably against them.

I have often observed that I am the luckiest person on earth. I feel that way even now as I prepare for the end of my life. I have loved my life, all of it. I have had experiences, adventures and friendships enough for ten satisfying lives, and I am so thankful. Like most people, I have regrets. But I would not trade a day of my life, in good or bad times, for the best day of anyone else's.

I owe that satisfaction to the love of my family. No man ever had a more loving wife or children he was prouder of than I am of mine. And I owe it to America. To be connected to America's causes — liberty, equal justice, respect for the dignity of all people — brings happiness more sublime than life's fleeting pleasures. Our identities and sense of worth are not circumscribed but enlarged by serving good causes bigger than ourselves.

'Fellow Americans' — that association has meant more to me than any other. I lived and died a proud American. We are citizens of the world's greatest republic, a nation of ideals, not blood and soil. We are blessed and are a blessing to humanity when we uphold and advance those ideals at home and in the world. We have helped liberate more people from tyranny and poverty than ever before in history. We have acquired great wealth and power in the process.

We weaken our greatness when we confuse our patriotism with tribal rivalries that have

BINARY CODE

A	01000001
B	01000010
C	01000011
D	01000100
E	01000101
F	01000110
G	01000111
H	01001000
I	01001001
J	01001010
K	01001011

Base 8

WALL PANEL MODULE

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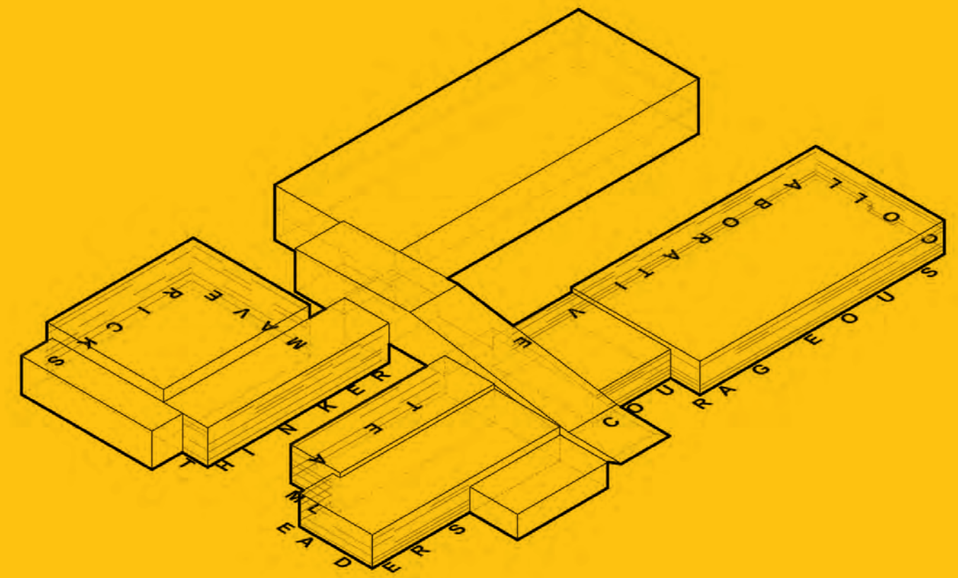
8	

