

Kelley Tanner Innovation Award GENERAL INFORMATION

Title of Innovation:
Deck of Spaces™, K-12 Second Edition

Date Submitted: August 15, 2023



Photo credit: Lauren Pusateri

Applicants:

- David Reid, AIA, Principal, Multistudio, David.reid@multi.studio, 816-550-9362
- James Basham PhD., Professor of Special Education @ University of Kansas, jbasham@cast.org, 513-593-1677
- Michael Ralph, PhD., Director of Multistudio Research Center, michael.ralph@multi.studio, 816-701-5361

NARRATIVE

Introduction: The Deck of Spaces™ helps designers and users of learning spaces adopt and integrate inclusive designs while employing diversity, equity, inclusion, and belonging (DEIB) principles and the Universal Design for Learning (UDL) framework. As a tool, the Deck helps school teams, parents, and community members visualize and understand inclusive design from the perspective of this well-established learning framework.

A Missing Link: UDL originated in Harvard University's Graduate School of Education in the mid-1980s and was developed by two educators who were also neuropsychologists and clinical psychologists, respectively. Since the 1980s, UDL has been the holy grail for inclusive learning, but for its first 30 years, UDL did not provide considerations for the design of learning spaces...the built environment **can** amplify the principles of UDL and dramatically impact a learner's potential. UDL has been solely focused on teaching strategies, teaching manipulatives, and education technology. If one considers the power of space as "the third teacher," as Loris Malaguzzi of Reggio Emilia fame once said, it's understandable what a significant absence this has been in the practice of UDL.

In 2018, the governing organization of UDL (CAST/UDL-IRN) invited the designers of the Deck of Spaces™ to create criteria that align space design with the UDL framework. The evolution of this design process led to a deck of cards – flexible, open-ended, offering users the chance to engage anywhere and providing a fun way to immerse themselves in this critical aspect of education inclusion.

Integration of Learning Science: It's challenging to align ALL the needs of school stakeholders in the school design process, from recognizing the pressures put on teachers and their professional needs, managing construction budgets and schedules, managing expectations of school boards and parents, integrating district ed specs and standards, optimizing school operations ... the list goes on. *Adding further complexity to this list is the importance of **integrating learning science** into the design process* – it's a robust domain to master. The Deck of Spaces™ offers a path, bringing together education design ideas that integrate learning science upon which the UDL framework is based.

Equity & Opportunity: The K-12 Second Edition goes well beyond the core UDL framework (beyond physical and cognitive variabilities of learners) to include themes associated with diversity, equity, inclusion, and belonging (DEIB). While these considerations are inherent in UDL, they've never been explicitly called out. The redesign of the Deck in its second edition adds new ideas to include ways that space can support inclusivity across racial and ethnic differences, socio-emotional variability, varying sexual and gender identities, trauma-sensitive variabilities, and more. Student variability is addressed in the 57 idea cards in a way that is approachable, easy to interact with, and powerfully effective in uniting stakeholders around key ideas supporting elevated student potential.

A few example cards from the Deck of Spaces™ are shared below. The front of each card has a big idea and a supporting narrative with research citations. On the reverse of each card are photo examples of the idea in action.



Photo credit: Lauren Pusateri

S.3 Student Experiences

deck of spaces™

Allow students to “make space”

Encouraging students to create their own spaces allows them to express their individual identities as part of a learning community.

- Think about furniture as a “kit of parts”
- Develop student agency by teaching students to become effective designers of their own space to support their learning.
- Create learning opportunities by having students reflect on their design choices.

multistudio
All rights reserved. © 2022 Multistudio and CAST

S.4 Student Experiences

Measure of Effectiveness on Intrinsic Motivation

Choice Level	Effectiveness Score (approx.)
1 Choice	0.15
2-4 Choices	0.55
5+ Choices	0.35

(4) 0.1 0.2 0.3 0.4 0.5 0.6

deck of spaces™

Offer structured choices

Give students choices of where they work, how they approach the task, and with whom they work.

Offering choice reinforces a classroom culture of student agency and has a positive impact on student motivation. (4)

This principle supports trauma-informed practices in allowing students to choose the location, noise level, lighting level and furniture options they need to feel safe and focused.

multistudio
All rights reserved. © 2022 Multistudio and CAST

S.23 Student Experiences

deck of spaces™

Shelter and refuge spaces

Predictability, safety, positivity and consistency offer opportunities for refuge for all students including trauma-affected learners. These students are often hypervigilant and need options to retreat. Refuge spaces contribute to socio-emotional development and healing.

- Design chill zones, peace corners or refill stations for students—places to relax and restore balance.
- Think about the use of color, lighting, soft music and soft furniture (rugs and cushions).
- Apply sound-absorbing materials and variable lighting, if possible.

multistudio
All rights reserved. © 2022 Multistudio and CAST

P10 Paradigms & School Culture

deck of spaces™











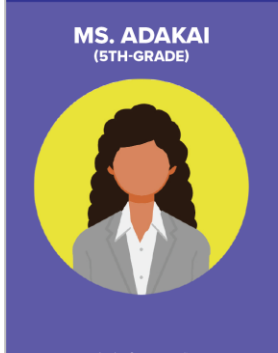
Convert STEM to STEAM for improved accessibility

Integrating “Art” within STEM (Science, Technology, Engineering and Math) can serve as an on-ramp for reluctant learners.

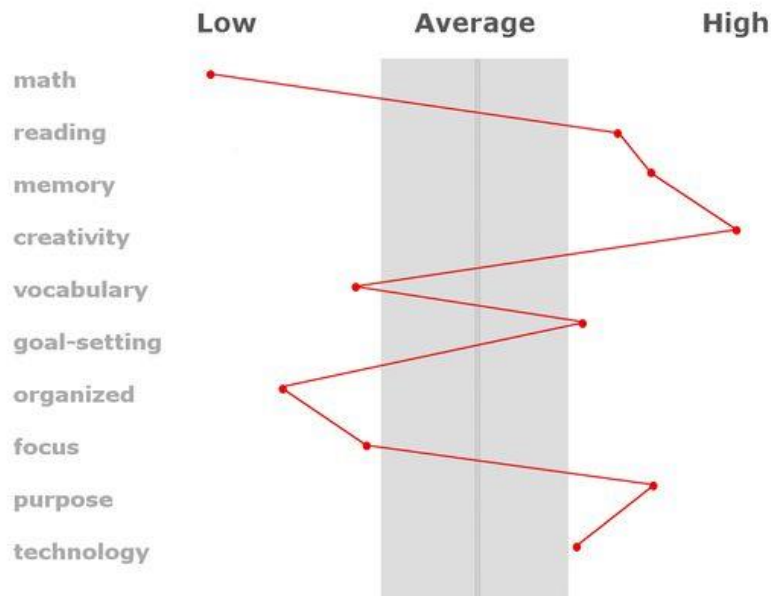
Going beyond conventional representations of STEM concepts offers multiple paths to understanding abstract ideas. This is especially true for students with disabilities affecting sensory processing.

