Space to Learn

Ideas and inspiration for transforming learning spaces

Making space for learning

Educators have been arranging and rearranging classroom spaces since the days of the one-room schoolhouse. From shared seats and long benches to individual desks, from blackboards to whiteboards to smartboards, learning spaces have evolved over time in response to a changing world and students' changing needs.

That tradition continues today as the science of learning reshapes how teachers prepare students to work collaboratively, act independently, think creatively, and use new technologies.

Learning spaces matter

Designing learning spaces is not about decorating classrooms. As educators work to meet the challenges and opportunities faced by a new generation of students, they are designing (and redesigning) their classrooms to support modern learning.

Research shows that where students learn can make an enormous difference in how well they learn. Absenteeism declines when classrooms have more daylight. The presence of paintings and plants in classrooms has been linked to better motivation and concentration. One study found that the classroom environment can affect pupils' learning and academic progress by as much as 25%.

Even the smallest tweaks to the design of a learning space can add up to a change that fosters active participation and gets students to take ownership of their learning. Anyone can make space for learning.

What you'll find in this booklet

This booklet is a starting point for anyone interested in transforming a learning space. Inside you'll find big ideas to guide your thinking of what a reimagined space might look like, practical tips on how to begin the process, resources to keep you going, and inspiration along the way.

LITTLE BETS:
Ideas and simple advice from schools and teachers.

Design Mindset:
Questions and guidance for your design journey.

Students to the Center:
Strategies for ensuring that your transformations benefit your students.

Learn From:
Design inspiration from other spaces and places.
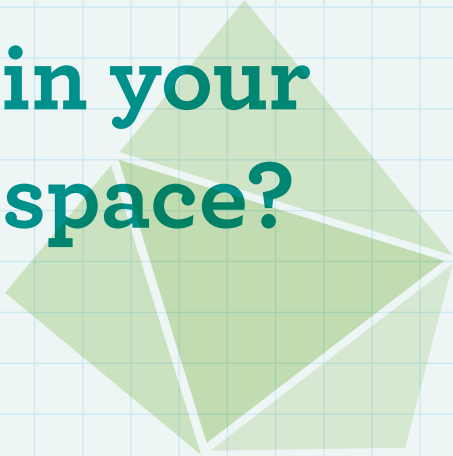
IN PRACTICE:
Examples and reflections from real space transformations.

Space is a tool for learning, and everyone in a school is a potential designer.

Getting started with a space transformation can be as dramatic as knocking down walls or as modest as applying a new coat of paint. If you let your learning goals drive your redesigns, and enlist your students as co-designers, you can make meaningful and lasting changes to your learning space.

Ready to get started? Don't worry about what you have to buy or how much it's going to cost. As you'll see, you can do a lot with a little. Instead, start by asking yourself:

What do you want students to do in your space?

Principles of learning space design

Put students at the center *and co-design with them.*

Strive for universal *so that all students can access what's available.*

Balance form with function *because they're both important.*

Stay playful, *question your assumptions, experiment wildly, and consider nothing to be precious.*

Never stop iterating *because there is no finish line.*

Terminology in this book

Design: The process of making improvements to the built environment based on creative solutions to identified needs.

Designer: Anyone who works to change or create the built environment, especially by balancing feasibility, viability, and desirability.

Iterate: To repeat a process or endeavor in order to improve and refine results.

Student-centered: Practices that address the distinct learning needs, interests, aspirations, and cultural backgrounds of students.

Universal design: The process of composing an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, or ability.

Collaborate & Communicate

When students work in groups to tackle a larger problem, they drive their own education. Rather than receiving knowledge passively, learning through collaboration and communication helps students build skills they'll spend the rest of their lives using. *Learning spaces that encourage collaboration and communication:*

Provide the tools for students to **visualize their thought processes**.

Make room for students to **learn from and with each other comfortably**.

