

Classroom UX: Designing for Pluralism

DESPITE HIS ECCENTRIC COUTURE and the strange totem rising from his backyard, Henry Cavendish was not a wizard. He was, in eighteenth-century terms, a natural philosopher, or what we now call a scientist. (The word scientist wasn't coined until the nineteenth century, when it was proposed as a counterpart to artist by oceanographer and poet William Whewell.) He was not only one of the most ingenious natural philosophers who ever lived, he was one of the first true scientists in the modern sense.

[Silberman, Steve. *NeuroTribes: The Legacy of Autism and the Future of Neurodiversity* \(p. 21\). Penguin Publishing Group.](#)

Since reading [NeuroTribes](#), we think of [psychologically](#) and [sensory safe](#) spaces suited to zone work as “Cavendish bubbles” and “Cavendish space”, after [Henry Cavendish](#), the [wizard of Clapham Common](#) and discoverer of hydrogen. The [privileges](#) of nobility afforded room for his [differences](#), allowing him the space and opportunity to become “[one of the first true scientists in the modern sense.](#)”

Let's build psychologically safe [homes of opportunity](#) without the requirement of nobility or privilege. Cavendish's autistic ways of being offer insight on how to do that.

One of the greatest scientists in history might have ended up on a ward at Bedlam.

Cavendish was clearly an extraordinary man, fortunate enough to be born to a family of extraordinary means. If his father had been a brakeman or a miner, one of the greatest scientists in history might have ended up on a ward at the Bethlem Royal Hospital (commonly known as “Bedlam”), enduring the regimen of cold baths in vogue for the treatment of “withdrawn” patients at the time.

[Silberman, Steve. *NeuroTribes: The Legacy of Autism and the Future of Neurodiversity* \(p. 34\). Penguin Publishing Group.](#)

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Cavendish Space

Cavendish Space: psychologically & sensory safe spaces suited to zone work, flow states, intermittent collaboration, and collaborative niche construction.

The Main Elements of Cavendish Space Are

- [caves, campfires, and watering holes](#)
- [sensory safety](#)
- [psychological safety](#)
- [learner safety](#)
- [flow states](#)
- [intermittent collaboration](#)
- [niche construction](#)
- [embodiment and regulation](#)
- [cognitive liberty](#)
- [somatic liberty](#)
- [neurological pluralism](#)

A school struggling with the ravages of American poverty has to first be a home — the kind of home the children may not have at home. **A place that is relentlessly safe, that is both calming and exciting, that offers unconditional love, and that offers boundless opportunity.**

That ‘home’ must be supportive and accepting, loving and encouraging, and **it must provide the biggest possible window on to the world, on to the universe.**

A home of opportunity.

What does opportunity look like? **First, it looks like [trust](#). It looks like freedom. And it looks like choice.**

[You must see your school as a home of opportunity | by Ira David Socol | Medium](#)

Build Homes of Opportunity

- Replace the trappings of the [compliance classroom](#) with [student-created context](#), BYOD (Bring Your Own Device), and BYOC (Bring/Build Your Own Comfort).

- Inform spaces with [neurodiversity](#) and the [social model of disability](#) so that they welcome and include all [bodyminds](#).
- Provide quiet spaces for [high memory state zone work](#) where students can escape [sensory overwhelm](#), [slip into flow states](#), and enjoy a [maker's schedule](#).
- Provide social spaces for collaboration and camaraderie.
- Create [cave, campfire, and watering hole zones](#).
- Develop [neurological curb cuts](#).
- Provide [psychological safety](#), [learner safety](#), and [sensory safety](#).
- Enable [cognitive liberty](#) and [somatic liberty](#).
- Fill our spaces with [choice and comfort](#), [instructional tolerance](#), [continuous connectivity](#), and [assistive technology](#).

In other words, make space for Cavendish. Make spaces for both collaboration and [deep work](#).

One of the more interesting ideas emerging from [attention capital theory](#) is the surprising role environment can play in supporting elite cognitive performance.

Professional writers seem to be at the cutting edge of this experimentation, but I wouldn't be surprised if, in the near future, we start to see more serious attention paid to constructing seriously deep spaces as our economy shifts towards increasingly demanding knowledge work.

[*Simon Winchester's Writing Barn – Study Hacks – Cal Newport*](#)

At [our learning space](#), we provide [caves, campfires, and watering holes](#) so that [dandelions, tulips, and orchids](#) alike can find respite. [Online](#) and [offline](#), we provide individual spaces as well as [community](#) spaces so that learners can progressively socialize according to their [interaction capacity](#). Caves, campfires, and watering holes are necessary to designing for [neurological pluralism](#) and providing [psychological safety](#). They're necessary to [positive niche construction](#).

For an autistic person 'it's about finding the right niche', because 'if you have a particular interest, you can really thrive in a particular niche.'

[*Happier on the outside? Discourses of exclusion, disempowerment and belonging from former autistic school staff*](#)

This is my space. It allows me to have control over one small part of a traumatic and offensive world.

[*AuDHD and me: My nesting habits – Emergent Divergence*](#)

Caves, Campfires, and Watering Holes

Campfires are a way to learn from experts or storytellers; Watering Holes help you learn from peers; Caves are places to learn from yourself; and Life is where you bring it all together by applying what you learn to projects in the real world.

