ISSUE THREE

R+B

RESEARCH AND
BENCHMARKING

Planting seeds

Enriching environments,
lasting partnerships,
nurturing success

Stantec

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Planting seeds

R+B is about planting seeds – for the next project, the next big idea, the next generation.

In this issue, we look at how research on play-based and sensory learning informs our design for young learners. We explore how partnerships are essential to connecting career and technical education to today's dynamic job market. We evaluate our research with our partners at the Lawrence Technological University and the Interior Design Educator's Council on mentorship in the new hybrid work environment. We explain the need, the power and potential of a new benchmarking tool we have developed that will help us and our clients make more informed decisions.

WHY RESEARCH+ BENCHMARKING
We care about the work we do, and we want to make it better. Constantly refining our projects is one way to grow. Beyond that, we can revisit the work we've done and see how successful it has been. Simultaneously, we look forward to understanding what's changing for our clients so that we can help them anticipate those changes. R+B is about looking beyond our day-to-day design work to find areas where growth is possible.

PROBLEM SOLVING
We're problem solvers. We design solutions. The outcome is often a building, but not always. We partner with our clients to help solve their problems, so understanding their problems is the first step. It's important that we're in touch with what makes our clients tick. We need to know what thorns are in their sides so that our conversations with them are more meaningful, and the results more impactful.

Springfield Literacy Centre   *Butler, Pennsylvania*

Thus, R+B is about keeping pace with a changing world. In the education sector, it's about understanding how pedagogy is changing and will continue to change and how that reshapes the needs of the educators with whom we collaborate.

BRINGING IN IDEAS FROM ELSEWHERE
As a global firm, we have certain advantages when it comes to forecasting trends and offering the latest solutions. We can pull from the ideas and solutions our hospitality studio or healthcare group is offering; our Career and Technical Education designers draw from actual workplace, manufacturing, and aerospace facilities designed by team members only a phone call away. We have dozens of industries under our umbrella. Our practitioners engage in an ongoing conversation about approaches and solutions.

By cultivating the seeds of good practice internally, with work like we're doing in R+B and in actual design, we're able to help our clients grow.

Stantec R+B Program Leaders

Dream teams

Building career and technical education programs through partnerships

BY MEREDITH WATASSEK AND THEO PAPPAS

Sterling Aviation Early College High School   *Houston, TX*

Traditional education in which a teacher lectures and a student takes notes was once the standard for cultivating knowledge. High school age students have long wondered how what they're tested on can be applied in the adult world.

They needn't wonder anymore. Educators and institutions are keen to connect in-school learning with the dynamic real world that students will encounter when they graduate. While experiences are shaped by the culture, environment and people of each place, school districts are looking for ways to enrich the in-school experience, to connect it to that dynamic changing world, and give students a sense that what they're learning has relevance and value. They can do this by exploring meaningful partnerships with businesses in their communities. **>**

By creating sustainable and mutually beneficial partnerships with local business entities, school districts provide for their students' education in a non-traditional manner. These educational experiences and benefits can include on-the-job work experience, access to mentorship, opportunities to explore a variety of career fields, and direct connection to professionals who provide guidance on next steps. In turn, businesses partnering up with schools reap their own rewards through work-force development, building a presence in the community, and opening the door to business development opportunities of which they'd otherwise be unaware.

Partnerships come in many different forms, but we can usually group them in one or more of four categories: programmatic planning; student experiences; funding; and human capital development. Districts must evaluate which partnerships are appropriate for their situation.

Programmatic planning
One of the challenges we face in designing Career and Technical Education (CTE) facilities is anticipating what programs will be in demand in the near and long-term future. Workforce information allows designers and districts to provide environments where students gain a competitive advantage by accessing skills needed for the future.

While developing Technology Exploration

Career Center – West in Lewisville ISD, we felt it was imperative that businesses have a seat at the table to advise the district on what careers are relevant and needed.

"Each year, as we plan our CTE offerings, we look at the careers that will be in demand when our current sixth graders graduate," CTE Director Adrian Moreno said.

Lewisville ISD relies heavily on its CTE advisory board to provide information regarding program needs. Additionally, industry experts play a key role in identifying equipment, technologies, and work approach that is required to support the educational program. Integrated teams of architects, education **>**

✎ **Willis High School Career & Technology**
Willis, TX

experts, and industry experts were able to solve challenges in real time creating professional spaces that emulate the environments these students will be expected to operate within.

Teachers, administrators, business partners and the integrated design team worked together to create a strategic plan for unique solutions and engaging learning environments at TECC - West.

Student experience
Survey data from national non-profit student perception company YouthTruth indicates that student engagement is reflected in a combination of pride in one's schoolwork, experiencing

relevant lessons, and enjoying coming to school.

But its surveys show that only 48% of 12th graders feel that what they learn in class helps them outside of school. This is where CTE can bridge the gap.