Design for flexibility, creating **configurations that support different tasks and conversations**.
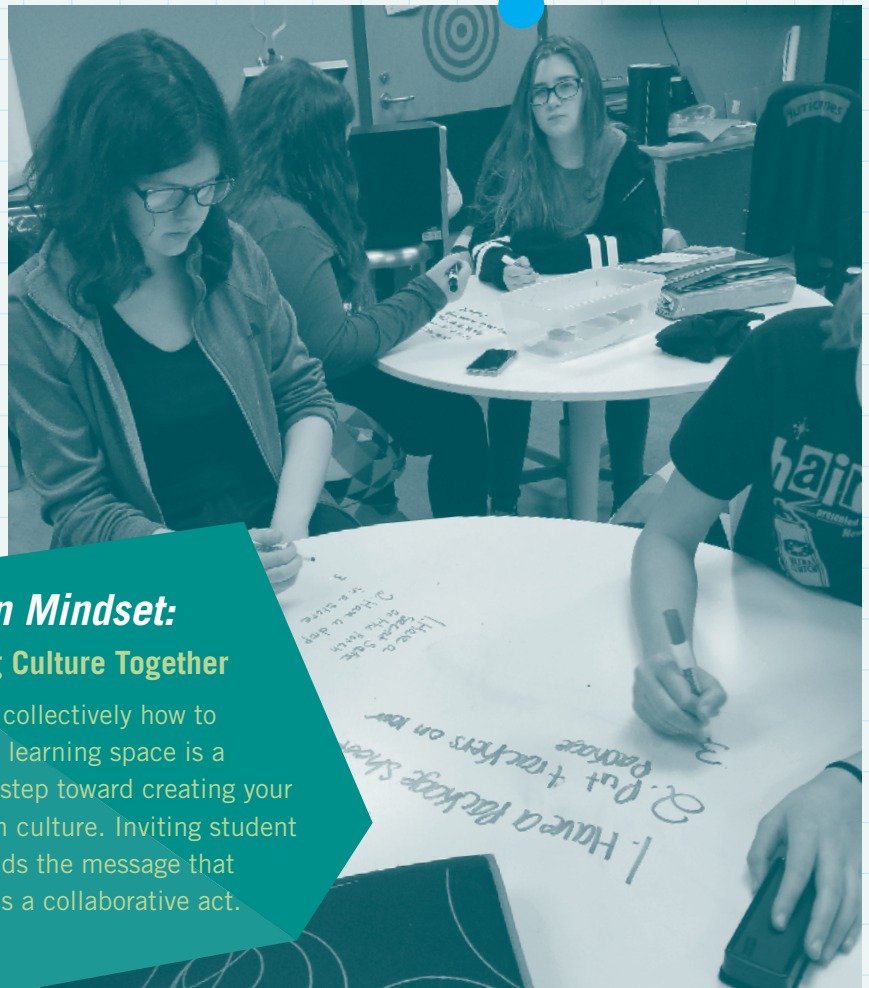
LITTLE BET:

Whip up a Whiteboard

Whiteboards are a staple of collaboration, but they don't have to be expensive or permanent. Ordinary contact paper can turn the top of a desk or table into an instant whiteboard. Shower board is an inexpensive whiteboard material available at hardware stores (and they'll typically cut it to your dimensions right in the store).

IN PRACTICE:

Whiteboards at New Castle Area School District

At New Castle Area School District, adding whiteboards to tables, desks, and walls has created opportunities for students to articulate thoughts, visualize ideas, and enjoy the freedom to make mistakes that comes with writing on a surface that can be wiped clean easily.

Design Mindset:
Creating Culture Together

Deciding collectively how to arrange a learning space is a powerful step toward creating your classroom culture. Inviting student input sends the message that learning is a collaborative act.

Design Mindset:
Think Beyond the Front

Moving (or downsizing) the teacher's desk can signal to students that they drive their own learning. Consider the powerful perspective change that comes from removing the "front" of the classroom.

Learn from: Museums

Museums are full of evocative, often eye-catching objects that invite visitors to explore independently, choosing which displays they engage with and in which order. In many kid-friendly museums, visitors must work together (with peers or adults) to fully experience exhibits. On your next museum visit, take note of the ways in which curators have intentionally built in opportunities for collaboration and communication.

LITTLE BET:
Flexible Seating on a Comfortable Budget

Before buying expensive standing or mobile desks, try using inexpensive plastic bed risers to raise a desk, or removing desk or table legs to create a desk that students can use while sitting on the floor.

IN PRACTICE:
iCreate Studio at Elizabeth Forward Middle School

Elizabeth Forward Middle School transformed their library into the iCreate Studio, where students use technology, imagination, and a little elbow grease to bring their ideas to life. Eight different seating arrangements give teachers and students flexibility, and a one-button video studio and outdoor classroom provide a variety of environments for learning.