8 Lines

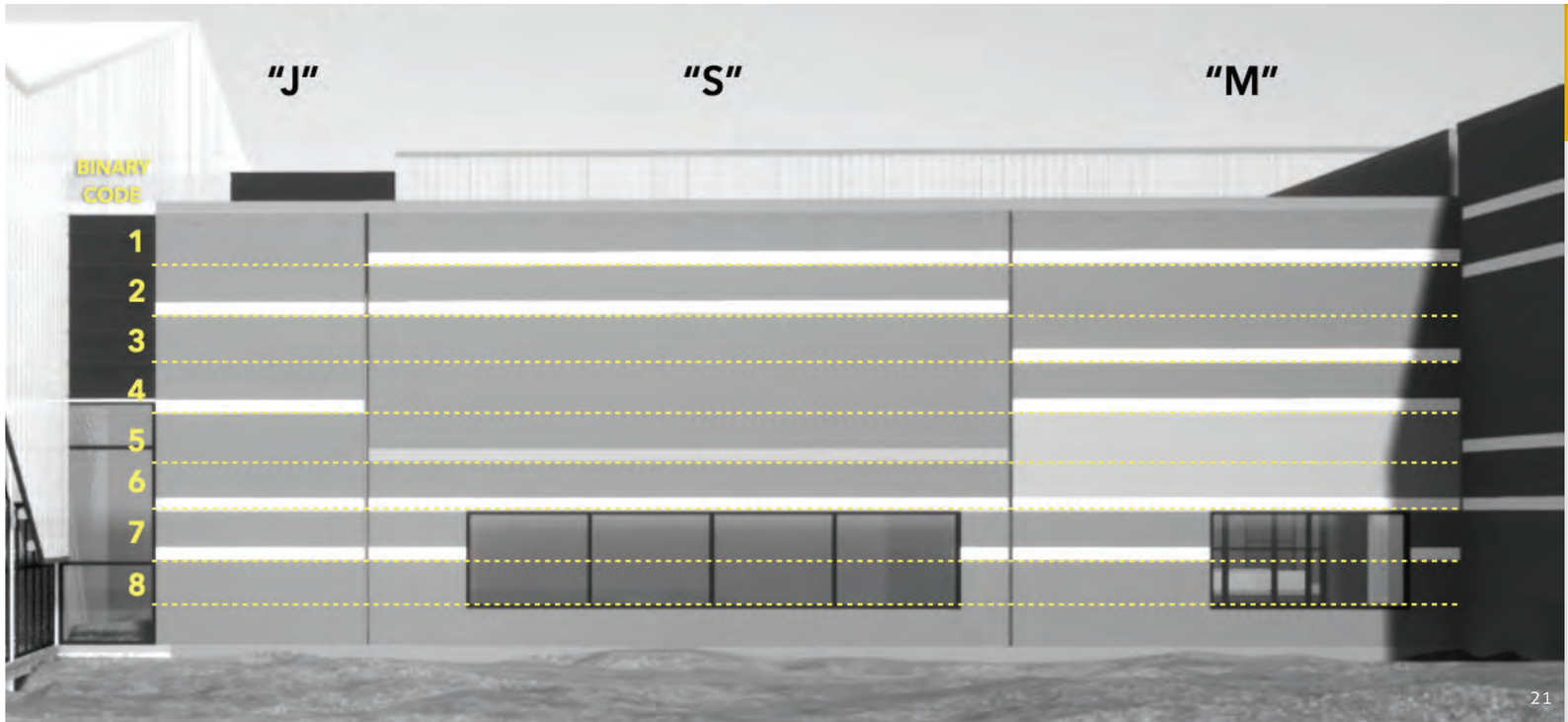
Lines are activated to represent 1 or deactivated to represent 0