[*The Language of School Design : Design Patterns for 21st Century Schools : Nair, Prakash*](#)

Caves

Like Cavendish, we're autistic. We relate to much of his personal life. He needed his bubble, his cave, his sensory and social cocoon.



The cave is a private space where an individual can think, reflect, and transform learning from external knowledge to internal belief.

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[Australia's Campfires, Caves, and Watering Holes](#)

The cave is a private space, where students can find that much needed alone time useful for reflection on their learning or just to recharge. (a necessary space for those students with Aspergers).

[*Campfires, Caves and Watering holes | Libraries, Youth and the Digital Age*](#)

The story of Newton seeing the apple fall is probably one of the most famous stories ever told about the history of science. The fact that the experience leading to this profound discovery was a result of the Cave is significant. In today's hectic life, there is precious little time for quiet contemplation, yet, as Newton found, it is through such contemplation that some of the greatest discoveries are made.

[*From the Campfire to the Holodeck by David Thornburg*](#)

The Cave—the home to reflective learning. This process is solitary and involves self-directed meaning making that can be facilitated with outside resources (books, online informational services, etc.). If the Campfire is home to the lecture, and the Watering Hole is home to the dialogue, **the Cave is home to the cognitive construction of understanding of the sort described by Jean Piaget**. Unlike the social constructivism of Vygotsky, the cognitive constructivism of Piaget is largely a personal act, although it is informed by presentations and conversations. The point here is for the learner to internalize what he or she knows through experimenting and reflecting on observations.

[*From the Campfire to the Holodeck by David Thornburg*](#)

The process of developing Understanding in any domain is highly iterative and nonlinear. **Cave work involves the kind of deep and prolonged thought and research needed to build a personal understanding of a domain of inquiry.**

[*From the Campfire to the Holodeck by David Thornburg*](#)

In schools, we find that the cave form of learning is never a priority. This is a serious problem because **the millions of dollars spent on many new schools will do little to improve educational outcomes if they are built without cave spaces.**

[*The Language of School Design : Design Patterns for 21st Century Schools : Nair, Prakash*](#)

...it is in solitude that students assimilate, synthesize and internalize learning so that it becomes knowledge and (sometimes) wisdom.

[*The Language of School Design : Design Patterns for 21st Century Schools : Nair, Prakash*](#)

Campfires



Cavendish also needed, occasionally, the company of a small set of his Royal Society peers. The Royal Society Monday Club was his campfire, his place where he could lurk at the edges and socialize with a small group on his terms.

The campfire is a space where people gather to learn from an expert. In the days of yore, wise elders passed down insights through storytelling, and in doing so replicated culture for the next generation.

The Campfire is, for many cultures, home to storytelling—a place where people gather to hear stories told by others. Many of these stories evolved into myths that were used to explain the complexities of existence. One (of many) incredibly rich examples of this kind of story can be found in the legends of the Northwest Indian cultures in North America. Many stories in this tradition involved the escapades of Raven—a trickster—whose adventures explained the origin of day and night cycles and many other things. One fine example of this kind of story can be found in Raven stories told by Pacific Northwest Indians.¹ These stories were the primary method that knowledge of the universe was shared with youngsters. The use of primordial archetypes (trickster, etc.) made them particularly engaging. This engagement was essential in preliterate societies because oral tradition was the only way to pass stories from one generation to another and it was important that the stories be remembered.

[From the Campfire to the Holodeck by David Thornburg](#)

Cavendish's Neurodivergent Traits

The source of this apparent shyness was social anxiety so intense that it nearly immobilized him in certain situations.

It is not true, however, that he wanted to remove himself entirely from the company of his peers; he just wanted to stand off to the side, soaking everything in. Two scientists conversing on a topic of interest at the Royal Society's Monday Club might notice a hunched figure in a gray-green coat lurking in the shadows, listening intently. Eager to solicit his appraisal of their work, his fellow natural philosophers devised a devious but effective method of drawing him into an exchange. "The way to talk to Cavendish is never to look at him," said astronomer Francis Wollaston, "but to talk as it were into a vacancy, and then it is not unlikely but you may set him going."

NeuroTribes: The Legacy of Autism and the Future of Neurodiversity

Learn about Cavendish's neurodivergent traits in our [glossary](#).

[Learn About "Exposure Anxiety"](#)

[Learn About "Situational Mutism"](#)

[Learn About "Rejection Sensitive Dysphoria"](#)

[Learn About "Monotropism"](#)

[Learn About "Infodumping"](#)

[Learn About "Eye Contact"](#)

Watering Holes

Cavendish was very uncomfortable in the public eye. He formed an alliance with Charles Blagden, an extroverted and outgoing Monday Club peer, whereby Blagden introduced Cavendish and his ideas to wider audiences. Blagden brought Cavendish to the creative commons, to the watering holes of science and naturalism.



The watering hole is an informal space where peers can share information and discoveries, acting as both learner and teacher simultaneously.

The watering hole is an informal space where peers can share information and discoveries, acting as both learner and teacher simultaneously. **This shared space can serve as an incubator for ideas and can promote a sense of shared culture.** It is an informal area, where students can share in collaborative learning experiences.