Study & Focus

When students have the space to work independently in a quiet space, they cement what they have learned while recharging for a new cycle of engagement and collaboration. *Learning spaces that encourage studying and focusing:*

Create a buffer between students and the constant stimuli that surround them.

Make room for students to **reflect on what they've learned** and internalize lessons.

Help students to process and reset, and to **refuel their mental and emotional energy**.

Design Mindset:
Sound Is Part of Your Space

Space design goes beyond what the eyes can see. Noise can be a distraction or a catalyst for learning. Young learners have sensitive ears, which means that the sounds in a space can have a profound effect. How could you tailor the sounds of a learning space to fit student needs?

IN PRACTICE:
Quaker Valley Middle School Library

When Quaker Valley Middle School redesigned its library, they did more than replace the bookshelves and tables. The library includes spaces for group projects, a makerspace zone, and even a mini video studio designed to look like the TARDIS from the television show "Doctor Who." A special café space provides an alternative to the cafeteria for students who prefer to eat lunch in a quiet place.

Design Mindset:
You Can't Learn on an Empty Stomach

Students can learn only when their more basic needs—for food, shelter, and security—are met. Keep these needs in mind while designing your learning space.

Students to the Center:
Stop Fighting Fidgeting

Fidgeting might seem like a sign of a distracted student, but for some children it's a natural part of the learning process. Consider using desks that give students room to move their bodies while they learn.

IN PRACTICE:

Kiddie Pools at Duquesne Elementary School

At Duquesne Elementary School, empty kiddie pools provide a relaxing alternative to desks and chairs. Alone and in pairs, students recline with body pillows and blankets as they read, using the pools to recharge. With clipboards and lap desks, the pools double as writing spaces, fostering close collaboration. One student in an Emotional Support class recently took the Pennsylvania System of School Assessment test in the pool, which helped to counter the anxiety of test-taking.

Design Mindset:
Accentuate the Negative

You might spend a lot of time considering what to put on your walls, but what about which walls should remain blank? Emphasizing the negative space on your walls can give young brains a break from processing information.

Learn From: Libraries

Libraries' quiet atmospheres and private desks are perfect for learners who crave independent study. Visit your local library to take note of how they're creating intentional focus space.

Investigate & Experiment

When students solve a mystery or perform an experiment, they develop their curiosity into a tangible result while building skills and habits that they'll use in work and life. *Learning spaces that encourage investigation and experimentation:*

Make tools and resources visible to students.

Create **comfortable and welcoming places** to "fail forward."

Make space for both **team collaboration and individual discovery**.

LITTLE BET:
Just Add Wheels

You don't need to buy new furniture to make your classroom more flexible. Sometimes all it takes is a set of casters attached to an existing item to get minds moving.

IN PRACTICE:
Mobile Fab Lab at Intermediate Unit 1

Intermediate Unit 1 in Coal Center, Pennsylvania, has found a solution to the problem of insufficient space for investigating and experimenting in the classroom. They've created a Mobile Fab Lab that travels to area schools and brings state-of-the-art equipment, teacher training, and materials directly to students.

Learn From: Science Labs

Modern science labs feature ample standing-height working surfaces and adjustable chairs. This allows scientists to stand or sit depending on what's best for the task at hand. As your students conduct experiments, consider how your space serves their different activities.

Students to the Center: Experiment Together

Students know how and where they learn best. By giving them clear choices and modeling their options, you can invite them to experiment with you on your space transformation.

Design Mindset:
Where Are You Going to Store All This Stuff?

You're going to need storage! Designate at least 30% of your space as storage, and don't stash things in the dark: use transparent storage containers to make materials more visible.

IN PRACTICE:
STEAM Learning Labs at South Fayette Elementary School

The STEAM (Science, Technology, Engineering, Arts, and Math) Learning Labs at South Fayette Elementary School contain many technology tools that students need to learn, but the design of the space—bright paint colors to complement student work, flexible tables and chairs to allow for the right arrangement for each project, and tons of storage chosen specifically for the materials needed for STEAM learning—is central to the Labs being an effective learning space for students and teachers.

Design Mindset:
Stay in Motion While Remaining in Place

Your space transformation is an opportunity to change your students' surroundings without going anywhere.