Think of “Art” expansively—visual arts, language arts and performing arts, etc.

multistudio
All rights reserved. © 2022 Multistudio and CAST

<p>S.27 Student Experiences</p>  <p>An example learning space that survey respondents felt represented masculinity AND femininity, and a corresponding high level of belonging.</p>  <p>deck of spaces®</p>	<p>Inclusive mindset in design</p> <p>Traditional classroom designs reinforce messages of status quo and can further marginalize learners in historically excluded groups.</p> <p>Recent studies show representations of both femininity and masculinity are not mutually exclusive. Students reported one of the highest senses of belonging in such spaces that are gender inclusive. (23)</p> <p>Design learning spaces to go beyond gendered norms by using more diverse color palettes, collaborative furniture that avoids an implied classroom hierarchy, and biophilic design elements that embrace the beauty and complexity of nature.</p> <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>	<p>E.3 Educator Experiences</p>   <p>deck of spaces®</p>	<p>Faculty “scrum space”</p> <p>Create a culture of learning and problem solving among faculty, and give them a space to think deeply and co-create solutions. Allow this space to host content that can be left up on the walls.</p> <p>Consider how this space might support:</p> <ul style="list-style-type: none"> • Data analysis of student work (data wall) • Professional learning communities • Planning & staff goal setting • Affinity groups: build upon shared experiences and enrich teachers’ communities of practice. <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>
<p>E.8 Educator Experiences</p> <p>“Our flexible classroom reinforces our relationships with students as a partnership positively affecting our personalized approaches with them.” —3rd Grade Teacher</p>   <p>deck of spaces®</p>	<p>Review spatial power dynamics</p> <p>Places of power in a classroom—like an off-limits teacher’s desk or prestigious teaching wall—can be a symbol of power and control.</p> <p>These spatial relationships reinforce hierarchical power dynamics and position students as non-engaged receivers of knowledge. Non-hierarchical arrangements support students as co-creators of knowledge, reinforcing sense of belonging. (27)</p> <p>Consider the teacher’s lounge or collaboration studio as the main space for teacher storage; preserve the classroom as community space.</p> <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>	<p>P.5 Paradigms & School Culture</p>   <p>deck of spaces®</p>	<p>Celebrate cultural diversity within your school</p> <p>Take cultural representation beyond artifacts on display—create spaces that allow students to share aspects of their culture:</p> <ul style="list-style-type: none"> • Embed multicultural symbols, practices and curricular content in all the materials and experiences. • Consider spaces for dance, step squad, drum core and cultural festivities. These activities may have critical dimensions, special flooring or acoustic treatments. • Consider paint color—different cultures have different reactions to colors. <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>
<p>P.2 Paradigms & School Culture</p>   <p>deck of spaces®</p>	<p>Engage family members with hospitality</p> <p>Create a sense of hospitality for the front of the school. This space should cultivate relationships and present an inclusive first impression—“ALL are welcome here.”</p> <p>Security or control should not be the first impression. Security and hospitality can co-exist.</p> <p>When family members feel engaged (through feeling welcome), they take more ownership in the management of their student’s education.</p> <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>	<p>V1 Vignettes</p> <p>MS. ADAKAI (5TH-GRADE)</p>  <p>deck of spaces®</p>	<p>Vignette #1</p> <p>Ms. Adakai is planning a unit around economics as it relates to local businesses. She plans on introducing her students to a wide range of information for them to create their own business plans. She wants students to lead their own learning, have easy access to resources, and present their ideas in a local marketplace-style environment.</p> <p>How can she prepare a learning environment that provides the supports students will need, without crowding out the student autonomy that is key for her plan?</p> <p>multistudio</p> <p><small>All rights reserved, © 2022 Multistudio and CAST</small></p>

The Myth of “Average Learners:” Because we know there is no such thing as an average learner, and student variability is a well-understood fact of modern learning science, it’s important to design spaces and lessons that adapt to the variabilities of each student. The Deck is designed to help stakeholders do this – to begin thinking about architectural design in support of inclusion across the board. This “Myth of Average” concept is well exemplified in the work of Todd Rose, a faculty member at Harvard University’s Graduate School of Education and author of “The End of Average.” And it’s the foundation of UDL and the Deck of Spaces.



*"Average" is only a mathematical construct.
Image credit: Todd Rose, Professor, Harvard University*

VALUE ALIGNMENT

CONCEPT

1. What need inspired your innovation, and how does it help students and the community?

The absence of space design considerations within the UDL framework inspired the Deck of Spaces™. Dr. James Basham, Professor of Special Education at the University of Kansas and founder of the [UDL-Implementation and Research Network \(IRN\)](#), has always been attuned to the powerful effect of space on his students, as well as learners in the research he conducts. In an unassuming conversation over beers, the question was asked:

"What would it look like if we engaged education architects and researchers to consider space designs that further reinforce the UDL framework? How can the science behind UDL further establish an evidence-based approach to education space design?"

A Diverse Design Team: The design process for the initial iteration of the cards took over a year. It involved a diverse team of national collaborators ranging from architects, interior designers, teachers, students, researchers, learning coaches, furniture designers, school administrators, and more. The style of the product evolved over the course of this initial design phase, moving from a [LEED-styled checklist](#) to a more versatile and interactive deck of cards. A fundamental premise of UDL is to offer "multiple means" for learning. The cards do this well, allowing users to follow pre-established [Activity Instructions](#) published with the cards, or they can invent their uses. The online [Activity Instructions](#) have grown as more user input is continually shared with the author team.



Activity Instructions; DeckOfSpaces.com

VALUE (Development) 35 pts.

2. What educational environment planning opportunities does your innovation address?

The Deck has proven a powerful gateway to open meaningful conversations about space design and learner variabilities. Whether the users are educators, designers, students, or administrators, the cards spark conversations of exciting ideas about learning potential among students. Users are educated on the correlation between architectural design and behaviors and can visualize how learning science and research can be translated into spatial ideas. They can see how a single versatile space can support the needs of many different learners. Not only does it make planning processes fun, but it makes them rich with purpose. And it extends a learning outcome that sticks with users – to be mindful of how space can amplify teaching and learning while supporting student variability.