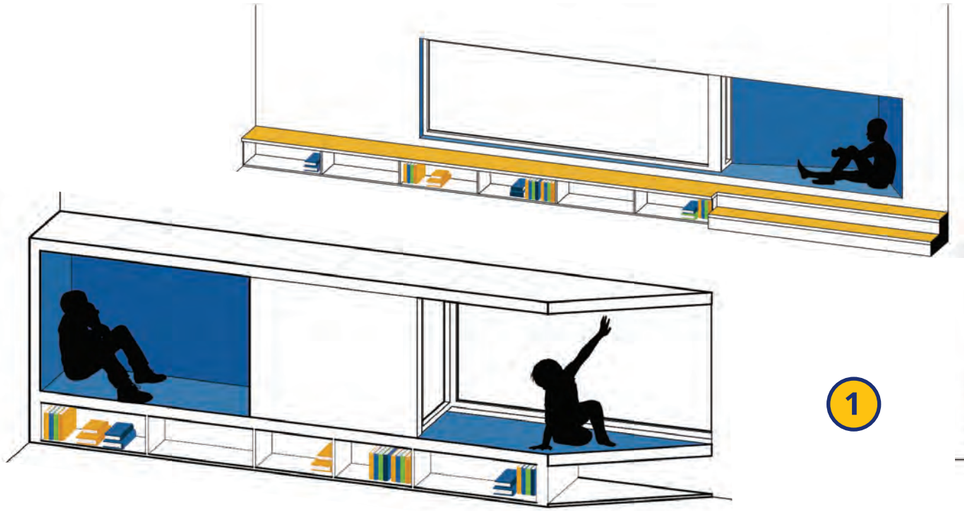


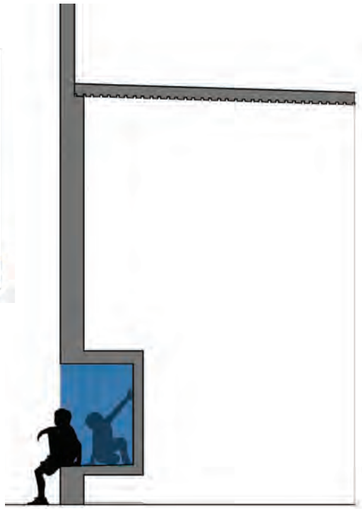
Placement around the perimeter

PHYSICAL ENVIRONMENT: UBIQUITOUS LEARNING

JSM III embraces and embeds the life, work, and ethics of the late senator John S. McCain III into the fabric of the built environment. Courageous, collaborative, thinkers, team leaders — these are character traits that are forever coded into the concrete walls comprising the school. Reveals and the absence of reveals in each tilt panel represent 0s and 1s, creating a binary code spelling out each trait. The students who inhabit these spaces are, in turn, sculpted by the words and the memory of the late Senator, which are integrated into the school walls.