[Australia's Campfires, Caves, and Watering Holes](#)

If the Campfire is home to the didactic presentation of material, the Watering Hole is the place for social learning among peers. This learning takes place through conversations, not lectures. Each of us takes part in the Watering Hole—whether it is the water cooler or copying machine at work, the lunchroom, or any other gathering place where peers interact—social learning is a dominant activity in all societies and always has been.

[From the Campfire to the Holodeck by David Thornburg](#)

As for the success of this approach, the computer on which this book was written has a graphical user interface, a mouse, an Ethernet connection, and connection to a laser printer—all of which were invented or (in the case of the mouse, refined) at Xerox PARC in the 1970s. Although I can't speak for others, my own experience was that the **Watering Hole environments there made it easy for me and others to engage in crossdisciplinary projects, many of which emerged serendipitously.** For example, although I had my own research responsibilities in the area of device physics, I also would hang out with the systems scientists one floor up, where, among other things, I was able to invent the resistive touch tablet still in wide use today. **These kinds of inventions were born from chance encounters with people across disciplines who shared their needs and others who had skills no one had thought about before.**

[From the Campfire to the Holodeck by David Thornburg](#)

One of the more interesting ideas emerging from [attention capital theory](#) is the surprising role environment can play in supporting elite cognitive performance.

Professional writers seem to be at the cutting edge of this experimentation, but I wouldn't be surprised if, in the near future, we start to see more serious attention paid to constructing seriously deep spaces as our economy shifts towards increasingly demanding knowledge work.

[Simon Winchester's Writing Barn – Study Hacks – Cal Newport](#)

[Learn About "Caves, Campfires, and Watering Holes"](#)

Cavendish needed control over parts of his world in order to build his [niche](#).

This is my space. It allows me to have control over one small part of a traumatic and offensive world.

[AuDHD and me: My nesting habits – Emergent Divergence](#)

And Cavendish needed [intermittent collaboration](#).

Intermittent Collaboration

Groups whose members interacted only intermittently preserved the best of both worlds, rather than succumbing to the worst. These groups had an average quality of solution that was nearly identical to those groups that interacted constantly, yet they preserved enough variation to find some of the best solutions, too.

[Problem-solving techniques take on new twist: For best solutions, intermittent collaboration provides the right formula](#)

Our cave, campfire, and watering hole moods map to the red, yellow, and green of [interaction badges](#) (aka color communication badges).



The [three-level and three-speed communication flow](#) used at [Automattic](#), [WordPress](#), Stimpunks, and other distributed organizations reflects the progressive sociality of [cave, campfire, and watering hole](#) contexts and [red, yellow, green interaction moods](#).

With our [communication stack](#), we cover the three levels, three speeds, and three archetypal spaces of communication, collaboration, and sociality.

- Three Levels: Conversation, Discussion, Publication
- Three Speeds: Realtime, Async, Storage
- Three Spaces: Caves, Campfires, Watering Holes
- Three Sensitivities: Dandelions, Tulips, Orchids

Three Levels: Conversation, Discussion, Publication

An example of the three levels of communication at Automattic

Say I have a new *idea* about something at work, for example, I think we should automatically check for JavaScript console errors during our e2e automated test execution. I might start with an asynchronous **conversation** in Slack about this, just mentioning it and seeing if anyone has any ideas. Someone might mention they saw a blog article about that

recently, and post a [link to it](#). I'm immediately ahead before I started that conversation since I now have a head-start on how to achieve this.

I go about my ways of working on this and having resolved a few different issues along the way through conversation, I am now ready for **discussion** on my idea. At Automattic we make extensive use of internal sites called P2s which are a way to quickly post an idea internally for people to read and have threaded discussions. So for example I could post all the details I have about my idea so far, and it's via this I learn about another approach that's currently taking place by a different team using a service called [Sentry](#).

Taking all the discussion and feedback into account, I may choose to add information on JavaScript console logging to a new or existing article on our knowledge base called *The Field Guide*. This is the guide to all things Automattic and contains only the **publication** of information, *not* discussion. It's still kept very up to date by allowing everyone edit access to any part of it (much like a wiki) – and each page shows the people who have edited it the most.

[How we Communicate at Automattic – Quality Thoughts](#)

Three Speeds: Realtime, Async, Storage

This is the speed where **you must be there** to engage in the conversation. This kind of collaboration happens often in one-to-one discussions, with a lot of messages exchanged in a short amount of time and quick replies. Sometimes this can happen with more than 2 people, but it's unlikely to reach a large team. For this speed to work well it's very important to have a good notifications system in place.

This is the speed where **you will be there** at some point to reply in the conversation. This form of discussion involves small groups of people. Usually, the groups consist of 1- 3 participants but not often more than 10 or conversation becomes very difficult. It is frequently represented by content displayed in an activity flow.

This is the speed where **you are not there** anymore in the conversation after you wrote it. This is a form of broadcast communication: one person writes, many people listen, often in a long timeframe. It's often a piece of content that is able to stand on its own, covering a specific topic or subject.

[The Three Speeds of Collaboration: Tool Selection and Culture Fit · Intense Minimalism](#)

Three Spaces: Caves, Campfires, Watering Holes

Futurist David Thornburg identifies three archetypal learning spaces- the campfire, cave, and watering hole-that schools can use as physical spaces and virtual spaces for student and adult learning,

The campfire is a space where people gather to learn from an expert. In the days of yore, wise elders passed down insights through storytelling, and in doing so replicated culture for the next generation. In today's schools, the experts are not only teachers and guest speakers, but also students who are empowered to share their learning with peers and other teachers.