Meaningful Thought Starters: An early draft of the K-12 Second Edition Deck had over 150 ideas – far too many cards to be a manageable toolkit. The Deck is not trying to be all-inclusive of every idea pertaining to inclusion, belonging, and learning access. It's a set of thought starters. When blank cards are distributed to users along with the Deck of Spaces™ cards, and a challenge is shared to "one-up" the Deck, users' imaginations are sparked even further. Ideas become personalized to the specific needs of an educator or the unique culture of a school. Users feel empowered as designers – with a newly recognized superpower to affect their learning environments.



Users expand on ideas in the Deck to create their own cards.

Education Environment Planning Opportunities: The Deck and the UDL framework both support each student's needs – addressing learner variability via the three principles of UDL:

1. the "why" (affective network of the brain)
2. the "what" (recognition network of the brain)
3. the "how" (strategic network of the brain)

Learner variability is supported across these three networks via multiple means of engagement (the why), multiple means of representation (the what), and multiple means of action & expression (the how).

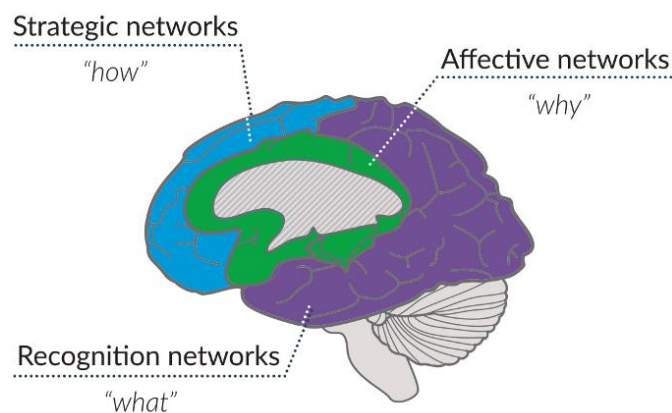


Image Credit: CAST

By offering students multiple means of access to learning challenges, they can access any of the three networks of their brain to optimize accessibility and understanding for themselves. The Deck of Spaces™ helps all stakeholders, including designers, align space design solutions with this approach to learning access.

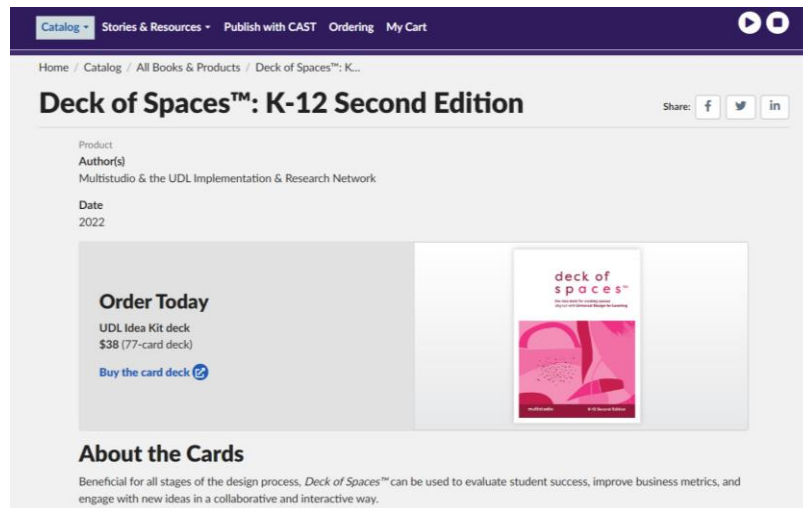


*Example spaces resulting from a design process driven by the Deck of Spaces™ and UDL principles.
Image credits: BL Dean Birinyi, Multistudio*

3. What are the cost impacts of implementing the innovation? How can costs be mitigated for underserved communities?

Cost of the Deck of Spaces: CAST/UDL-IRN has a mission to implement UDL as broadly as possible, at an international scale. In a literal sense, the cost of the Deck of Spaces™ is \$38, available to anyone via the [CAST Publishing Bookstore](#). It is intentionally priced and

distributed to be universally accessible to everyone. **Free** online resources exist at DeckOfSpaces.com to support users with application ideas and provide a [Reference Guide](#) that links each of the 31 UDL checkpoints to the card ideas.



CAST Publishing Website for Deck of Spaces sales & distribution



Online Reference Guide; DeckOfSpaces.com

Many districts and Education Service Centers in larger states maintain the Deck as part of their resource library collection. They can be checked out for free and used as long as needed by any district employee.

Support to Underserved Communities: Members of the author team commonly donate card decks and provide pro-bono workshops and professional development sessions to schools that are actively interested in implementing UDL. This is particularly true for underserved schools and communities. And it's worth pointing out that the Deck is

particularly well-tailored to be used in underserved communities to draw greater attention to aspects of school design that tend to marginalize the very students in their classrooms.

Cost of Implementation: One of the beauties of the Deck is that many of the ideas are simple DIY space hacks – things teachers can do on their own with limited or no budget. Card examples range from DIY ideas to large-scale ideas that can be incorporated into new school construction or renovations. The cost premium of ideas inspired by the Deck of Spaces™ is \$0. The Deck inspires design decisions that are more informed by learning science, learner variability, and DEIB awareness. **Good design doesn't have to cost more. It just takes intentionality.**

DELIVERY (Implementation) 35 pts.

4. How have you shared and/or communicated your innovation and made it available to those who need it?

The CAST/UDL-IRN network is global in its reach and is actively working with new districts and education ministries every day. As the single governing organization overseeing UDL, CAST/UDL-IRN is sought out on a regular basis by schools and districts looking to better support every learner and make learning accessible to all. The Deck of Spaces™ can be found on CAST's Online Bookstore and purchased by anyone. No membership or subscriptions are required. As a part of the publishing agreement with CAST, the authors and publisher launched a significant promotional initiative to make the Deck better known.

In addition, the authors have presented at several national and regional education conferences since the Deck's introduction in 2018. Conferences have included Learningscapes, EDspaces, SCUP, SXSWedu, International UDL Summit, Coalition for Adequate Student Housing (CASH), Midwest Greatlakes A4LE Conference, Pacific Northwest A4LE Conference, Southern Region A4LE Conference, The Annual UDL Symposium, UDLHE Network DigiCon, Social Innovation Summit KC, San Francisco Design Week, AdvancED Midwest STEM Summit, and the KU School of Education Summer Conference.