CTE coursework has the power to make learning relevant by showing students how the skills they're learning—in math, science, reading, writing, or social studies—apply to today's industries and job market. If they find value in what they are learning, students are more likely to be engaged and, hence, more likely to find success. **>**

Hobbs Regional CTE Center
Hobbs, NM

"I had no idea what I wanted to do until I had the opportunity to work in the TRIO lab at the James Reese Career and Technical Center in Fort Bend," said D. Harrison, a 2021 Fort Bend ISD graduate. *"I am so much further along in my program than peers my age."*

Hobbs Regional CTE Center   *Hobbs, NM*

Fort Bend ISD took this to heart as they started developing partnerships. TRIO Electric, LTD. was losing qualified electricians to attrition and retirement and recognized the need to build a junior-level workforce. Fort Bend ISD worked with TRIO Electric to create an instructional model that ensured students would have real-world experiences and training necessary to be successful. Students participate in a three-part learning experience—academic content, virtual reality learning, and hands-on learning lab. TRIO Electric ensures that students obtain their industry certification through academic learning. One-third of their time is then spent in a virtual reality simulation learning experience – which is tailored to a tech-savvy current generation. The remainder of students' time is spent in the mock construction lab where learners pull wire and install multiple electrical units. Students walk out of the program with one-year of their state electrical apprenticeship program complete. **>**

Funding

CTE programs are costly to install, generally due to the expense of specialized equipment that is needed. Partnerships can provide critical funding to offset the expense the districts incur in providing opportunities. The community in Hobbs, New Mexico pushed through this challenge by developing early consensus and support for the development of a CTE center for Hobbs Municipal Schools. During the community engagement process, the participation of local businesses, government agencies, institutions and post-secondary education exceeded expectations.

With Hobbs Municipal Schools Superintendent, TJ Parks, leading the way, the project secured two major benefactors and partners for the project: the JF Maddox Foundation and the Permian Strategic Partnership, each of which committed $10 million to the project. Due to this early support, Hobbs Municipal Schools easily passed a $30 million bond for the project. The mayor quickly recognized the importance of the project for the students and community as a whole and led the charge in getting many local businesses to support the operational budgets through funding, donation of equipment, and provision of teaching staff.

Human capital development

For many districts, securing and training qualified personnel to teach in specialized programs can sometimes be the biggest hurdle in developing CTE educational offerings. Teachers can make or break the student experience and a program. Both the Hobbs CTECH and FBISD James Reese Career and Technical Center programs realized this need early on. Stantec had numerous conversations with project stakeholders during the design phase about what type of teachers it would take to make specialized programs successful.

In both instances, the districts rely heavily on the industry partners to **>**

James Reese Career & Technical Center   *Fort Bend, TX*

provide on-going training for teachers and even sometimes for direct student instruction. In year one of the Fort Bend ISD/TRIO Electric partnership, the instructor was employed by TRIO Electric and was on school district staff as a contract employee. Subsequently, many business partners at Hobbs and Fort Bend have provided summer externships for teachers. By participating in this type of training, teachers stay current and up to date on current industry trends.

The world of education is everchanging, and it is critical that educators provide thriving programs that engage students and serve them with relevant and useful skills. Strategic partnerships provide this opportunity. ■

Frisco CTE Center   *Frisco, TX*

MEREDITH WATASSEK

With more than two decades of experience in education, Houston-based planner Meredith Watassek leads the Innovative Learning Environments Research + Benchmarking group.