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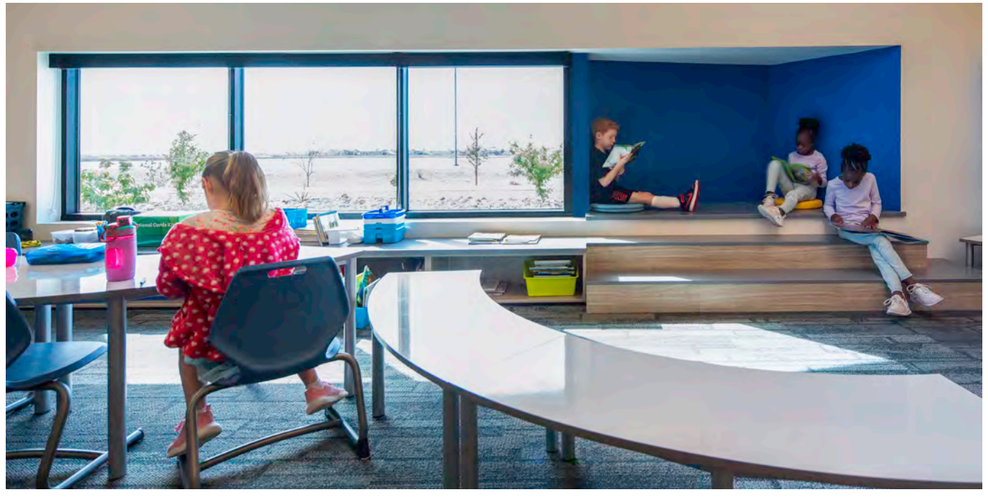
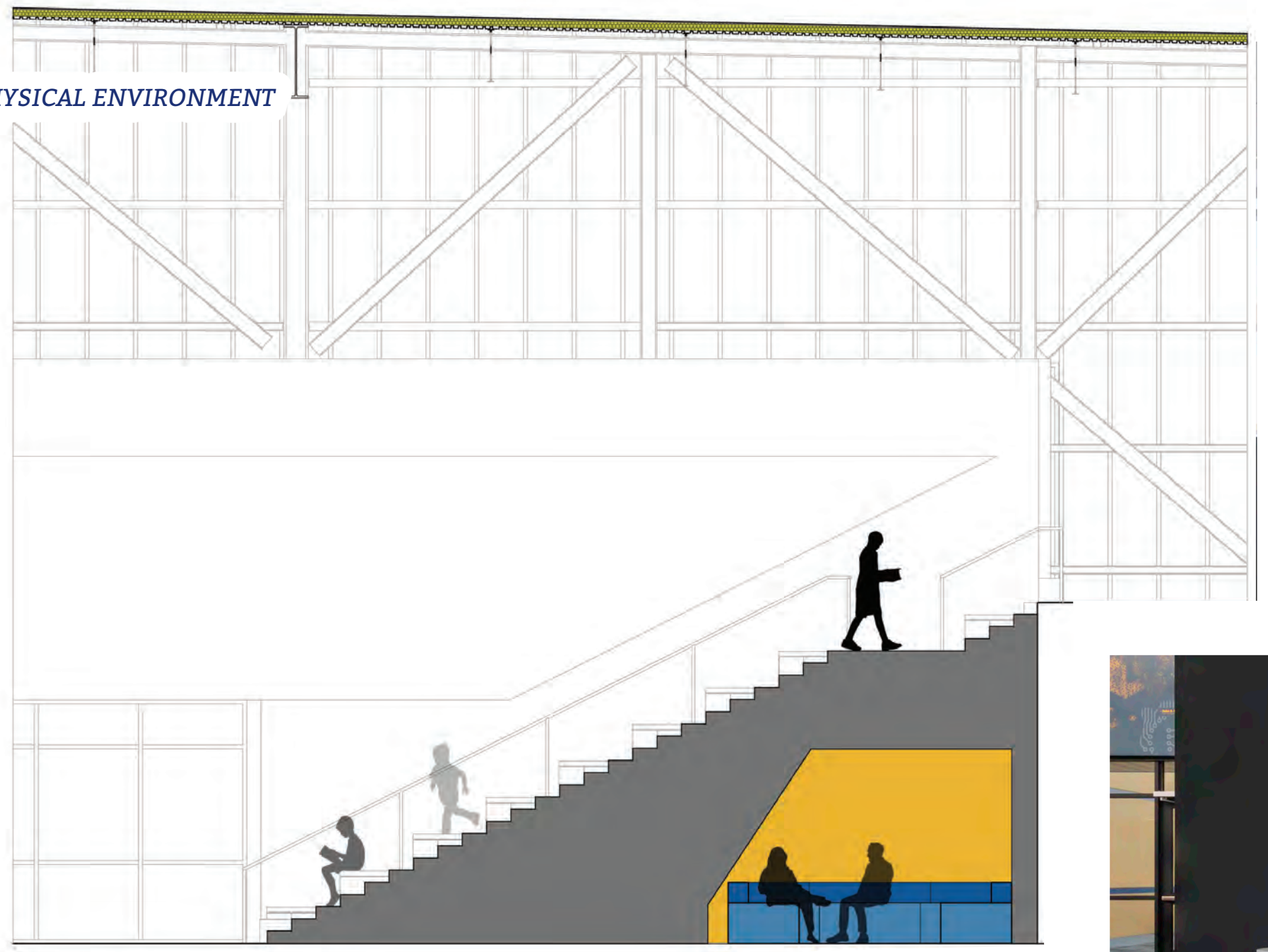
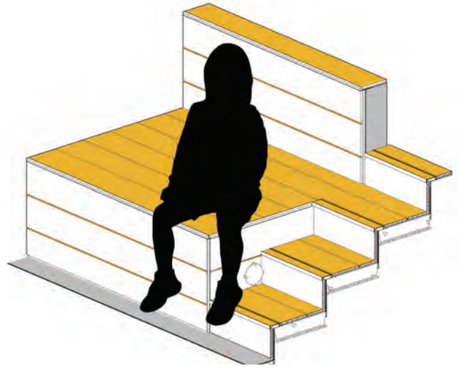


In a school that embraces a high level of openness and transparency, the design team was careful to provide "refuge" spaces for children that need a bit of recluse. The Activity Cockpit was one such idea borne out of this mindset. Each K-2 learning studio featured "reading cockpits" (1) where a young learner can take refuge with a book. "Play cockpits" were similarly placed along outdoor play areas where kids can seek some shelter during play (2)