The Deck of Spaces is used by CAST's faculty in teacher training nationwide. This ranges from individual schools to large districts in California, Texas, and New York, to entire service centers (serving multiple districts), and even education ministries abroad. Multistudio continually uses the Deck in stakeholder engagement with schools and district clients. A gift deck (or multiples) is commonly left with school partners once introduced to it through teacher training and/or engagement sessions.

Although designed to be open-ended and used in a number of manners, the team outlined six ways in which the second edition of the Deck could be utilized. Of those six is a game called Schools Against Inhumanity (see Section 6), which is a tool for additional engagement. Schools Against Inhumanity encourages debate over which idea card would be the most effective in addressing specific challenges to making

inclusive and accessible schools. Modeled after card games like Apple to Apples™ and Cards Against Humanity™, this game is popular with groups that are 6+ participants and meant for those playing to reflect on dis/ability, trauma-informed practices, social/emotional/ & behavioral development, ethnic & racial identity, gender & sexuality, and other identity representations.

The author team and its collaborators are continually promoting the Deck of Spaces on their social media channels and receiving great interest from these large networks.

5. How have you balanced personal and professional goals with the implementation of the innovation?

Service, Selflessness & Integrity of Leadership:

Developing the Deck of Spaces was a passion project among all its contributing authors. Never was it funded through client fees, grants, or any other funding source. The K-12 Second Edition is the culmination of hundreds of hours and thousands of dollars of development costs. With CAST/UDL-IRN being a non-profit organization, their purpose for existence is to support new users in the adoption of UDL and to better support all students regardless of abilities. The purpose and opportunities afforded by the Deck are too crucial for this project to have waited for outside funding or a formal development process. And the way it was developed helps the owners of the trademarked product use it and distribute it as liberally as they see fit.

Creating an Ongoing Culture of Service & Selflessness: One aspiration of the Deck was to empower our teachers – a critical community to consider during the design process. By empowering teachers to help design the spaces that they teach in, the Deck expands the creative and interpersonal connections that are made through students, teachers, and designers.

Contributions from Multistudio Research Center: To ensure the K-12 Second Edition exceeded the framework of the current UDL framework and fully addressed topics of diversity, equity, inclusion, and belonging, Multistudio committed donated time from its Research Center. This time was invested in conducting primary research and exploring existing research on these topics of DEIB that became embedded in the K-12 Second Edition Deck of Spaces™.

International Applications: Through the reach of CAST and CAST Publishing, the Deck of Spaces™ is being deployed worldwide. The UDL framework and its implementation are fully accessible to institutions around the world – districts, service centers, education ministries abroad, and individual schools, both public and private. Its graphic-friendly format has been proven to be accessible to non-English speakers. Further, the design team is collaborating to develop a forthcoming Spanish-Language Edition.



Professors from Hainan University quickly take to the Deck with excitement about its opportunities in China.

IMPACT (Evaluation) 20 pts.

6. Who benefits from your innovation, and how do you define and measure that impact?

Comprehensive Engagement: The Deck of Spaces™ makes the design process accessible to those without the design language that architects have learned during their schooling and time as practitioners. The Deck is an equalizer during the engagement process. It gives stakeholders the agency and opportunity to share their design preferences based on how they learn and experience a classroom. Beyond the Deck's ability to create an accessible dialogue, it improves the design performance, which enables the architect to achieve a more well-rounded classroom study and, thus, successful post-occupancy results.

Community Impact: As design practitioners, we come to the table with skills learned through our education and experience. The diverse author team that created this Deck consisted of educators, administrators, researchers, and designers – the result of a multi-pronged effort, and the outcome is a tailored experience for each user group. When school communities utilize this tool and place stakeholders at the center of the design process, we can create a facility that becomes a valued asset to each and every student as well as the community for generations to come. By fully engaging and supporting each student through the principles of UDL, regardless of learner variability, we better ensure their success after graduation and future potential contributions to society and the economy. Empowering each new generation of students to succeed through graduation will further empower the following generations, often breaking the cycle of poverty in underserved communities.

Guiding Principles for Design: Other impacts are associated with the remarkable community buy-in that results from a process driven by the Deck of Spaces™. The Deck has proven to rally school communities around specific and meaningful Guiding Principles that they achieve collectively through the Deck. When community members

have buy-in on the process and the ideas for a school (new or renovated), they're more engaged with the school. Community engagement builds thriving neighborhoods with tangential economic benefits, where incremental development (and re-establishment of neighborhoods) follows strong schools via solid community engagement.



The outcomes of an engagement process defined the Guiding Principles for the design of the school, including common themes the stakeholders rallied around.

Impact on Thriving Students & Educators:

The measure of success for UDL and the Deck of Spaces is to create a culture of thriving students and educators. UDL empowers students and educators alike by affording multiple means with which both can engage in learning. Through this engagement, they find passion and success. Even for reluctant learners, UDL has turned disengaged students into thriving, successful learners.

CLASSROOM MANAGEMENT



Themes:

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



This classroom helps me be the best version of myself, I need to be comfortable with the fluid teaching.
- Teacher

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

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

Excerpts from research on schools designed around ideas from the Deck of Spaces™

"The learning space has created a hospitable place – not institutional – which is very valuable in building relationships." – STEAM Coach

"The more mature space is having a positive impact on students' self-regulation." – 3rd Grade Teacher

"Our relationships with students are improved with the new classroom...& these are essential to belonging." – high school math teacher


"One student who has a 504 wasn't sure the classroom was going to work out for him – he likes to be by himself. In the end, he had an awesome semester. The flow of the classroom allowed him to integrate in a way that was comfortable for him." – 4th Grade Teacher

Impact on School Designs with Fact-Based Design Strategies: Innovation can be an overused term. It's often mistaken for trendy or flashy, or simply different. But without the intention of student outcomes, "innovation" doesn't bring value. The impacts afforded through the application of the Deck of Spaces™ and UDL on school design has been extensive and are grounded by 30+ years of learning science from some of the nation's leading schools of education. Quantitative studies are underway to add specific metrics to the benefits of UDL in the classroom, as well as specific learner-center benefits via targeted space design.