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S I G N A L
B O O S T

How
design
can
promote mentorship in
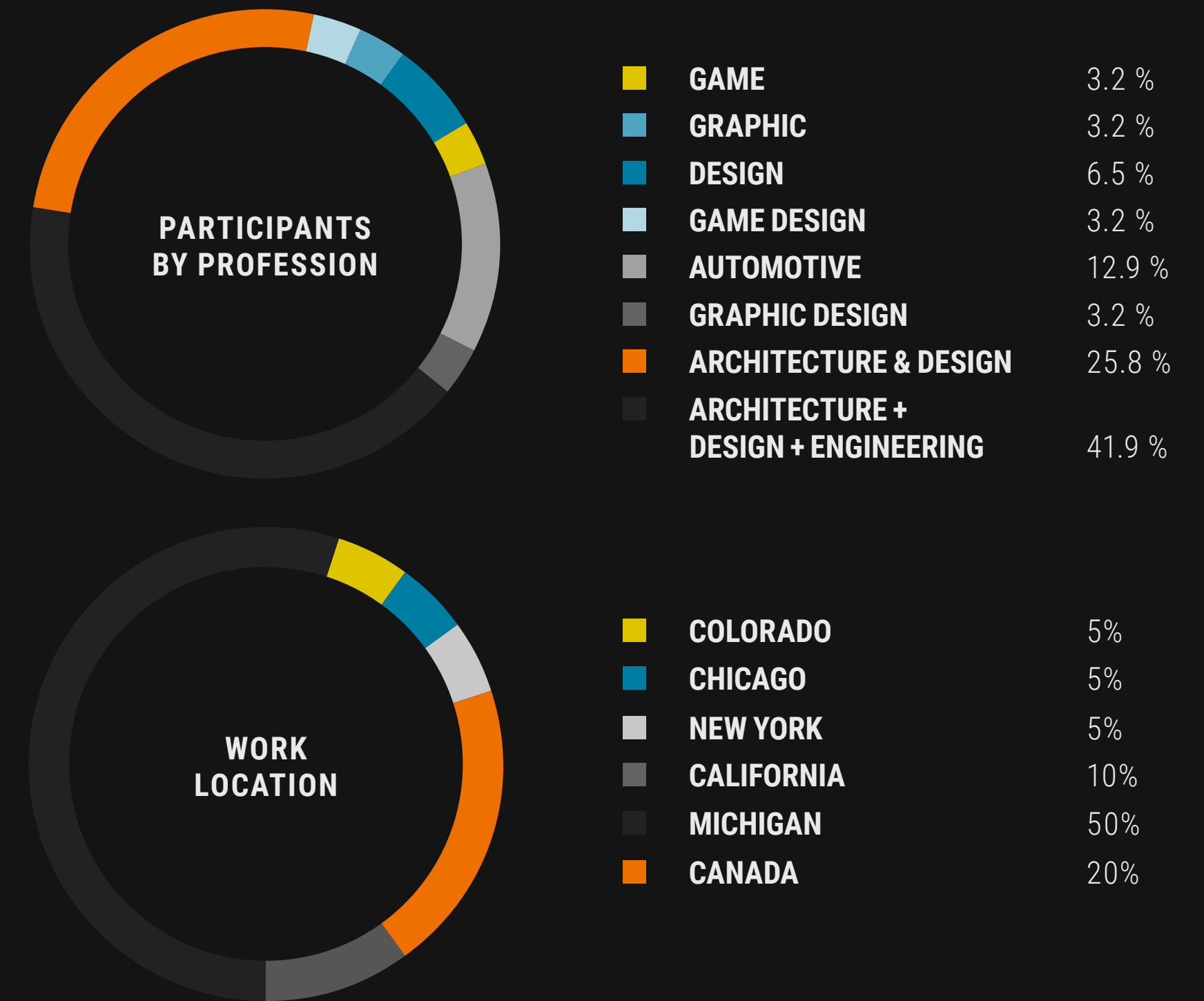hybrid work
environments

BY GWEN MORGAN

Coming out of the pandemic, we began to hear that the future of work would be "hybrid." Exactly what this meant, however, was open to interpretation. Once we have the option to work or learn remotely or in person, what is the preferred proportion of one to the other? To this day companies around the world struggle to find the right balance, and the factors playing into their equation are numerous. They're considering finance, real estate, technology, communication, and mentorship in devising their new standards for hybrid work. This last piece, mentorship, was of particular interest to our design team, and we partnered with Lawrence Technological University and the Interior Design Educator's Council (IDEC) to study the question of how the built environment can help support mentorship in hybrid environments for the workplace and beyond.

Lawrence Technological University is a private university in Southfield, Michigan, with nationally recognized programs in architecture, interior design, and engineering. IDEC is a recognized authority in interior design education, working toward the advancement and recognition of industry education, scholarship, and service. We partnered with project initiators Jenna Walker and Philip Plowright of the LTU Department of Design and students from College of Architecture & Design on an investigation of hybrid work and mentorship.

We began our investigation with a series of interviews of mentors, interns, recent graduates, and emerging design professionals from creative professional firms in architecture, game design, graphic design, and transportation from across North America. We interviewed 15 mentors and five emerging designers between November 2021 and September 2022. Our team asked questions about the work environment, the changes seen during the pandemic, technology used to support remote work, reflections on onboarding new employees during this time, and engagement, connection, and mentorship amongst employees. **>**

RESEARCH PARTICIPANT RESULTS

PARTICIPANTS BY PROFESSION

■	GAME	3.2 %
■	GRAPHIC	3.2 %
■	DESIGN	6.5 %
■	GAME DESIGN	3.2 %
■	AUTOMOTIVE	12.9 %
■	GRAPHIC DESIGN	3.2 %
■	ARCHITECTURE & DESIGN	25.8 %
■	ARCHITECTURE + DESIGN + ENGINEERING	41.9 %

WORK LOCATION

■	COLORADO	5%
■	CHICAGO	5%
■	NEW YORK	5%
■	CALIFORNIA	10%
■	MICHIGAN	50%
■	CANADA	20%

Our team formally analyzed the interview results to draw out recurring themes related to mentorship and growth of professional experience, particularly the way mentorship takes place in tacit (non-structured) ways. Some of the topics that frequently came up included:

- The need for ad hoc and causal access to knowledge
- The traditional desk or workstation as a place for engagement
- The important of immediacy for engagement and response
- Social interactions being critical to a sense of belonging
- The value of impromptu meetings
- Body language and facial expression in communication

From these, our researchers developed several insights: **Casual and quick interactions are critical for project and professional development.** Immediate and efficient interactions happened most successfully at desks or other fixed sources of information (a materials library, for example). These fixed spaces were referenced much more often than flexible spaces like conference rooms or breakout spaces. With this in mind, there are significant design implications for us to explore in light of real estate trends toward space reduction and unassigned desks.