JSM III would be a truly learner centric environment. The design team helped the steering committee visualize scenarios where a traditional mindset might erode learner centrism. One major shift towards learner needs is that JSM III DOES NOT have a Media Center. Traditional media center functions such as reading technology access and collaboration were all brought to where kids are - the learning communities. Each learning community had a reading commons, that served children in different ways, and provided access to books and reading as kids engaged in their day to day learning. This space has high visibility, ample natural light (3), and at the same time had great acoustics not to mention comfortable seating, cushions and mats where kids can spread out with a book.

3





ENVIRONMENT

The design for John S. McCain III is grounded in Maslow's hierarchy of needs and focuses on creating a high-performance learning environment that is considered foundational to developing self-actualized learners.

Daylighting is a big area of emphasis with every occupied space provided with ample daylight with glare control, and full spectrum LED lighting used as a minimal supplement. The facility consequently uses 40% less energy for lighting end use than the minimum threshold for code.

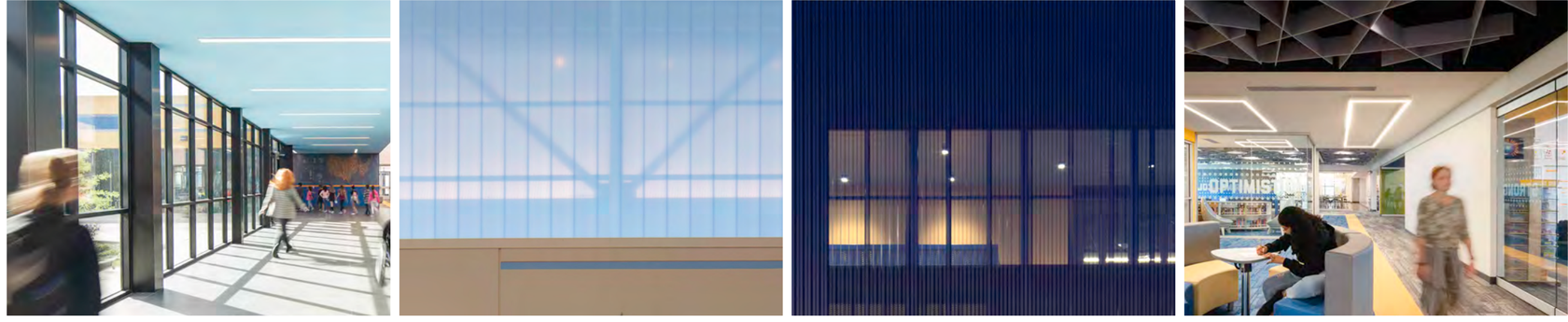
The facility is also designed with the most efficient heating and ventilation system possible within district standards. High SEER packaged units and the use of energy recovery ventilators helps reduce HVAC energy end use by 18% compared to a code baseline building.