UDL has significantly impacted policy, practice, and partnerships within education organizations nationwide, advocating and reinforcing practices for inclusive education. [Global Campaign for Education] The Deck of Spaces™ manifests these practices into visually accessible ideas.

Each idea is built upon fact-based practices stemming from UDL's founders, Dr. David Rose and Dr. Anne Meyer. In the Deck of Spaces™ Reference Guide, the UDL principles pertaining to each idea are identified and can be searched independently. If seeking ways to minimize threats and distractions for a student (UDL principle 7.3), one can search the Reference Guide and find every card idea that supports this principle.

5.4 Student Experiences



Measure of Effectiveness on Intrinsic Motivation

Choice Level	Effectiveness Score (0.1 to 0.6)
1 Choice	0.1
2-4 Choices	0.2
5+ Choices	0.4

(4)

deck of spaces™

Offer structured choices

Give students choices of where they work, how they approach the task, and with whom they work.

Offering choice reinforces a classroom culture of student agency and has a positive impact on student motivation. (4)

This principle supports trauma-informed practices in allowing students to choose the location, noise level, lighting level and furniture options they need to feel safe and focused.

multistudio

All rights reserved. © 2022 Multistudio and G&T

S.4 Offer structured choices

1.2 Offer alternatives for auditory information

- Provide Computer-Aided-Design (CAD), music notation software, or mathematical notation software
- Use web applications (e.g., wikis, animation, presentation)

4.1 Vary the methods for response and navigation

- Provide alternatives in the requirements for rate, timing, speed, and range of motor action required to interact with instructional materials, physical manipulatives, and technologies
- Provide alternatives for physically interacting with materials by hand, voice, joystick or keyboard

4.2 Optimize access to tools and assistive technologies

- Compose in multiple media such as text, speech, drawing, illustration, comics, storyboards, design, film, music, dance, visual art, sculpture or video
- Solve problems using a variety of strategies

5.1 Use multiple media for communication

- Use story webs, outlining tools, or concept mapping tools

5.3 Build fluencies with graduated levels of support for practice and performance

- Provide differentiated models to emulate (i.e. models that demonstrate the same outcomes but use differing approaches, strategies, skills, etc.)
- Provide scaffolds that can be gradually released with increasing independence and skills (e.g., embedded into digital reading and writing software)
- Provide multiple examples of novel solutions to authentic problems

7.1 Optimize individual choice and autonomy

- Provide learners with as much discretion and autonomy as possible
- Allow learners to participate in the design of classroom activities and academic tasks

7.2 Optimize relevance, value, and authenticity

- Vary activities and sources of information

7.3 Minimize threats and distractions

- Vary the level of novelty or risk
- Vary the level of sensory stimulation
- Vary the social demands required for learning or performance

8.2 Vary demands and resources to optimize challenge

- Provide alternatives in the permissible tools and scaffolds
- Vary the degrees of freedom for acceptable performance
- Emphasize process, effort, improvement in meeting standards as alternatives to external evaluation and competition

8.3 Foster collaboration and community

- Create cooperative learning groups with clear goals, roles, and responsibilities

Excerpt from the Deck of Spaces™ Reference Guide

The Multistudio Research Center has further advanced design principles in the cards with its primary research, especially across topics of diversity, equity, inclusion, and belonging. For example, if designing space that is equally inclusive to all students regardless of gender identity, the Center's work identifies several spatial design factors that were measured on classroom design, restroom configurations, and overall building design. See examples below:

1. [Article: A Framework to Scaffold Project Visioning for Inclusion](#)
2. [Article: The Future of Restrooms is Inclusive](#)
3. [Conference Presentation: Gender-Inclusive Classroom Study](#)

Continual feedback from users around the world serves as evidence of the impact of the cards. They're excited about the inspiration and eager to share ideas sparked by the Deck. The author team uses this "crowdsourcing" to capture concepts for future editions of the Deck. The K-12 Second Edition is a manifestation of user feedback on the First Edition, published in 2018.



7. What success has your innovation achieved?

In 2023, the Deck of Spaces™ was honored with two prestigious awards. The first is from CORE77, an organization that recognizes outstanding product design across industries. The Deck of Spaces™ was recognized in CORE77's Built Environment Category. The second award was bestowed on the Deck of Spaces™ by the jurors of San Francisco Design Week. Here it was recognized for its emphasis on interaction design and was honored in the Wildcard Category, described as "the category for the unexpected and experimental products that can't be put in a category."

Most recently, the Deck was used during engagement sessions with the San Francisco Unified School District (SFUSD) for the design of the new Mission Bay School. Multistudio's Director of Research, Dr. Michael C. Ralph, and Assistant Superintendent of Elementary Schools Cohort 5 for SFUSD, Dr. E'leva Hughes Gibson, wrote a white paper titled A Framework to Scaffold Project Visioning for Inclusion for the Association for Learning Environments (A4LE). After sessions with stakeholders from Mission Bay, the team expanded upon the original Deck to include a more inclusive language around equity and belonging. The Deck's ability to get granular with how people feel in certain spaces – especially surrounding belonging, has led to successfully designed school spaces, such as the Mission Bay School.

"Teachers, leaders, and coaches love the Deck of Spaces. They use the cards to plan and create welcoming, engaging, and supportive places to learn. The images and the strong connection to UDL, equity, and inclusion help educators think about how they can use space to support their diverse students, families, and staff."

– Sue Hardin, UDL Coach & Assistive Technology Consultant for Macomb Intermediate School District.



8. What is the realistic potential for expanding its impact?

The Deck of Spaces™ is easy to access and distribute. Its uses and applications are versatile and adaptable to different settings – visioning for new school designs, hacking the design of a teacher’s classroom, helping students better understand how they learn, helping teachers impact their learning spaces to better support all their students’ variabilities and more.

An “On-Ramp” for Educators Around the World: The Deck is a communication tool to help facilitate conversations between UDL-trained educators and administrators less familiar with UDL. It’s a great tool to introduce users to the principles of the Universal Design for Learning framework, thereby serving as an onramp for educators to develop life-long expertise as UDL-trained teachers adept at supporting the needs of every student. The Deck is valuable in creating environments that help students feel a sense of belonging. The companion deck, Deck of Spaces, Higher Education Edition, translates UDL-inspired space design principles to collegiate campuses and users.

In the past several years, the Deck has evolved to include multilingual adaptations to better facilitate multicultural design and engagement, supported advances in research, and initiated improvements in design education.