Asynchronous communication can be an issue in remote work. If an intern has a question while working from home, they can send a message to their mentor for help, but the mentor may or may not be able to respond immediately. Mentors tended to comment that this was an advantage; they could come back to the question later. Emerging designers were more likely to feel that they were "stuck" until such time as the mentor could consider their question.

Remote work requires more formal, scheduled meetings, since fewer conversations happen spontaneously, typically. This tends to drive a very scheduled day, which causes people to feel more **>**

- Small, dedicated workstations for each person, grouped by discipline to encourage cohesion and in-person resources even if some members are absent

- Strategic angling and triangulation of individual desks

- Creative furniture solutions to flexibly shift between open, collaborative activities and private calls

- Flexible personalization options for desks such as a kit of parts of modular attachments and digital customization choices

GWEN MORGAN

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OTHER CONTRIBUTORS

Philip D. Plowright, Ph.D, Chair of the Department of Design and Professor of Design Theory and Architectural Design for Lawrence Technological University's (LTU) College of Architecture, and Jenna Walker, an Associate Professor of Practice and the Director of Interior Design for the College of Architecture at LTU, both contributed to the research provided for this article.

task-oriented about their work, and less collaborative. It also put significant pressure on their time.

Remote work is easier for more experienced professionals, but the experienced professionals are in demand to mentor develop emerging designers. More senior professionals may feel that their work can be done remotely, but emerging designers miss out on mentorship when they lose physical access to their experienced coworkers. Accomplishing tasks might be easier for professionals working remotely, but offering mentorship is not.

Formulating design solutions based on insights
So, what do these insights mean for design? In November 2022, we gathered a team of students, educators, and professional interior designers to look at these insights and propose a design solution that responds to them. We split into three teams to study a floor plan for a small office to house 39 design professionals. And we thought about how the space planning might better support mentorship in the hybrid workplace.

Together we brainstormed different spatial arrangements and furniture typologies including:

What does all this mean for the design of educational spaces?
Today, workplace design and educational design tend to influence one another. Mentorship is critical to both. Both schools and workplaces seek the best way to support their people in a hybrid remote and in-person situation. Educational environments that can successfully foster student/educator mentorship will better equip students with the skills to appreciate a mentor/employee mentorship when they encounter the real-world office and remote environments after graduation. ■

BUILDING BETTER
BENCHMARKING

Giving designers the right tools to harness the power of data

BY TERRY D'AMORE AND DAVID MARTIN

SEEING A NEED

Access to meaningful data enables our teams to be more knowledgeable heading into a project and arms our clients with information to support decisions about building performance, user wellness, space efficiencies, and more.

Until recently, given a general lack of ease in data gathering and reporting about space typologies and building systems, our project teams deemed previous benchmarking efforts cumbersome, or simply inaccessible. Because this knowledge is so specialized, datasets from research and benchmarking (R+B) had been more difficult to access across our large design practice.

To make R+B more accessible, Stantec practice leaders and our firm's Buildings Digital Practice team explored creating a dedicated tool to surface the information through multitudes of filters, offering options to make data more digestible or presentable, depending on the user, and ultimately empower anyone using the **>**

FACILITIES INVENTORY AND CLASSIFICATION MANUAL SPACE TYPES

SPACE	% TOTAL ROOM AREA	ROOM AREA
Assignable Area	**62.90%**	**3,219,981**
Unclassified Facilities	0.22%	11,092
Classroom Facilities	7.38%	377,902
Laboratory Facilities	31.05%	1,589,522
Office Facilities	16.76%	858,039
Study Facilities	0.89%	45,426
Special Use Facilities	2.93%	149,759
General Use Facilities	3.04%	155,676
Support Facilities	0.64%	32,565
Nonassignable Area	**37.10%**	**1,899,296**
Circulation Area	22.67%	1,160,609
Building Service Area	3.39%	173,382
Mechanical Area	11.04%	565,305
Total	**100.00%**	**5,119,277**

information to more easily examine possible solutions and create better spaces. The resulting tool would be a timesaver and a marketing asset; its user friendliness allowing non-specialized team members to pull and share data and shine a brighter light on Stantec thought leadership throughout our industry.

Beyond that, we wanted to be able to provide meaningful, digestible data to our clients as they explore space utilization and programmatic needs. A great example of such is provided below. But first, here's how it all came together.

DEVELOPING A TOOL

In 2020, Stantec's Buildings Digital Practice engaged leaders and experts from relative sectors to provide input on a tool that would serve our Science +

Technology (S+T) group, which includes designers and engineers serving several sub-sectors, from academic and medical research to pharmaceutical and biotechnology manufacturing. Before proposing a solution, we held numerous focus groups and analyzed projects, from higher education to commercial laboratories to pilot plants. We collaborated with the company's Education sector leaders to ensure that the system we developed for S+T could also address the Education sector's needs. That way the captured data could be used to compare different project types holistically.