The watering hole is an informal space where peers can share information and discoveries, acting as both learner and teacher simultaneously. This shared space can serve as an incubator for ideas and can promote a sense of shared culture.

The cave is a private space where an individual can think, reflect, and transform learning from external knowledge to internal belief. Schools across Australia had both posters and places to encourage this private individual time.

[*Australia's Campfires, Caves, and Watering Holes: Educators on ISTE's Australian Study Tour Discovered How to Create New Learning and Teaching Environments where Curriculum and Instructional Tools Meet the Digital Age, UNGC NC DOCKS \(North Carolina Digital Online Collection of Knowledge and Scholarship\)*](#)

In creating such a system, today's educators go back to the best of our roots in the earliest teachers who understood that learning occurs in many spaces, from caves to campfires to watering holes. The tools we use and the curriculum we learn shift across time.

[*Timeless Learning – How Imagination, Observation, and Zero-Based Thinking Change Schools*](#)

First, and make no mistake here, [all three sacred learning spaces](#) will have [analogs in cyberspace](#). If they don't, then cyberspace will cease to exist as a domain of interaction among humans. **Those using the new media will create their own analogs for these learning places, even if they are not designed into the system.**

[*Campfires in Cyberspace: Primordial Metaphors for Learning in the 21st Century*](#)

Three Sensitivities: Dandelions, Tulips, Orchids

According to empirical studies and recent theories, people differ substantially in their reactivity or sensitivity to environmental influences with some being generally more affected than others. More sensitive individuals have been described as orchids and less-sensitive ones as dandelions.

Although our analysis supports the existence of highly sensitive or responsive individuals (i.e. orchids), the story regarding 'dandelions' is more complicated because they can be further divided into two categories. If we consider 'dandelions' as the metaphorical example

of the low-sensitive group, what plant species best reflects the medium-sensitive group? Sticking to the well-known flower metaphor, we suggest ‘tulips’ as a prototypical example for medium sensitivity. Tulips are very common, but less fragile than orchids while more sensitive to climate than dandelions. In summary, while some people are highly sensitive (i.e. orchids), the majority have a medium sensitivity (i.e. tulips) and a substantial minority are characterised by a particularly low sensitivity (i.e. dandelions).

[*Dandelions, tulips and orchids: evidence for the existence of low-sensitive, medium-sensitive and high-sensitive individuals | Translational Psychiatry*](#)

Most of us have genes that make us as hardy as dandelions: able to take root and survive almost anywhere. A few of us, however, are more like the orchid: fragile and fickle, but capable of blooming spectacularly if given greenhouse care. So holds a provocative new theory of genetics, which asserts that the very genes that give us the most trouble as a species, causing behaviors that are self-destructive and antisocial, also underlie humankind’s phenomenal adaptability and evolutionary success. With a bad environment and poor parenting, orchid children can end up depressed, drug-addicted, or in jail-but with the right environment and good parenting, they can grow up to be society’s most creative, successful, and happy people.

At first glance, this idea, which I’ll call the orchid hypothesis, may seem a simple amendment to the vulnerability hypothesis. It merely adds that environment and experience can steer a person up instead of down. Yet it’s actually a completely new way to think about genetics and human behavior. Risk becomes possibility; vulnerability becomes plasticity and responsiveness. It’s one of those simple ideas with big, spreading implications. Gene variants generally considered misfortunes (poor Jim, he got the “bad” gene) can instead now be understood as highly leveraged evolutionary bets, with both high risks and high potential rewards: gambles that help create a diversified-portfolio approach to survival, with selection favoring parents who happen to invest in both dandelions *and* orchids.

[*The Science of Success – The Atlantic*](#)

For in the story of the figure of speech from which this book draws its enigmatic title-the metaphor of orchid and dandelion-lies a deep and often helpful truth about the origins of affliction and the redemption of individual lives. Most children-in our families, classrooms, or communities-are more or less like dandelions; they prosper and thrive almost anywhere they are planted. Like dandelions, these are the majority of children whose well-being is all but assured by their constitutional hardiness and strength. There are others, however, who, more like orchids, can wither and fade when unattended by caring support, but who-also like orchids-can become creatures of rare beauty, complexity, and elegance when met with compassion and kindness.

While a conventional but arguably deficient wisdom has held that children are either “vulnerable” or “resilient” to the trials that the world presents them, what our research and that of others has increasingly revealed is that the vulnerability/resilience contrast is a false

(or at least misleading) dualism. It is a flawed dichotomy that attributes weakness or strength-frailty or vigor-to individual subgroups of youth and obscures a deeper reality that children simply differ, like orchids and dandelions, in their susceptibilities and sensitivities to the conditions of life that surround and sustain them. Most of our children can, like dandelions, thrive in all but the harshest, most bestial circumstances, but a minority of others, like orchids, either blossom beautifully or wane disappointingly, depending upon how we tend and spare and care for them. This is the redemptive secret the story herein reveals: that those orchid children who founder and fail can as easily become those who enliven and thrive in singular ways.