Deck of Spaces™ Higher Education Edition

As the Deck of Spaces™ grows in popularity, it will hopefully see greater and greater visibility and use. Every user engaged with the Deck has found it effective. We hope to see its use continue to grow in the coming years.

Press: The University of Kansas, Core77, & SF Design Week Awards

DECK OF SPACES, CARDS DESIGNED TO MAXIMIZE EDUCATIONAL SPACE USAGE, SPREAD TO SCHOOLS AROUND THE WORLD¹

Tue, 07/25/2023



LAWRENCE — Playing cards might not be considered a traditional school activity, but the Deck of Spaces has educators thinking about how they can make the most of schools, classrooms and the spaces in which students learn. The deck, developed as a collaboration among education researchers at the University of Kansas, architects, teachers and learners, has been adopted by schools around the world to inspire conversations and new ideas about how schools can maximize their physical spaces, whether building a new school or rearranging existing environments.

James Basham, professor of special education at KU, has devoted much of his career to researching and furthering universal design for learning, an educational approach that focuses on design for the

needs and abilities of all students by removing barriers in the learning environment. Through his work he met David Reid, principal of Multistudio, an interdisciplinary design firm with a studio in Lawrence. Their discussions resulted in [Deck of Spaces](#)², developed as a way to encourage more interaction at educational conferences.

Featuring pictures of physical spaces on one side and questions on the other, they proved immediately popular at events. The developers then began selling them as a fundraiser, and their popularity boomed, now being used in schools in the United States, Europe and Australia. The decks' success in inspiring people to reimagine the best research-backed way to use school spaces also secured their creators this year's Core77 Design Awards' Notable Interaction Award. The annual awards honor all areas of design enterprise, with an emphasis on excellence and inclusivity. The K-12 deck's second edition also was honored with a San Francisco Design Week Award, which recognizes the intersection of ideas, design, business and entrepreneurship.

"We're trying to help transform educational spaces to be student-centered. Being able to provide an image with discussion topics and integrated research is critically important," Basham said. "We've seen these decks help people think differently. All educators are designers of the learning environment and experience. Whenever design doesn't work in life, we go through the redesign process, and we have to do so continually in education."

Multistudio and KU researchers have developed both a K-12 deck, which is now in a second edition, and a higher education deck. They are working on a Spanish-language deck as well. Each card in the K-12 deck is part of a theme: student experiences, educator experiences, or paradigms and school culture. One side features photos of various educational spaces while the other features discussion such as how spaces can be used to achieve goals, such as engaging students, encouraging faculty collaboration or making facilities such as the school library part of a larger community. The deck also features cards with vignettes of a teacher, their level and subject matter, and goals they hope to accomplish for their students. It then asks users to consider how that teacher can maximize the space and resources they have to achieve those goals.

While students and teachers use educational spaces the most, many other people — including architects and researchers — influence the design. The Deck of Spaces is designed to bring people from all backgrounds together to discuss ideal use of educational facilities while considering things from each other's perspectives and contributing their own expertise. Basham said he can also use the decks to help the future teachers he educates consider how best to maximize space in alignment with the research-backed principles of universal design for learning.

"The physical environment itself is often overlooked in schools, but is critical in making educational improvements," he said. "That's often because it is viewed as endemic. I learned very early on even simple things like painting can improve the learning environment. Even if we work to improve curriculum, the physical plant needs to be viewed on the same level of importance."

Michael Ralph has considered the issue of optimal classroom use from multiple angles. Vice president and director of research at Multistudio, Ralph is one of the co-authors of Deck of Spaces and was a teacher as well. While completing his doctorate at KU, [he also conducted research on optimal uses of learning spaces on college campuses](#).³

"The Deck of Spaces can help educators think more creatively and inclusively about their learning environments. As a former classroom teacher, I know the impact seeing new approaches to space design can have in the way I design my own classroom," Ralph said. "The deck is filled with interesting and provocative imagery that helps me imagine entirely new paradigms for how the school itself can become another teacher. Thoughtful design can make a teacher's job easier, a student's learning experience more productive and the whole school environment more inspiring and inclusive."

Top image: Early childhood educators use the Deck of Spaces to discuss maximizing school spaces.

Image credit: Multistudio

The University of Kansas is a major comprehensive research and teaching university. The university's mission is to lift students and society by educating leaders, building healthy communities and making discoveries that change the world. The KU News Service is the central public relations office for the Lawrence campus.

kunews@ku.edu⁴ | 1450 Jayhawk Blvd., Suite 37, Lawrence, KS 66045

Links on this page:

1. <http://today.ku.edu/2023/07/25/deck-spaces-cards-designed-maximize-educational-space-usage-spread-schools-around-world>
 2. <http://deckofspaces.squarespace.com/k-12>
 3. <https://news.ku.edu/2021/10/19/study-finds-women-honor-students-prefer-active-learning-spaces-could-be-key-diversifying>
 4. kunews@ku.edu
-

Contact The University of Kansas

785-864-2700
1450 Jayhawk Blvd.
Lawrence, KS 66045
785-864-2700

All social media at KU »

 [Kansas Degree Statistics](#)

[Winners](#)

[Categories](#)

[Jury](#)

[About](#)

[Other Years](#)

CORE77

Notable

Built Environment Award

Core77 Design Awards 20

Deck of Spaces:
K12 Second

HONOREE

Multistudio + CAST

Edition

The Deck of Spaces is a set of card decks designed to bring greater awareness to the power that our physical environments have on the way students learn. EVERYTHING in our learning environments has the ability to create a stronger sense of belonging, inclusion, and better supports to address learner variabilities – or the environment can create barriers. Much of this impact runs beneath our consciousness. The Deck of Spaces brings greater awareness to the power of space as an influencer, to truly serve as "the 3rd teacher," as Loris Malguzzi of Reggio Emilia fame once said.