By looking at past benchmarking efforts for inspiration and precedents, we identified what previously worked well and what didn't work well. In recent efforts,
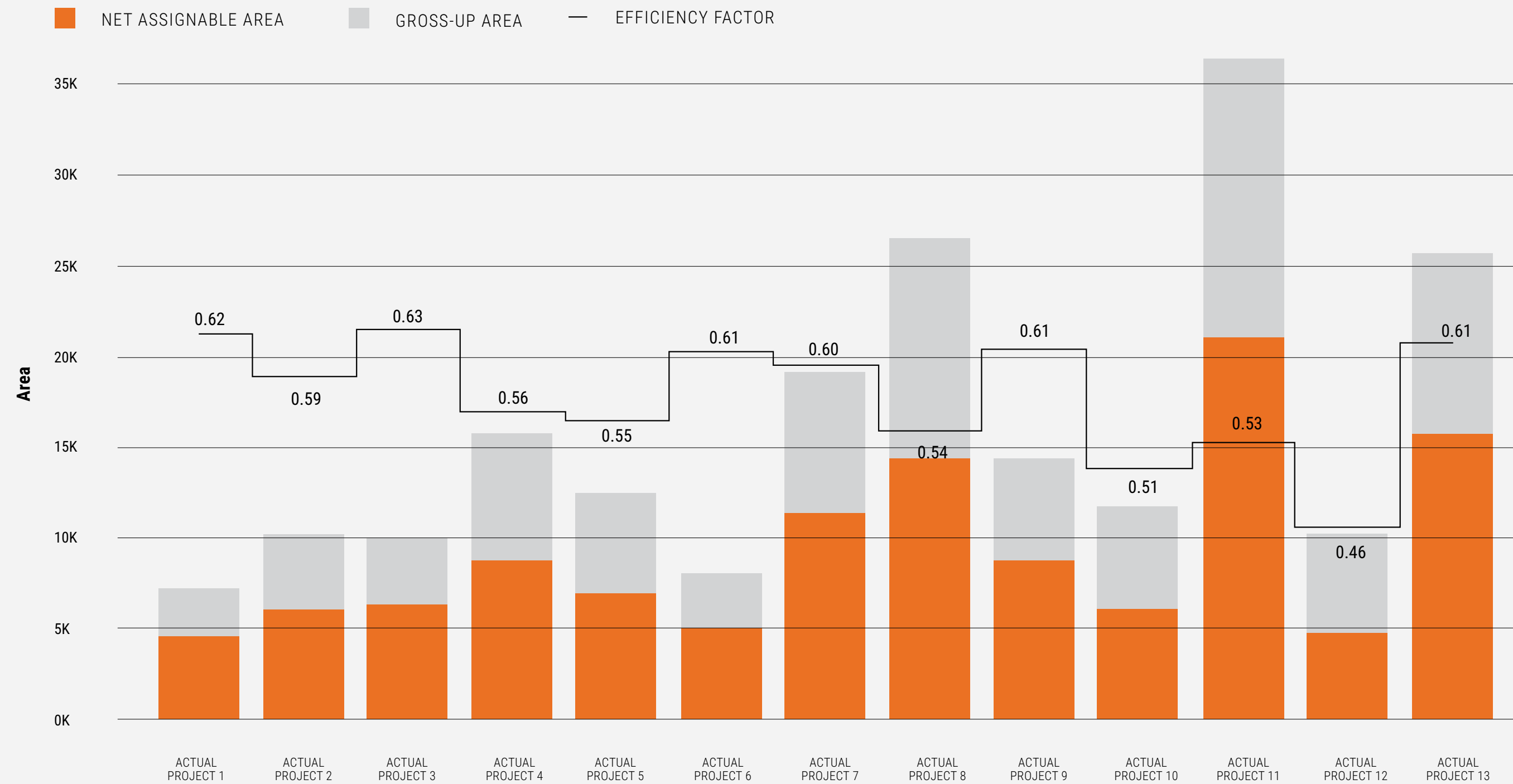
only a handful of people had access to the data; a high level of expertise and training were required to use that tool, and data visualizations were limited. These were drivers that fundamentally shaped the way we approached the solution.

Additionally, the focus groups identified crucial new data points to collect, including:

- PROJECT MANAGEMENT DATA SUCH AS PROJECT COSTS AND FEES, INTERNAL STAFFING, AND CONSULTANTS

- DETAILED CLIENT DATA TO MAKE IT EASIER TO FIND PEER INSTITUTIONS

- REVIT MODEL DATA INCLUDING MORE DETAILED INFORMATION ABOUT EACH ROOM IN A BUILDING, ITS SPACE AND DEPARTMENT TYPE CLASSIFICATION, RESEARCHER CAPACITY, AND HAZARD CONTAINMENT >

Here's one way the reporting tool can present our benchmarking outputs.
This example was generated for a client in the United Kingdom, interested in seeing how spaces in comparable research facilities were allocated.