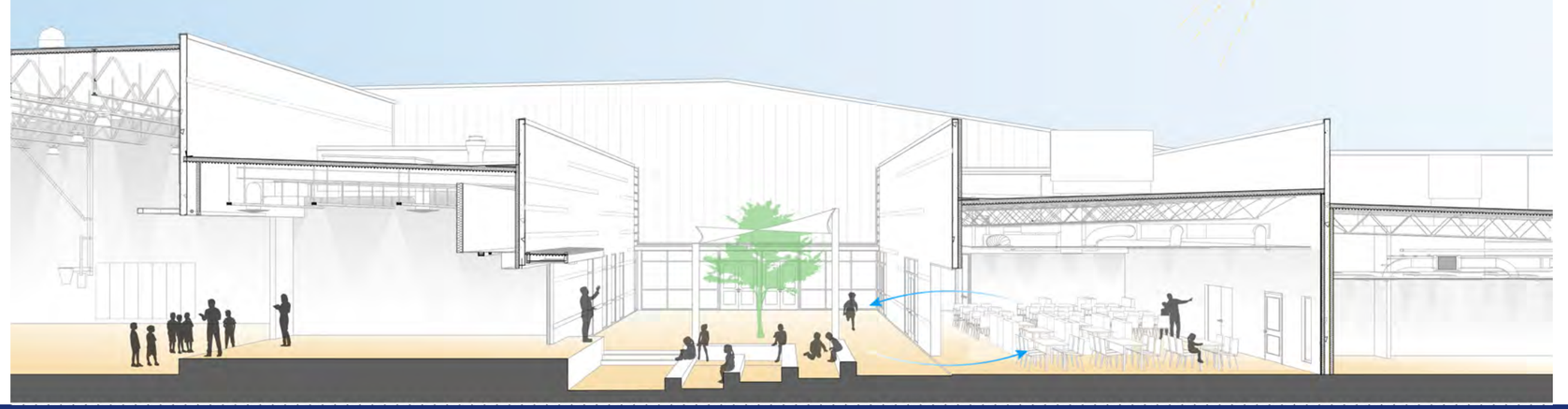
WELLNESS

Occupant wellness is a major consideration in the design of John S. McCain III Elementary. Biophilic design is one approach that has been shown to help normalize occupant physiology, improve cognition, short- and long-term memory, retention, and above all occupant engagement and belonging. John S. McCain III Elementary School has embedded several biophilic patterns:

- Visual Connection to nature
- Non-Rhythmic Sensory Stimuli
- Dynamic and Diffuse Light
- Complexity and Order
- Thermal & Air Flow Variability
- Prospect
- Refuge
- Mystery
- Risk/Peril
- Awe

The spatial/experiential rendition of these patterns through various design strategies helps cater to overall occupant wellness while creating a solid foundation for higher-order learning.