The Orchid and the Dandelion: Why Some Children Struggle and How All Can Thrive

First, and make no mistake here, [all three sacred learning spaces](#) will have [analogues in cyberspace](#). If they don't, then cyberspace will cease to exist as a domain of interaction among humans. **Those using the new media will create their own analogues for these learning places, even if they are not designed into the system.**

Campfires in Cyberspace: Primordial Metaphors for Learning in the 21st Century

Together, all these tools facilitate intermittent collaboration, psychological safety, and sensory safety. They help us develop and respect [flow states](#). They help us solve problems together.

Is it better to solve problems in isolation or by collaborating with others?

Harvard research says . . . neither.

The best solutions come from “intermittent collaboration” — group work punctuated by breaks to think & work by ourselves.

[Daniel Pink](#)

Anyone else have trouble with open office plans? [#AskingAutistics](#)
[#ActuallyAutistic](#) [#neurodiversity](#) <https://t.co/bk4XsPPgRE>

— NeuroDivergent Rebel (they/them/Xe/Xem) ? ???? (@NeuroRebel) [February 18, 2018](#)

Someone mentioned almost wanting to make it an ADA issue, I think it already

absolutely is – not having to work in an open office is a reasonable accommodation employers should be expected to agree to [#AutSpace2018](https://t.co/CB9GIn8rV6)
<https://t.co/CB9GIn8rV6>

— e* says hi (also at @endeverstar.bsky.social) (@endeverstar) [August 19, 2018](#)

And I add [@medicieffect](#) findings that creativity blossoms in diverse teams / couple that with collab + individual space for problem solving and the solution finding and invention potential moves up an S-curve I bet!

— pammoran (@pammoran) [August 22, 2018](#)

[Learn About “Intermittent Collaboration”](#)

[Learn About “Red|Yellow|Green Interaction Badges”](#)

[Learn About “Communication Speeds”](#)

Neurological Pluralism

Neurodivergent people are psychological safety barometers.

We must build for the psychological, social, and [sensory safety](#) of neurodivergent people.

- Caves, Campfires, Watering Holes
- Dandelions, Tulips, Orchids
- Red, Yellow, Green
- Conversation, Discussion, Publication
- Realtime, Async, Storage

These reductions are a useful starting place when designing for neurological pluralism. When we design for pluralism, [we design for real life](#), for the [actuality of humanity](#).

[Hyper-plasticity](#) predisposes us to have strong associative reactions to [trauma](#). Our threat-response learning system is turned to high alert. **The flip side of this hyper-plasticity is that we also adapt quickly to environments that are truly safe for our nervous system.**

The stereotypes of [meltdowns](#) and self-harm in autism come from the fact that we frequently have stress responses to things that others do not perceive as distressing. Because our unique safety needs are not widely understood, growing up with extensive trauma has become our default.

Because of our different bio-social responses to stimulus, **autistic people have significant barriers to accessing safety.**

[*Discovering a Trauma-Informed Positive Autistic Identity | by Trauma Geek | Medium*](#)

Edges Cases Are Stress Cases: Design is Tested at the Edges

An education that is designed to the edges and takes into account the [jagged learning profile](#) of all students can help unlock the potential in every child.

[*From Hostility to Community – Teachers Going Gradeless*](#)

Design for agency and [collaboration](#). Design for [acceptance](#) and [intrinsic motivation](#). Design for the real lives of [disabled](#) and neurodivergent people. We [are always edge cases](#), and [edge cases are stress cases](#). [The logistics of disability and cognitive difference](#) are exhausting, often impossible. A necessary part of design is [compassion](#), and a necessary part of compassion is recognizing the [structural realities](#) of marginalized people. [Design is tested at the edges. We design for everyone when we design for neurodiversity and disability.](#)

Design for our spiky profiles.

[What makes us different, makes all the difference in the world.](#)

“Edge cases define the boundaries of who and what you care about” (<http://bkaprt.com/dfrl/00-01/>). They demarcate the border between the people you’re willing to help and the ones you’re comfortable marginalizing.

That’s why we’ve chosen to look at these not as edge cases, but as stress cases: the moments that put our design and content choices to the test of real life.

It’s a test we haven’t passed yet. When faced with users in distress or crisis, too many of the experiences we build fall apart in ways large and small.

Instead of treating stress situations as fringe concerns, it’s time we move them to the center of our conversations—to start with our most vulnerable, distracted, and stressed-out users,

and then work our way outward. The reasoning is simple: when we make things for people at their worst, they'll work that much better when people are at their best.

[Design for Real Life](#)

Intersectionality's raison d'être is to reveal the systems that organize our society. Intersectionality's brilliance is that its fundamental contribution to how we view the world seems so common-sense once you have heard it: by focusing on the parts of the system that are most complex and where the people living it are the most vulnerable we understand the system best.

At its core, [intersectionality](#) is about nuance and context.

[The Intersectional Presidency – Tressie McMillan Cottom – Medium](#)

“Essentially, no one knows best the motion of the ocean than the fish that must fight the current to swim upstream. I study fish that swim upstream.”

[Black Cyberfeminism: Intersectionality, Institutions and Digital Sociology by Tressie McMillan Cottom :: SSRN](#)

[For More, Read “Choosing the Margin: Design is Tested at the Edges”](#)

Design With, Not For

Even better than designing *for* is designing **with**. Neurodivergent & disabled students are great [flow testers](#). They'll thoroughly [dogfood](#) your school UX. There are great opportunities for project & [passion-based learning](#) in giving students agency to audit their context and design something better.