Legend: NET ASSIGNABLE AREA | GROSS-UP AREA | — EFFICIENCY FACTOR

Y-axis: Area (0K, 5K, 10K, 15K, 20K, 25K, 30K, 35K)

Efficiency factors: 0.62, 0.59, 0.63, 0.56, 0.55, 0.61, 0.60, 0.54, 0.61, 0.51, 0.53, 0.46, 0.61

X-axis: ACTUAL PROJECT 1, ACTUAL PROJECT 2, ACTUAL PROJECT 3, ACTUAL PROJECT 4, ACTUAL PROJECT 5, ACTUAL PROJECT 6, ACTUAL PROJECT 7, ACTUAL PROJECT 8, ACTUAL PROJECT 9, ACTUAL PROJECT 10, ACTUAL PROJECT 11, ACTUAL PROJECT 12, ACTUAL PROJECT 13

CREATING A WORKFLOW

With data coming from multiple sources including the project team, accounting, and Revit models, we had to strategically think through workflows for collecting and evaluating meaningful data.

To extract the information that usually resides in the project manager's head or is buried deep in the project file folders, we built a custom webapp which allows teams to manually input data for each project. The form allows users to enter information such as project type, client type, space type and use, construction cost, gross areas, sustainability targets, and directly upload floor plans.

To obtain project management data, we established a new connection to the company's enterprise resource planning software to gather live and accurate information about project basics, fees, project staff, and consultants. We also mined the data in our Revit models. Since each project is unique, model data needed to be standardized so that we could compare the information across projects. We created department, space use, and other standard types to normalize the data, based on the US Department of Education's National Center for Education Statistics (NCES) standards when possible. The project team applies **>**

these types to the rooms, furniture, fixtures and equipment, such as lab benches and fume hoods. These standard types lead to consistent color plans and space allocation schedules which are helpful for visualization and analysis throughout the life cycle of the project. Once the design is set, the team can export the file directly from Revit through our custom add-in button, which grabs all the data we need for benchmarking.

PUTTING IT INTO ACTION

Today the Benchmarking Reporting Tool for S+T is available to all practitioners within Stantec, and it's doing exactly what it was designed to do.

Stantec's London studio is working with the University of Glasgow to support their development of a new biological research facility, which will consolidate several current vivarium facilities while providing new research laboratories, offices, and collaboration space. The University's objective is to maximize efficiencies and enhance their institution's world class research.

In a pre-feasibility exercise focused on generating a space program and analyzing site and building configuration options, we are developing an assessment of the required functional space—which is paramount to aid the University in their decision-making process and receive necessary approvals to proceed into subsequent design phases.

Following a series of stakeholder workshops with the University, including the director of biological services and estates personnel, our team developed a conceptual schedule of accommodation (i.e., a space program) that outlined the assignable functional space required for the proposed facility. To support high-level cost exercises, we applied a net-to-gross ratio to project its envisioned gross area. We used our new S+T Benchmarking tool to find that this critical figure was supported by comparison to the data for similar facilities. The datasets we pulled harnessed a dozen or so projects with vivarium and research components throughout the United States, Canada, and the United Kingdom. By benchmarking and comparing similar datasets for our clients at the University of Glasgow they were able to move forward on the project with confidence. **>**
The University of Glasgow example
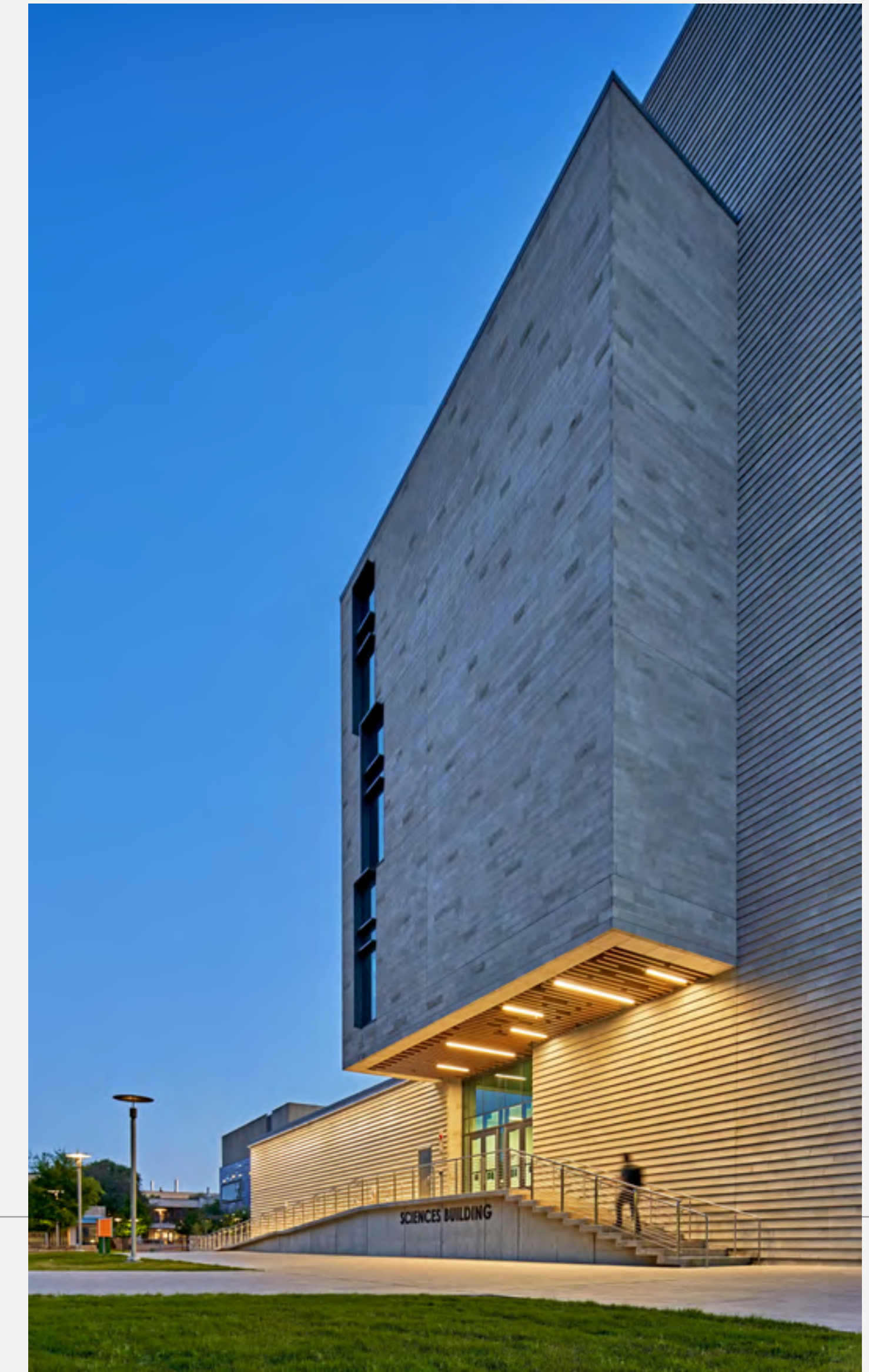
embodies, in the simplest way, what the new tool was designed to do:

Deliver accessible data: Anyone within Stantec can access, filter, and evaluate an extensive project data archive, including project management data, costs, area metrics, and floor plans.

Research in practice: Practitioners can capture and aggregate data at all levels to gain a deeper understanding of projects, from the macro level to the micro level. Project metrics such as net-to-gross ratios, department space types, bench length, etc. help us understand industry trends and inform future programs.

Build case studies: Because we know the background and have the data, we can understand why projects are the way they are and share this collective knowledge with our clients and partners.

Data-driven decision making: The ability to see the metrics for comparable projects helps us to set targets and optimize design, reducing unnecessary building area and bringing down a building's carbon footprint.

EVOLVING WITH PRACTICE

With a tool of this type, we look at the key metrics of adoption, implementation, and education to measure and evaluate success. To stay nimble as a practice, we are constantly looking for ways to improve and refine, especially as our industry and client needs evolve. As we continue to evaluate this reporting tool, we will explore our internal culture around

benchmarking and inspire positive change within our practice of data collection. We will begin to integrate post-occupancy studies to illustrate why some buildings perform more efficiently than others, and hopefully help our clients better understand potential returns on the investment of more sustainable equipment. Eventually, we hope to link to National Science Foundation (NSF) and National Center for Education Statistics (NCES) data to compare Stantec projects with others across the United States for baseline data and national assessments.

Data is powerful and useful. By benchmarking and comparing similar datasets for our clients at the University of Glasgow, they can now move on to the next steps of the project with confidence.. ◾

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DAVID MARTIN

Based in London, David Martin has led design efforts for many of our award-winning healthcare, research, and higher-education projects in the United Kingdom. He is a vice president and Director of Design for Stantec's Buildings group.

UTD Sciences Building
Richardson, TX

Healthy roots

Creating early learning environments for future success

BY PARUL VYAS AND JAZMÍN MÉNDEZ

Research shows there are important positive correlations between human well-being and time spent outdoors. Outdoor learning and play environments with diverse natural elements advance and enrich all the domains relevant to the development, health, and wellbeing of young children. Being outdoors stimulates brain development and direct, ongoing experience of nature in familiar settings remains a vital source for children's physical, emotional, and intellectual development. Furthermore, proximity to views of, and daily exposure to natural settings increases children's ability to focus and enhances cognitive abilities.[1]

In November 2020, Stantec was selected by Willis Independent School District (Willis ISD) to develop an ambitious early education design program for a new preschool center. Throughout a series of visioning sessions with the district's stakeholders, our team was able to develop an understanding of what makes their current school successful and how this new facility could build upon those successes while creating new opportunities for innovation.

In terms of human development, the importance of early childhood education cannot be emphasized enough: a child's early years are the foundation for her or his development, providing a base for their future learning and abilities, including cognitive and social development. So how could our design create a new learning environment where young children could thrive? How could we create a forward-thinking early educational design for the district? >

Inspired by these big questions, our design team aimed to explore and discover ideas that aligned with the district's vision, finding diverse learning strategies that can be supported by learning environment designs that amplify student opportunities and support a high-quality educational experience.

Outdoor learning and spatial interior/exterior connection
In our design for the new Roark Early Education Center (EEC) the goal of providing access and views to outdoor spaces was central. Achieving accessibility to the outdoors for early learners can take various forms: some districts plan for standalone outdoor learning centers while others aim to integrate the concept within their K-12 school designs.