Perform & Create

When students perform and think creatively, they engage fully and actively with the material, take chances, and begin to demystify their own work processes. *Learning spaces that encourage performance and creation:*

Transform schools from places of receiving knowledge to **spaces of active creation**.

Demonstrate that teachers are **co-creators of knowledge**, not people who hold all the answers.

Inspire students to **dream big**.

Students to the Center: **Co-designing Comfortably**

Students will feel like true co-designers of a learning space when they feel that their input is needed to make the space comfortable, fun, and a place where they can learn.

IN PRACTICE:
iMedia Center at Connellsville Area High School

At Connellsville Area High School, students use the iMedia Center to record music, create videos, and produce television programs. By enlisting students as co-creators in everything from designing the space to training new students on the facilities, the school ensures student buy-in.

Design Mindset:
Let Light In

Far from a distraction, windows and the daylight that they allow into the classroom have been associated with higher math and reading test scores and faster test-score improvement, and have also been shown to cut down on absenteeism.

IN PRACTICE:
Brick Makerspace powered by LEGO Education Solutions at Montour Elementary School

Only one thing outnumbers books at the Montour Elementary School library—LEGO bricks. The Brick Makerspace powered by LEGO Education is designed to give students room to move around, work together, and create anything they can imagine. Vehicle test tracks and engineering stations sit alongside low tables covered in lego baseplates and equipped with plenty of places to store bricks.

Students to the Center:
Kid's-eye View

Low desks, pillows, and carpet squares let you see things from kid level, opening up a new perspective on how the classroom works for everyone and new visions of how to support kids' creativity.

Learn From:
Artist Studios

Studios are places where artists have the space to try new things, fail, clean up, and try again. Their flexible setups, natural light, and open layouts encourage creation and performance. Creating wide-open spaces in your classroom (even if they're temporary) can make room for new kinds of learning.

Make & Build

When students have space to make and build at school, they can actively apply their academic learning to real life while developing technical expertise and creating tangible evidence of their progress. *Learning spaces that encourage making and building:*

Illustrate how things work and how students can manipulate their world.

Give students **ready access to the tools** they need to tackle a problem.

Design with **students' learning needs**—not specific equipment—in mind.

IN PRACTICE:

Tiny House Mobile Fab Lab at Fox Chapel Area School District

Seniors at Fox Chapel Area High School created a space for themselves, their peers, and learners all over their region to investigate and experiment. Students built a mobile fabrication lab on a flat trailer base. This red-roofed tiny house on wheels is a mobile makerspace that transports many of the same machines students used to build it—CNC machines, 3D printers, laser engravers, vinyl cutters, and more.

Students to the Center: Students as Co-owners

When students feel a strong sense of ownership toward a makerspace, they're more likely to act as stewards of the space, observing safety precautions and taking good care of the equipment.

IN PRACTICE:
Makerspace at Barack Obama Academy

Pittsburgh Public Schools' Barack Obama Academy boasts a state-of-the-art makerspace where students design their own 3D-printed and vinyl-cut projects, and even operate T-shirt-printing businesses, giving them the opportunity to fully experience the active, hands-on learning that occurs in makerspaces.

Students to the Center:
Talk to Your Students

Starting with what students are excited to make and build and then designing your makerspace around that can both save the steep costs of buying expensive equipment and cultivate student buy-in right from the start.

LITTLE BET:
Open Storage

Instead of hiding supplies away in closed cabinets, consider open shelves to make students' tools more visible to them.

Learn From:
Industrial Workshops

Industrial workshops are all about smooth workflow. Engineers notice when equipment that is placed too far apart or processes that run at different rates create traffic bottlenecks on the shop floor, and they're constantly iterating to make these spaces more efficient. Take time to notice traffic flow and bottlenecks in your classroom, and iterate on a layout that works for you and your students.

Socialize & Grow

When students come together in a learning space, they build social skills that will inform their education and work for the rest of their lives. When they act as co-designers of their classroom spaces, they learn the power of non-stop self-reflection and iteration. *Learning spaces that encourage socialization and growth:*

Invite a broad range of **cultural perspectives** into the conversation.

Foster **comfort in sharing ideas**, even those that aren't perfect.

Create space for students to **build and develop relationships**.

Design Mindset:
Making Spaces Universal

Create a welcoming space for all by incorporating the seven principles of universal design:

- Equitable use to people of diverse abilities.