This is another area where working with disabled people can prove beneficial to all employees. We tend to feel most greatly the unseen negative effects many employees feel on a lesser degree. Design workspaces with us and we can help you design a better space for everyone.

— John Marble (@JHMarble) [February 18, 2018](#)

Good point by @krisnotkristen: Sensory Curation is useful for neurodivergent people because environments are not normed for us, which is to say it isn't built with autistic people in mind. [#autspace2018](#)

— Eric Michael Garcia (@EricMGarcia) [August 19, 2018](#)

“There is something very simple but profound about simply watching people tackle their everyday challenges.” <https://t.co/kNkSiOmNow>

— Ryan Boren (@rboren) [January 15, 2017](#)

And we can prove it with (e.g.) eight years of figures for a set of public buildings. Autism-accessible ones saw greatest growth in visitor numbers from all kinds of people. <https://t.co/2EaFetzLGq>

— Ann Memmott PgC MA ? (She/They) (@AnnMemmott) [September 24, 2018](#)

And, take my word on this, no one can identify and rebel against an unfair system as efficiently as a kid or adult with ID, except perhaps an autistic person. They know the system is unfair!

[*PBIS is Broken: How Do We Fix It? – Why Haven't They Done That Yet?*](#)

Parallel to the topic of who designs for children lies a bigger question: **Do children need design at all? Or, rather, how might they be enabled to design the toys they need and experiences they desire for themselves?** The act of making that designers find so satisfying is built into early childhood education, but **as they grow, many children lose opportunities to create their own environment, bounded by a text-centric view of education and concerns for safety.** Despite adults' desire to create a safer, softer child-centric world, something got lost in translation. Jane Jacobs said, of the child in the designed-for-childhood environment: “Their homes and playgrounds, so orderly looking, so buffered from the muddled, messy intrusions of the great world, may accidentally be ideally planned for children to concentrate on television, but for too little else their hungry brains require.” Our built environment is making kids less healthy, less independent, and less imaginative. What those hungry brains require is freedom. Treating children as citizens, rather than as consumers, can break that pattern, creating a shared spatial economy centered on public education, recreation, and transportation safe and open for all. Tracing the design of childhood back to its nineteenth-century origins shows how we came to this place, but it also reveals the building blocks of resistance to fenced-in fun.

[*The Design of Childhood: How the Material World Shapes Independent Kids*](#)

The School User Experience

What do kids see? What do they feel? What do they smell? What do they hear? What is their experience as they move through your school?

How much more effective we might be if our user interface design was intentional, and intentionally designed to support children?

[*Your School's UX. What is it? And where to start.*](#)

Have many fewer rules, and ONLY have rules you can successfully defend in a debate with a student

Eliminate lunch detention and no recess punishments. Those are cruel punishments which demolish your credibility with every child.

Working graffiti is good.

[*Your School's UX. What is it? And where to start.*](#)

We had been talking about our journey from opening up a few walls to building truly flexible spaces, from offering kids seating and writing choices to a move toward eliminating single-teacher classrooms, but our [presentation](#) was, indeed, geared toward *building*.

“Everybody always has a building project,” I finally said.

Because every school should be changing all the time. And should be changing with a purpose — moving from adult centered teaching spaces to child centered learning spaces — moving from static environments to flexible environments — moving from controlling design to inspiring design.

Every school needs a building project every year, because you don't need contractors and bulldozers to change a school environment — you just need commitment.

So if you can't do the expensive stuff — you can still do the effective stuff. So here are four things you can do to change your school's space.

[*How Will You Redesign Your School Over The Next Six Months?*](#)

One: Give your kids the gift of daylight.

Well, in order to maintain healthy attention kids need three things that are often in short supply in schools — [fresh air, large muscle movement, and daylight](#). One of the easiest to fix, in many schools, is daylight.

[How Will You Redesign Your School Over The Next Six Months?](#)

Two: Get rid of teacher desks.

The teacher's desk is an ugly remnant of a time when uninvolved teachers led ineffective classes, they really need to vanish.

[How Will You Redesign Your School Over The Next Six Months?](#)

Three: Keep all of your classroom doors open.

The most obvious way to build transparency and openness into your educational environment is to open classroom doors and create the notion of 'the commons.' Opening doors will make your school noisier and more active. It will convert corridors from waste space to instructional space. It will allow kids who need a different kind of space to have it and yet — remain supervised.

Obviously it will do something else. The talk we gave to the architects was titled "Space that forces change — Change that forces space." Opening doors will make your teachers change what they do. Noisier environments mean that teacher voice must change. You can't really yell over it, you have to talk under it, and thus move away from mass instruction.

[How Will You Redesign Your School Over The Next Six Months?](#)

Four: Let kids sit where they want, if they want.

We have this saying, *"if a kid can't walk into any classroom, kindergarten through 12th grade, and choose where, how, or if to sit — we aren't teaching them to make decisions, which means we aren't teaching them very much at all."*

This is important. The act of controlling seating, like the act of controlling toilet use, or food and drink, is an act which shatters the possibility of real trust between teachers and children.

[How Will You Redesign Your School Over The Next Six Months?](#)

We cannot build an effective, an empathetic, a working [User Experience](#) unless we build a [User Interface](#) that kids won't turn away from. And our schools are User Interfaces. Our schools are the "how" our children interact with education. Every door, wall, room, teacher,

rule, chair, desk, window, digital device, book, hall pass are part of the User Interface, and that User Interface defines the User Experience.