Roark EEC at Willis ISD is one such campus. The new school boasts of two large, secured courtyards surrounded by the learning communities. Providing a safe space for early learners to discover and explore, the courtyards feature planting, mounds, logs, a cistern, and a sun tower, drawing attention to environmental features. These interactive features engage children while fostering commitment and respect for the environment and providing them with opportunities to practice independence. Large windows in every classroom and transparency in the main circulation design open the space towards the courtyards providing a strong indoor-outdoor connection. The Roark EEC dining hall is the heart of the school and connects to the outdoors with flowing patterns on the floor, wood ceilings and the courtyards in the backdrop.

The stepping logs and rocks from the outside take the form of stepping blocks down the hallways of the school. Educators in the school integrate the outdoor elements as learning tools. Students count logs, watch sun angles, observe water collection and irrigation, compare natural and artificial elements, and watch the seasons change. Access to natural phenomena builds the early learner's awareness of their surroundings and life cycles.

Sensory learning in early childhood Jean Piaget's theory of cognitive development states that children move through various stages of mental development: the young child experiences learning as sensory absorption. According to his research, during the initial stages of cognitive development perception conducts thought. **>**

Learning environments designed to provide a wide variety of colorful elements, textures, smells, temperatures, and sounds will stimulate the early learner's senses. Our design for the Roark EEC puts these ideas into practice by using tactile finishes with different temperatures to the touch. We designed the school's floor patterns to work as a wayfinding tool for early learners who can make the connection between the different colored flooring lines and their own classroom pod's color.

We used texture to provide variety, add interest, and create contrast in the interior design. We also tapped into contrasting texture in the landscape design by combining fine and coarse surfaces for plants or **>**

⊘ **Roark Early Education Center**   *Willis, TX*

materials. Everything has a texture: plant foliage, rocks, paving, flowers, bark, and the overall branching pattern.

Play-based learning environments
Play allows children to use their creativity while developing their imagination, ability, and physical, cognitive, and emotional strength. Play is important to healthy brain development. [2] It is through play that children learn to forge connections with others, to share, to negotiate and resolve conflicts, as well as learn how to advocate for themselves. Furthermore, play is a natural tool that children can use to build their resilience and coping skills, as they learn to navigate relationships and

deal with social challenges as well as conquer their fears. [3]

As a society, we are now rethinking ways to help young children tap their vast learning potential. Play is one of the most important ways young children gain essential knowledge and skills, and for this reason, environments that promote play, exploration and hands-on learning are at the core of effective early childhood programs. [4]

The United Nations says "play is an essential strategy for learning." In the Roark EEC, the entire school is a playing/learning tool. We designed the interior space around the concept of a "big city," with the classrooms acting as **>**

**Roark Early
Education Center**
Willis, TX

SOURCES

[1] *Nature and the Outdoor Learning Environment: The Forgotten Resource in Early Childhood Education. Allen Cooper National Wildlife Federation. International Journal of Early Childhood Environmental Education, 3(1)*

[2] *Tamis-LeMonda CS, Shannon JD, Cabrera NJ, Lamb ME. Fathers and mothers at play with their 2- and 3-year-olds: contributions to language and cognitive development. Child Dev. 2004;75:1806–1820*

[3] *Milteer, Regina M., and Kenneth R. Ginsburg. "The importance of play in promoting healthy child development and maintaining strong parent-child bond: Focus on children in poverty." Pediatrics (2011): peds-2011.*

[4] *Learning through play: Strengthening learning through play in early childhood education programmes. UNICEF Education Section, Programme Division 3 United Nations. Retrieved from https://www.unicef.org/sites/default/files/2018-12/UNICEF-Lego-Foundation-Learning-through-Play.pdf*

"homes," the learning communities simulating "neighborhoods," and the corridors serving as "roadways."

We designed the larger, dynamic, and colorful space for dining to be analogous to a "city" and surrounded it with graphics that highlight the Houston skyline. A central principle of learning through play is bringing together the different spheres of a children's life – their homes, their community and the wider world, in a way that there is continuity and connectivity of their learning processes over time and across different situations and environments.

With a design inspired by research that shows that movement and physical activity can help students learn, the Roark EEC also features a large outdoor play area with age-appropriate equipment, plants and vegetation, and a range of multi-sensory play opportunities and safe surfaces.

The colorful steps in the main corridors are a fun way to move from one area to the other, and each learning pod or "neighborhood" has its own flexible space with a platform for performances and larger "community" gatherings.

Early childhood is an important and very specific stage of development for students. Early childhood is an important and very specific stage of development for students, and early childhood education plays a fundamental role in fostering student development before the age of five. Research shows its benefits are lasting. The physical environment influences the way children develop their ability to learn and interact with others.

As designers, the opportunity to create spaces that provide a foundation for students to fulfill their potential is a responsibility we don't take lightly. This inspires our ongoing research into early learning environments. ■

JAZMÍN MÉNDEZ

Jazmín Méndez designs innovative early childhood, K-12 and higher ed facilities from our Houston, TX studio.

PARUL VYAS

Also based in Houston, Parul Vyas designs and coordinates project delivery for spaces that fulfil children's inquisitive minds.

Stantec