36 kBTU/SF
ENERGY USE INTENSITY

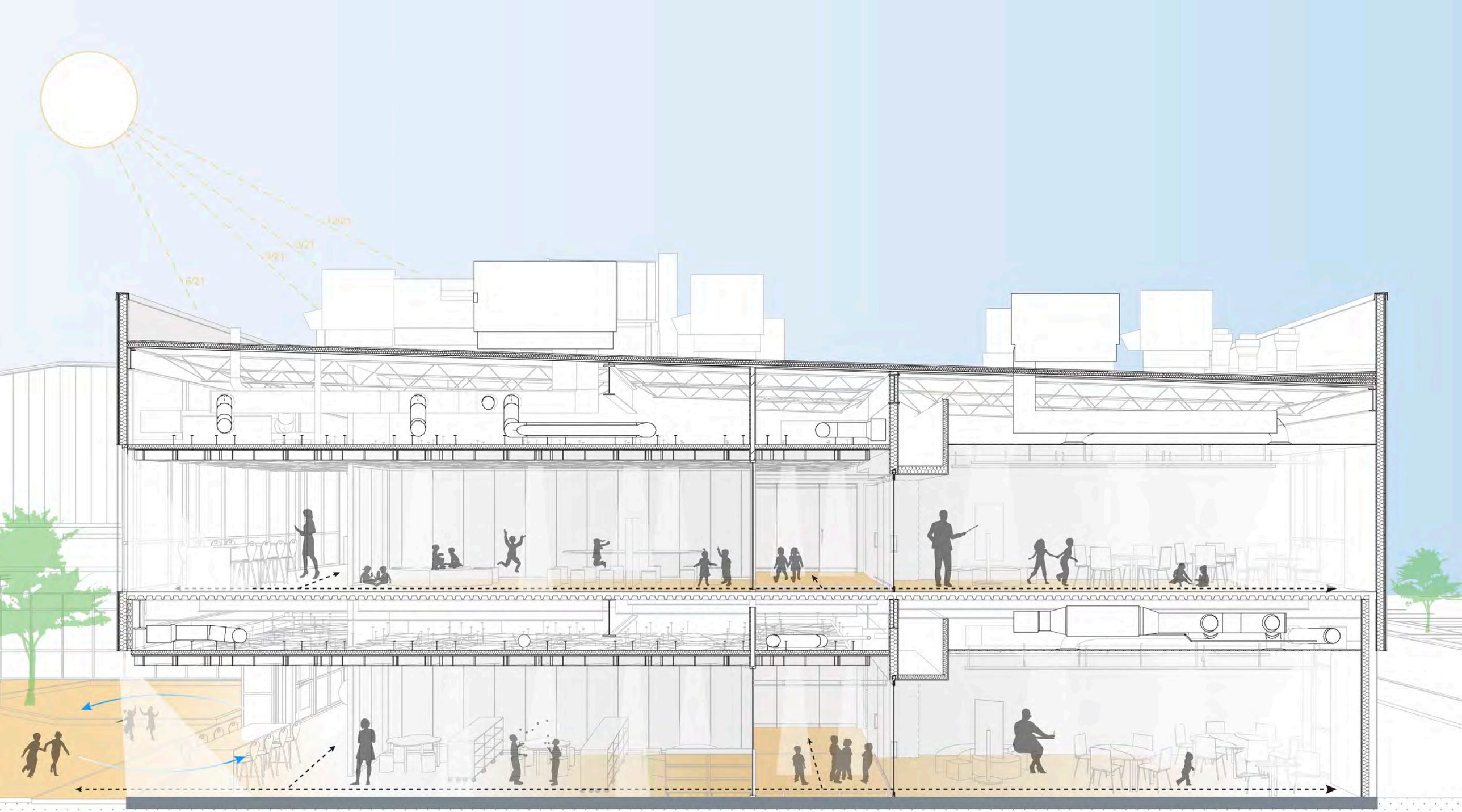
18%
BETTER THAN COOLING BASELINE

17%
BETTER THAN IECC 2018 ENERGY BASELINE

40%
BETTER THAN LIGHTING BASELINE

98%
DAY LIT SPACES

10
BIOPHILIC PATTERNS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Post-Occupancy Evaluation

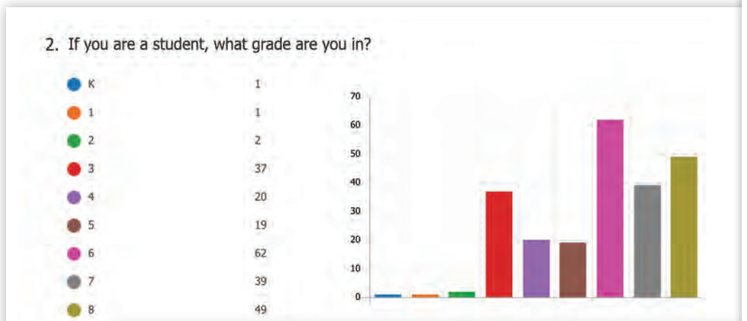
John S. McCain III Elementary has been operational for a whole school year and the district has had a chance to observe and measure the efficacy of the learning environment during this time.

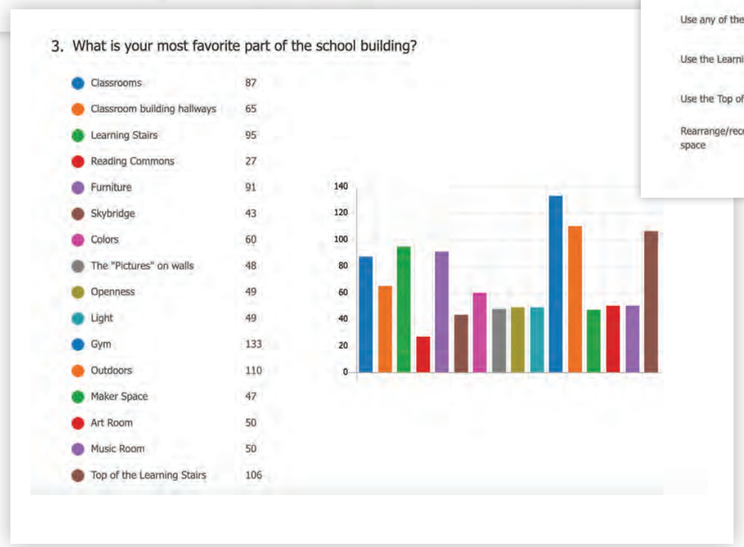
The design firm in coordination with the district/school leadership developed a post occupancy evaluation survey to measure the efficacy of various infrastructures and the school is using the data to make adjustments to their operations based on these results.