The Deck of Spaces was recently developed to support the Universal Design for Learning (UDL) framework, which originated out of Harvard University's Graduate School of Education nearly 25 years ago. UDL supports diverse learner needs, originating with a purpose to reinforce special education -- has since grown to advance general education. Throughout its existence, the UDL framework has never included space design as a key component of supporting diverse learner needs. Instead, it had concentrated on instructional methodology and assistive technologies. The Deck of Spaces: K12 2nd Edition is a major redesign, with entirely rewritten content and new graphic environment. The holistic update of content now engages ideas well beyond the UDL

Multistudio + CAST

PROJECT TEAM

David Reid, AIA, ALEP, UDL Assoc. - Lead Project Designer, Multistudio; Susan Hardin, UDL Implementation Consultant, CAST; Michael Ralph, PhD, Lead Researcher & Master Teacher, Multistudio; James Basham, PhD, Professor, Dept. of Special Education, University of Kansas; Sally Wurtzler, Education Designer, Multistudio; Tayvia Navy, Assoc. AIA, Interior Designer, Multistudio; Julie Charvat, Graphic Designer, Multistudio; Ally Simmons, Graphic Designer, Multistudio

CATEGORY

Built Environment

VIEW MORE INFORMATION

 [Website](#)

framework, including how space can support the inclusion of various racial and ethnic identities, trauma-sensitive learners, students struggling with stress and anxiety, and inclusion of non-binary gender identities and differing sexual orientations.

The design team for the Deck of Spaces includes educators, professional development coaches, education researchers, and design professionals across the country. The team is composed of diverse individuals to bring diverse perspectives about how spaces influence users of diverse lived experiences. The space design ideas in the deck are supported by research with the peer-reviewed sources cited in the back end of the deck.

With the Deck of Spaces, teachers, administrators, district and campus personnel, and design professionals can design spaces to mitigate barriers and improve students' sense of belonging and success.

Each idea card has a heading and descriptive text on one side and example application images on the opposite side. The decks are broken into four categories: Student Experiences, Educator Experiences, Paradigms, and Educator Vignettes. There's no one way to use the decks – they can be used by individuals or teams. They can be used in focus groups, brainstorming sessions, or as aids in classroom activities. The deck can be utilized in gaming formats to energize educational exercises; it considers effective

learning environments and the various perceptions students and teachers bring to their learning experiences.



Deck of Spaces Overview The Deck of Spaces helps with the mastery of the complex UDL framework, making it easy and fun. Much of the fun is understanding the major impact users know they're making for end users. *Lauren Pusateri*



Deck of Spaces: K12 Edition Box cover art
Lauren Pusateri



Deck of Spaces overview, K12 Second Edition Users
can engage with the deck through the images, the text, or both -
supporting multiple learning preferences. *Lauren*
Pusateri



Educator Professional Development The discovery
process of new ways to think about space design is invigorating
for many users. *David Reid*



Educator Professional Development Faculty from Hainan University in China were able to easily engage with the deck despite limited English language skills. *David Reid*



Playing "Schools Against Inhumanity" In this gamified application of the Deck of Spaces, users dive into deep conversations about why their chosen design strategy (the card they played) is a better strategy for the assigned challenge than their competitors' cards. It's a playful way to have deeply meaningful conversations about learning. *David Reid*



Engaging with Colleagues Co-workers are able to have rich conversations about values and strategies to better serve their students and how to better collaborate as a team of educators. *David Reid*



Brainstorming Your Dream Space Students find the

card deck inspirational and they consistently explain new interpretations of the card ideas from the perspective of their own experiences and dreams. *Kelly Dreyer*



Brain Food for Design Assignments The card deck can be used with class assignment relating to design, which incorporates geometry, scale drawing, budgeting, and more. When used as a kit-of-parts in a design assignment, the cards can be combined in endless variations. *Kelly Dreyer*



Supporting Client Connected Projects Multistudio often uses the Deck of Spaces as part of Client Connected Projects, to help students work with design professionals and obtaining Market Value Assets (MVAs) working toward Real World Learning goals. *David Reid*



Engage at Any Level Users from mid-elementary age up to adults can easily engage with the Deck of Spaces - it's user friendly and supports engagement from light-hearted, fun activities to deep culture-changing efforts across entire schools and districts.

Lauren Pusateri

0:00 / 2:08

Design intent & point of view:

Our physical environments are filled with primes – ways in which the space around us nudges us to make subconscious decisions or makes us feel a certain way. The Deck of Spaces helps us be better aware of these primes so we can impact them through intentional design decisions. The Deck of Spaces originated to bring more awareness to how *space* can positively impact the 32

checkpoints of the UDL framework to improve teaching and learning in support of learner variability. Among the checkpoints are ideas such as optimizing individual choice and autonomy, minimizing threats and distractions, fostering collaboration and community, varying the methods for response and navigation, and optimizing access to tools and technologies. All these and more can be augmented by well-designed space. The Deck of Spaces idea cards illustrate specific ways to accomplish this.

UDL is inherently about access and inclusion. However, many themes associated with diversity, equity, inclusion, and belonging (DEIB) in today's world of education aren't explicit in the original UDL language. Therefore, as the authors and designers of the Deck of Spaces re-imagined the K12 Second Edition, they foregrounded more explicit ideas and language to better spotlight opportunities that support DEIB with space design. These opportunities include how space can support inclusivity across racial and ethnic differences, how it can be more supportive to students with socio-emotional challenges, how it can mitigate stigmas associated with socio-economic disparities, and how it can be more intentional to mitigate barriers related to sexual identities and non-binary gender identities.

Example ideas from the deck that impact the student experience include concepts that offer choice and agency, rethinking the layouts of

classrooms to avoid spatial hierarchies that harken back to colonialism, providing safe spaces for retreat and reflection, allowing students to make their own space within a space, allowing students to engage with any surface, providing Living Labs to support authentic learning, and affording transparency to enhance the school community.

Similarly for faculty, ideas include faculty collaboration studios (not to be confused with the faculty breakrooms that smell of burnt popcorn and lack professionalism) and learning prototype studios that afford teachers environments that dignify their profession. In addition, the deck offers the chance to assess the power dynamics within classrooms, to raise awareness about how the teacher's position can inhibit a sense of inclusion. Within the Paradigms category, ideas include engaging family members with hospitality, which has direct links to concerted cultivation outside the classroom and progressive learning growth. Other ideas include showcasing community successes, defeating the stigma of school, and thinking of the library as a kitchen rather than a grocery store to foster more creative and maker-based learning.

Design process:

Multistudio was approached by members at CAST, the home organization supporting UDL,

to consider developing space design guidelines supporting the UDL framework.

For the 25 years UDL has existed, there has never been criteria to address the highly impactful influences of space on the principles within UDL. The process for the first beta deck took months, exploring hundreds of examples of education spaces that offer benefits to support principles of UDL, and vice versa, taking each of the 32 checkpoints and testing ways space could positively impact each checkpoint. This collection of ideas was collected into a set of primary idea cards, each with a big idea heading and secondary descriptions offering further inspiration and applications. A long list of draft cards was created and shared via a digital MIRO Board with a consortium of collaborators across the country – education researchers, teachers, teaching coaches, designers, and students. Many new ideas emerged, existing concepts were re-written, and imagery was refined. Further literature reviews were done to validate and refine ideas with scientific evidence on learning impacts.