And we cannot begin to understand the User Experience we need until we get fully into the heads of our users. That's true in web and programming design, its true in retail and restaurant design, and its absolutely true as we design our schools. This understanding can have complex analytical paths – and those are important, and it has a committed caring component – but it also has an essential empathetic underpinning, and maybe you can begin working on that underpinning in a serious way before this next school year begins.

[SpeEdChange: Writing for Empathy](#)

The learning flexibility created by our new school-wide, multi-age spaces offers a much wider bandwidth of opportunities and potential experiences to children. We have learned from multiple research sources that [natural light](#) is a key ingredient to create environments in which learners thrive. Since the redesign, light pours into halls and learning spaces.

A variety of [flexible furniture, seating, and informal work areas](#) provide learners and teachers with both choice and comfort options to locate in space differently depending upon the work that is being done. The teachers know from learning research that **both [spaces](#) for quiet, independent work as well as for small and large groups to gather are critical** to address the range of children's needs, planned learning experiences, and instruction necessary to maximize learning potential across the school.

[Thinking Beyond the School Box: Inspired Architecture + Contemporary Learning | A Space for Learning](#)

It is our responsibility to provide every learner with real learning space choices based on task-based and physical comfort-based needs, which not only allow their cognitive energy to be focused on learning but helps students to develop the contemporary skills needed to alter and use spaces to initiate and accomplish collaborative and individual work. This includes the availability of multiple communication tools and contemporary technologies as well as assisting students in understanding and creating a variety of learning products which demonstrate student choices in curriculum, task, technologies, and media.

No child within the Albemarle County Public Schools should need a label or prescription in order to access the tools of learning or environments they need.

Within the constraints of other laws (in particular, copyright) we will offer alternative representations of information, multiple tools, and a variety of instructional strategies to provide access for all learners to acquire lifelong learning competencies and the knowledge and skills specified in curricular standards. We will create classroom cultures that fully embrace differentiation of instruction, student work, and assessment based upon individual learners' needs and capabilities. We will apply contemporary learning science to create accessible entry points for all students in our learning environments; and which support students in learning how to make technology choices to overcome disabilities and inabilities, and to leverage preferences and capabilities.

[Seven Pathways](#)

Comfort & Choice and Student-Created Context

"...while sitting in that chemistry classroom, I asked, 'Does anyone here have furniture like this at home?' I guess that began our Choice and Comfort Pathway."

[Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools](#)

Learning Space [#acpsnta16](#) middle school treehouses
pic.twitter.com/rIPtD2SLQV

— Ira Socol – available on threads, bluesky, medium (@irasocol) [August 10, 2016](#)

We believe in scaling great ideas, theories, and strategies across our schools rather than trying to scale up programs. Not everybody's going to build a treehouse in the cafeteria as our kids did in one middle school. That was a school-specific desire. A group of middle schoolers in another school decided to build a high-altitude balloon apparatus and send it to the outer edges of the atmosphere. Not every middle school needs to do that. Some kids may decide to do something that seems less ambitious and build a nine-hole Putt-Putt golf course using cardboard. **The projects, and the form of the learning environment, need to build on the passions, and build from the experiences, of both students and teachers.**

[Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools](#)

We are learning that Making to Learn allows the children themselves to create their own engaging context.

Making has a simple role in schools, my friend and colleague [Chad Ratliff](#) says, "*it is putting content into student-created context.*"

[SpeEdChange: Getting to Making, Getting to Education which actually Works](#)

buy tools. Use them to rip out furniture and knock down walls ?

pic.twitter.com/fRfkhGVlQR

— Ira Socol – available on threads, bluesky, medium (@irasocol) [May 23, 2016](#)

Under former superintendent [Pam Moran](#) and former technology and innovation director [Ira Socol](#), [Albemarle County Schools](#) embraced BYOC, student-created context, [open technology](#), [toolbelt theory](#), and [universal design for learning](#). They are innovators to watch and emulate. Follow them on Twitter — and read their blogs.

- [SpeEdChange: The future of education for all the different students in democratic societies.](#)
- [Ira David Socol](#)
- [Ira David Socol @medium.com](#)
- [A Space for Learning](#)
- [Pam Moran @medium.com](#)

Their book, [Timeless Learning](#), is an important part of our journey at Stimpunks. We cite it all over our website. It is a [fundamental text of progressive pedagogy](#).

As a result, the culture of learning has shifted from a more traditional one-size-fits-all “sit and get” model to multiple learning pathways grounded in project work, choice and comfort, making, Universal Design for Learning, instructional tolerance, connectivity, and interactive technology applications.

We have learned from this work that children need control in their environment, choice in how they learn, different options for locating themselves comfortably in space, and trusting relationships with adults and peers if they are to become learners with voice, agency, and influence.

Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools

First we say “Project-Problem-Passion-Based Learning.” This starts with that teacher generated (perhaps choice of) project(s), in an attempt to make the meaningless in a curriculum appear relevant. Then, Problem — still teacher generated — say, “how might we filter water?” or even, “how might we clean water?” with student agency taking a foothold. Then Passion — to us Student Passion, not teacher — as in “What interests you? What could you read/do/write/make?” And suddenly the classroom changes.