- Flexible use to those with a wide range of preferences and abilities.

- Simple and intuitive use, easily understood by all.

- Perceptible information, accessible regardless of the user's abilities.

- Tolerance for error, minimizing the consequences of mistakes.

- Low physical effort, allowing spaces to be used with a minimum of fatigue.

- Size and space for approach and use regardless of user's size or mobility.

IN PRACTICE:
Avonworth High School

At Avonworth High School, transforming a computer lab into a coffee shop has offered students the chance to design a space, a place to hang out, and has given students in the school's Life Skills program the opportunity not only for work experience but to spend more school time interacting with their peers.

Learn From: Offices

Modern offices offer a model of how to balance space for socialization, brainstorming, communication, and independent work. Ask friends and family what they like and dislike about their office layouts, and consider how your space design can benefit from these observations.
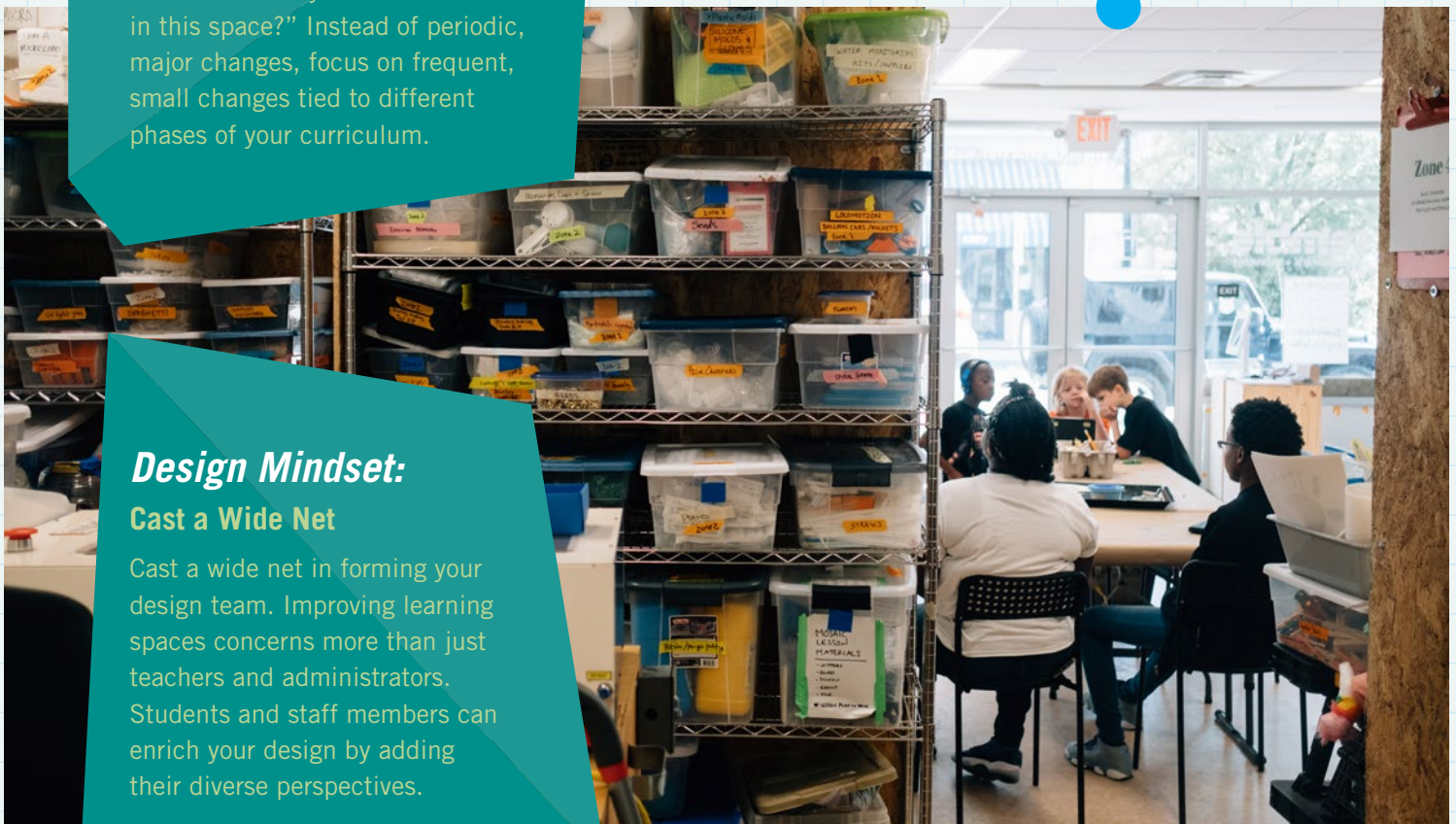
Students to the Center: Celebrating Cultures