The team also scrutinized user interaction with the cards. How many cards were too many? How could the card design help users mentally process and organize a large number of ideas? How could the card design facilitate easy sorting, whether users prefer to process ideas based on the image side or the text side of each card? How could we balance an appropriate level of rich descriptions and

citations with cards that can be quickly read and processed?

Research, ethnography, subject matter experts, iteration, and beta testing:

Along with collecting example learning spaces that support UDL and DEIB principles, the design team combed through dozens of research papers related to learning outcomes. Some research touched on space as a variable or influencer. Other research was extrapolated to imagine how space could be designed to elicit positive behaviors tied to the research; for example, how the benefits of concerted cultivation could potentially be enhanced by better engaging parents and family members in the management of their children's education.

The diverse composition of the design team lent a broad base of subject matter expertise to the team and differing points of view. One of the most challenging aspects of the design process was culling down the expansive collection of ideas from the team into a manageable-sized card deck.

Stakeholder interests: (audience, businesses, organizations, labor, manufacturing and distribution.)

The Deck of Spaces (available in editions for Early Childhood, K-12, and Higher Education) is incredibly versatile in its applications. We're continually discovering new ways users

interact with the cards – a testament to the versatility of the Deck of Spaces.

The baseline application was envisioned to support design discussions with stakeholders involved in designing new and renovated learning spaces. The deck is a wonderful tool to bridge languages between educators, design professionals, facilities personnel, and administrators. See photo captions for a few example applications.

Other applications that users have shared include the use by classes in schools of education around the country, by professional development specialists, and by teachers themselves seeking inspiration for their own classroom hacks. At the collegiate level, the Higher Education edition has been used by campus planners, administrators, centers for faculty excellence, and departments focused on access services. Many large school districts have furnished multiple copies in their service center resource libraries, making them more available for teachers and staff across dozens of schools. Nearly every week, we hear of new applications.

How the project earns its keep in the world. What is its value? Social, educational, and economic impacts, whether it's paradigm-shifting, sustainable or if it creates an environmental, cultural or gladdening effect.

The Deck of Spaces brings increased awareness to challenges and opportunities in

today's world of education. It informs users how space may be creating learning barriers for certain students, conscious or sub-conscious. By bringing greater awareness about the power of space design to non-designers (educators, facilities managers, school board members, administrators), the opportunity to influence design outcomes that provide positive impact to learner outcomes is much greater! And the ability to think about the influence of learning space on ALL learners, regardless of learner variabilities, is much more tuned in. Users of the deck are able to think more globally about the range of learners using their designed spaces – how their different lived experiences and learning disabilities may shape their perception of the environment much differently than those of the immediate design and instruction team.

The end result of the Deck of Spaces has been spaces more successfully designed to meet the needs of *each and every* user. Districts like San Francisco Unified have successfully integrated the cards into the design process of their new schools. The cards have been integrated into UDL teacher training around the country. The tool kit has been a catalyst in re-imagining schools and the future of education around the country. As diversity, equity, and inclusion (DEI) become more center-stage in districts across the country, the Deck of Spaces has been a fabulous tool to help create productive conversations on these topics so all students feel a sense of belonging



The Deck of Spaces K-12 (2nd Edition)

The Deck of Spaces K-12
(2nd Edition)

Multistudio

Visit Website

(<https://deckofspaces.com/>)

The Deck of Spaces™ K-12 (2nd Edition) is a conversation starter, a brainstorming tool, and an educational tool that allows educators and designers to introduce novel, research-supported spatial concepts to audiences — young and old.

As architects, designers, and researchers, we realize that physical space is a fundamental element within a learning framework. Consequently, our education design team partnered with the Universal Design for Learning Implementation and Research Network (UDL-IRN) and the Center for Applied Special Technology (CAST) to create a tool that is tactile, user-friendly, and supportive of conversation between the worlds of spatial planning and teaching.

At the beginning of every project, we use this deck during a visioning stage to implement and amplify teaching practices, which ultimately impact the mind-sets of students and faculty and have profound learning effects on the student experience. We use this deck in various ways to engage with the whole gamut of stakeholders. Each new user group is constantly expanding the card's methods of use. It awakens users to ideas not previously considered, making it an ideal tool for visioning. Users guide their discovery with an expansive set of ideas — it's not a prescribed visioning tool aimed at a specific outcome. Prioritized ideas are easy to pull from the deck and collect as guiding principles. Card categories include student experience, educator experience, and school culture, helping to ensure that all stakeholder perspectives have multiple means to find expression for their viewpoint.

The cards comprise an idea or set of ideas — a narrative description on one side and photos of application ideas on the other. While the images are not the sole solution for each idea, they're starter ideas, giving the design team and end users the springboard needed to express goals for the educational facility design.

Designed in partnership between Multistudio, UDL-IRN, and CAST.

1. David Reid, AIA, ALEP, UDL Assoc. - Lead Project Designer, Multistudio
2. Susan Hardin, UDL Implementation Consultant, CAST
3. Michael Ralph, PhD, Lead Researcher & Master Teacher, Multistudio
4. James Basham, PhD, Professor, Dept. of Special Education, University of Kansas
5. Sally Wurtzler, Education Designer, Multistudio
6. Tayvia Navy, Assoc. AIA, Interior Designer, Multistudio
7. Julie Charvat, Graphic Designer, Multistudio
8. Ally Simmons, Graphic Designer, Multistudio



[_\(\[https://twitter.com/sfdesignweek\]\)](https://twitter.com/sfdesignweek)



[_\(\[http://instagram.com/sfdesignweek\]\)](http://instagram.com/sfdesignweek)



[_\(\[https://www.facebook.com/sfdesignweek\]\)](https://www.facebook.com/sfdesignweek)

[Join our mailing List \(\[https://sfdesignweek.org/email-2/\]\)](https://sfdesignweek.org/email-2/)

[Contact Us \(\[https://sfdesignweek.formstack.com/forms/contact_us_\]\)](https://sfdesignweek.formstack.com/forms/contact_us_) | 415-609-6220

San Francisco Design Week® is a registered trademark of Design Bay Area. © 2023 AIGA|SF. All rights reserved.

The Deck of Spaces Video: <https://vimeo.com/397263203>