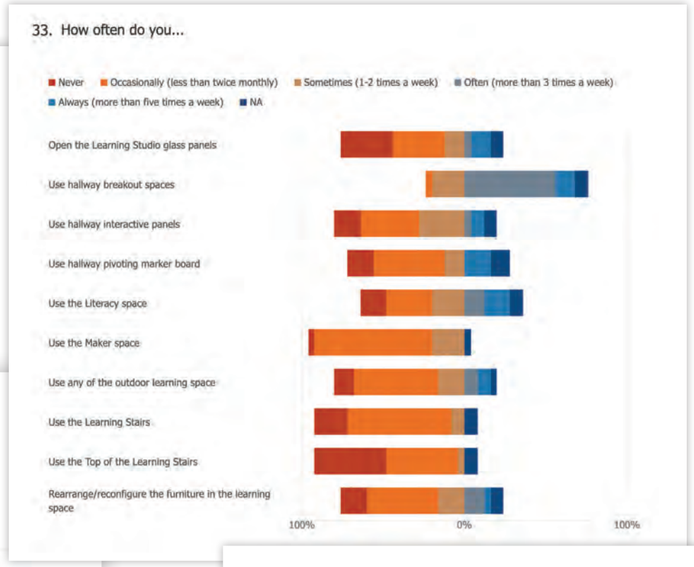
During design, the district developed a plan and had a cadre of trained teachers to mitigate any obstacles to achieving the vision of the learning environment. Teachers and students were trained on collaborative best practices to ensure the spaces were utilized as designed and intended. Upon occupancy, teachers have been routinely observed utilizing non-traditional learning spaces throughout the building in spaces including the community hub, learning stairs, and outdoor areas where structured, high energy, and collaborative student experiences are the norm.

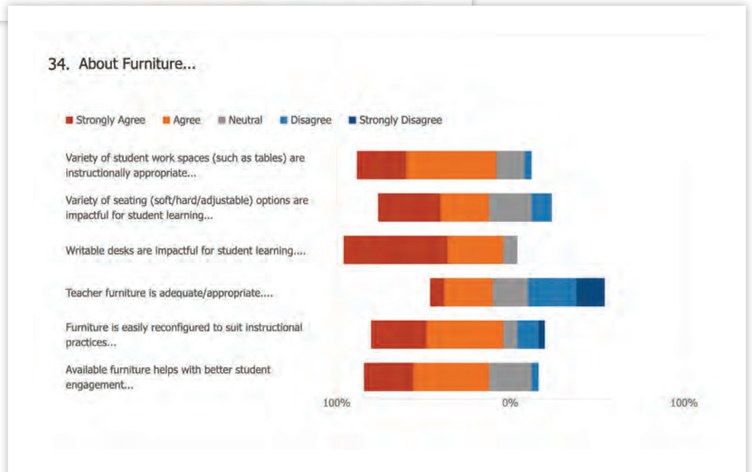
Another example of a successful outcome is the continuous, unique celebration of learning that is on display at John S. McCain III through building design. With community centered spaces and glass, operable partitions in place of solid walls, one can't help but see, everywhere, the number one passion of the school.

Active student learning is literally visible in every space at every moment that the building is occupied, and the product of "learning energy" is palpable, motivational, and supportive of the intellectual risks and challenges our students face every day.









255
RESPONDENTS

8.9/10
AVERAGE RATING GIVEN TO SCHOOL BY RESPONDENTS

>85%
FEEL THE SCHOOL IS SAFE, COMFORTABLE AND INNOVATIVE

"While we envisioned a dynamic environment throughout the process, we were amazed with the inclusive and immersive experience of learning generated at JSM."

-Dr. Kristi Wilson,
Superintendent

John S McCain III Elementary
MAVERICKS

John S. McCain III
ELEMENTARY SCHOOL