Projects that allow students to share their cultural traditions in ways that are comfortable and meaningful to them create a supportive classroom environment. By displaying students' work, you can use space to validate their experiences.

IN PRACTICE:
Assemble

Assemble, a community space for arts and technology in Pittsburgh's Garfield neighborhood, is a learning space with a dynamic identity: a makerspace, hands-on art gallery, and place for summer camp and afterschool, all in one. The space can adapt to different needs—all the furniture and interior walls are movable. Student work is pinned and posted to free surfaces to celebrate diverse perspectives and remind learners what can be done in the space. And Assemble's glass facade allows students to see others like them learning and experimenting.

Design Mindset:
Keep Tinkering

Look around your space at least once a week and ask yourself "What's new in this space?" Instead of periodic, major changes, focus on frequent, small changes tied to different phases of your curriculum.

Design Mindset:
Cast a Wide Net

Cast a wide net in forming your design team. Improving learning spaces concerns more than just teachers and administrators. Students and staff members can enrich your design by adding their diverse perspectives.

Now's the time to make space for learning

All the types of learning listed in this book happen every day in classrooms around the world. Whether they're planning lessons or arranging desks, every educator is a designer. And as designers, teachers and administrators have the opportunity to create learning spaces that activate and empower student learning, whether that means scouring yard sales for barstools and beanbag chairs or consulting with architects and electricians on a brand-new space.
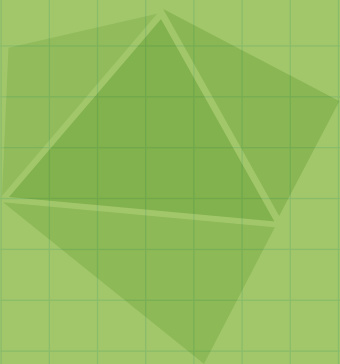
The lessons and advice offered here come from some of the things we've learned with members of the Remake Learning network in and around Pittsburgh, Pennsylvania (learn more at remakelearning.org). But this short introduction is just the beginning! We've collected some of our favorite resources for learning space design to help you take the next step.

With these resources in hand (and with a little help from your community), you can make your space a tool for learning.

An INNOVATOR is someone who...

Next steps

Fired up and ready to go? Here are a few resources for taking the next step in your space transformation.

BOOK: **Make Space**

by Scott Doorley & Scott Witthoft

A tome for designing seriously creative and collaborative spaces.

BOOK: **The Space**

by Rebecca Louise Hare & Robert Dillon

A quick read to get you thinking tangibly about your space-transformation project.

BOOK: **The Third Teacher**

by Cannon Design, VS Furniture & Bruce Mau Design

A 79-point approach to holistic community transformation for learning.

WEBSITE: **School Retool**

schoolretool.org

A collection of little bets to help schools work toward integrating deeper learning.

WEBSITE: **room2learn**

room2learn.org

A sharing platform full of inspiration for classroom design.

BOOK: **Reimagining Library Spaces**

by Diana Rendina

An any-budget guide to school library transformation.

BOOK: **The Design of Childhood**

by Alexandra Lange

An exploration of how the material world shapes children's lives.

WEBSITE: **Design for Learning**

designforlearning .archfoundation.org

Resources from the American Architectural Foundation for design, sustainability, and collaboration.

WEBSITE: **IDEO's Design Thinking Guide for Teachers**

designthinkingforeducators.org

A full guide and workbook to get you in the design mindset.

PDF: **Australia's Campfires, Caves, and Watering Holes**

bit.ly/campfirescaves

A quick introduction to three ways to think about learning spaces.

"Space is something to think of as an instrument for innovation and collaboration. It's not an initial, given condition, something that should be accepted as is. Space is a valuable tool that can help you create deep and meaningful collaborations in your work and life."

David Kelly, *Make Space*

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