Finally, the term we use is “Maker,” and for us that means Student Created Context. The learner knows where she/he wants to go, and we ride along, fitting important skill development and knowledge in where appropriate.

Within all this, “technology” — meaning contemporary information and communications technology — *is essential*, as are all other kinds of tools. And that **technology needs to be open and under student control, or it becomes a limitation instead of a key to the world.**

“Personalized Learning” is an expression of teacher and school power, just like “Project-Based...”

Contemporary learning doesn’t happen by chance. As we work to seamlessly migrate learners into digital environments, we also work to strengthen their active engagement in physical spaces that provide them with choice, comfort, and connectivity as they construct learning. Moving students out of desks in rows and teachers away from the dominant teaching wall has occurred intentionally and represents broad team efforts to design user experiences that bring tools, curricula, and pedagogy into alignment as learners acquire lifelong learning competencies essential to success in homes, communities, the workforce, and as citizens. This work has formatively evolved from years of study and efforts to advance the work, some of which were successes and others not.

Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools

What can you change that would give you an opportunity to extend choice and comfort in your environment to others? Seating? Work choices? Tools?

[*Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools*](#)

Within a year of that day she had changed the culture and space of her classroom, not just the use of new tools. The space became one of the first DIY classrooms in the district. By the end of the year, **she had shifted at least half of the chairs out of the room and replaced them with comfortable seating and set up the concept of choice in how and where learners worked on and off their devices.** She had that first group of sixth graders bring their own comfort in her room, so she had one wall where kids stacked up all their pillows and stuffed toys to use as they worked in writers' workshop.

[*Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools*](#)

Rearrange your room to provide learners with standing desk options. Add some soft, comfortable seating or active seating and encourage different kids to try it out. Ask them for feedback.

[*Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools*](#)

Imagine contemporary learning spaces that challenge every convention of the places we built as schools in the twentieth century. Imagine gathering spaces that encourage young people to work and play together in natural learning communities supported by teachers who create pathways that guide them towards adulthood. Imagine a merger of transparent natural and built environments that allow learners the delight of multisensory inputs through access to natural light, fresh air, and green space. Imagine a continuum of flexible spaces designed to create an atmosphere of choice and comfort as students pursue their interests and passions through transdisciplinary learning that fosters collaboration, critical thinking, creativity, and communication.

[*Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools*](#)

When we create spaces in which children can choose to extend their learning, their investigations, for as long as they desire, we breed empowerment and ownership.

By providing a variety of accessible learning pathways, kids develop a remarkable breadth of capabilities. If we trust in childhood and believe that we can help them learn from mistakes, they take off. Kids who have given up on school become leaders; kids who

have felt invisible develop a sense of voice. When we choose trust, we grow hearts and minds. Setting aside our controls and filters gives students space to develop their own. They begin to seize opportunities to personalize their own learning in response to their own questions about how they learn best. **As adults we can learn about the intersection of personalization of time, comfort, and choice as we watch children engage in the process of making learning decisions.** How do children choose to place themselves in space to work? Are they naturally inclined to sit, to stand, to lounge on the floor? Do they choose to work around an open table flooded with natural light, beneath the table in a quiet nook, or outside under a tree? **How do kids use time differently when organizing it for themselves?**

Timeless Learning: How Imagination, Observation, and Zero-Based Thinking Change Schools

Hacking Schools: Getting Ourselves to Yes

Hacking Schools: Getting Ourselves to Yes | Pam Moran

The challenge of getting past “yeah, but” to “what if” can be pretty difficult.

We have learned that getting to yes is the first step in the change process of really reimagining every nook and cranny...

Because of our educators getting to yes and making it safe to try out new ideas, our schools are now different.

We’ve built makerspaces and hacker spaces.

We’ve taken down walls and removed lockers and made design studios, and what I see all over our schools today are kids who no longer are having to check creativity when they enter our schoolhouse and doors.

Sometimes soon somebody’s going to come to your office and they’re going to pitch to you their idea for their version of a tree house.

Be ready, and just say yes.

[Hacking Schools: Getting Ourselves to Yes | Pam Moran | TEDxEICajonSalon](#)

Stimpunks Space

In designing [our learning space](#), we use [zero-based design](#) and said yes.



Online: Bringing Safety to the Serendipity

Online, we [bring safety to the serendipity](#) with our distributed community and [communication stack](#). Chance favors the connected mind. Our learners connect using **1:1 laptops** and **indie ed-tech**. We give our learners **real laptops** with **real capabilities**, and we fill those laptops with **assistive tech** and **tools of the trades**.



Offline: Fresh Air, Daylight, and Large Muscle Movement

Offline, our learners enjoy fresh air, daylight, large muscle movement, and the freedom to stim and play. Ensure there is quiet space and outdoor space that people can access at any time.



Cavendish Space: Caves, Campfires, and Watering Holes for Dandelions, Tulips, and Orchids

We provide psychologically and sensory safe spaces suited to zone work, intermittent collaboration, and collaborative niche construction



We Believe: Human-Centered, Trauma-Informed, Self-Determined, Equity Literate, Interdisciplinary, Open Technology

Learning is rooted in purpose finding and community relevance.
Social justice is the cornerstone to educational success.
Dehumanizing practices do not belong in schools.
Learners are respectful toward each other's innate human worth.

