By Christian Long

Teach Your Students to Fail Better with Design Thinking

Design thinking combines collaboration, systems thinking, and a balance of creative and analytical habits. And it might just help your students make the world a better place.

I f you were able to create your own classroom for the future, with your choice of resources, furniture, tools, and technology, how would you design it so that your students would be most capable of adapting in an increasingly complex world as a learner, professional, and citizen? And how would you design it so that your students were likely to have the greatest impact on the world around them? I believe this is the driving educational question for all of us in the digital age, and it has been tugging at me with increasing intensity over the past few years as technology has begun to dominate the larger conversation about learning and teaching.

Fail Better

Last spring, I was invited to speak at TEDxOverlake, a learning-focused event held at the Overlake School outside of Seattle, Washington, USA. When the event's curators asked me what part of education I wanted to speak about, I answered decidedly, "failure."

In fact, I didn't want to speak about just the general concept of failure, but I wanted to celebrate the words of Samuel Beckett: "Fail, fail more. Fail better." And I wanted to do so with an eye toward empowering students to thrive.

At first glance, Beckett's provocation appears to be counterintuitive. After all, our current system remains predicated on the belief that we should eradicate failure and guarantee that every student "succeed" at all costs. And yet, when we really look at what learning in the digital age is about— fostering multidisciplinary collaboration to solve increasingly complex problems with no clear answers—it seems impossible to imagine that an educational culture built on confirming "right answers" within predictable training scenarios offers our students a viable way forward.

Perhaps in the past when learning outcomes were more static, we needed students to be predictable. Tomorrow, however, we'll need agility, divergent thinking patterns, and an ability to test ideas in messier ways.

In other words, we need digital age learners to be comfortable with failure. And we need learners who know how to fail better.

From Designing Curriculum to Design Thinking

As a former high school English teacher and longtime experiential education leader, I spent years searching for innovative ways to combine the best of traditional academics with the hands-on projects my students accomplished outside the classroom.

My students successfully ran international blogging projects mentored by professional jury members around the world, undertook an 8,000-mile creative writing/research road trip to discover the "real America," debated literary ideas via Skype with students around the world, created a pop-up black-box theater in the woods behind our school to bring Shakespeare to life, and spoke at national educational technology conferences.

Sometimes these projects were fueled by emerging technologies. Sometimes they were analog in nature. They all, however, had one thing in common: I was ultimately in charge of identifying the problem to be solved. And to be honest, I always struggled with that.

I didn't struggle because teaching in such circumstances was hard. Quite the contrary. I was amazed by my kids' passions and abilities, and I loved conjuring up new problems for them to solve. What I struggled with was the contradiction of being the "designer" of my students' experiences on the one hand while wanting them to truly "own" their learning on the other.

While I spent years trying to perfect engaging project-based/problem-based learning experiences, I never quite made peace with the fact that:

- I was always in charge of the problems they would solve.
- The problems were not always anchored in the real world (even if they were useful in terms of academic skill development and general engagement).
- Deploying cutting-edge technology was often becoming the primary driver of the project itself.
- All too often, I felt pressured to prevent students from truly risking failure (and thus learning) in a meaningful way.

Most project-based/problem-based learning examples I ran into (or created myself) still treated school and the real world as distant allies, not as rigorous partners that had to work hand in hand.

It wasn't until I discovered the concept of design thinking (DT) that I could finally see a new way to challenge our students to become agile thinkers and collaborators in an effort to solve meaningful problems anchored in authentic experience. Even better, DT demonstrated how my students could create their own learning from beginning to end.

Defining a Design-Thinking Mind

DT is about using design to improve the human experience. It combines the ideals of what we want for our students: collaboration, systems thinking, and the development of a balance of creative and analytical habits. It also fuels what our students want for themselves: making an impact on the real world in real time

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and having adults take their passions seriously.

The process essentially comes down to a continuously evolving feedback loop with four elements: empathy, ideation, prototyping, and testing.

Empathy. DT is a creative process grounded in practical experience. By learning to observe human behaviors and needs in the context of real life, DT participants discover human-centered questions and problems worth trying to solve. Better yet, it does so within a remarkably empathetic process that puts the experience of human beings at the center of the equation. It is no longer about answer keys with static facts that seem separate from the day-to-day lives of learners.

Ideation. Once a DT participant is able to identify a real-world problem worth solving, the next step is to explore ways to respond. The goal is not to find a perfect solution at this point. Instead, DT participants seek novel perspectives with a bias toward innovation. DT values the creativity and insights of all participants, regardless of specific expertise or a need to be "right" at first blush. It encourages outside-the-box thinking, which leads to unexpected creative solutions. DT relies on a creative process based on "building up" ideas (rather than the typical analytical process that looks to "break down" ideas). Key to this is the belief that there is no place for value judgments early on. The DT process rewards "and, and" responses from participants, as opposed to the "yeah, but" reactions that are typical of traditional academic experiences.

Prototyping. Once participants identify a wide range of possible solutions, the next step is to rapidly mock up examples. To DT advocates, the idea is to help make an idea real, tangible, and accessible. Ultimately, DT has a natural bias toward action. The best way to approach this—as many designers will

tell you—is to use a rapid prototyping process fueled by an attitude of "fail and fail fast," something ideally suited for learning in a complex and often messy 21st century world.

Testing. Creativity and open minds aside, DT deeply values testing all assumptions. Solutions need to work. And better yet, solutions need to work in the real world and have an observable positive impact on the human experience. Because problems are found in the real world, answers need to be agile enough to adapt over time. Such a pedagogical framework naturally provides learners with the thinking tools to respond to an unpredictable future while remaining focused on the human experience.

Prototype Design Camp

Given this understanding of DT, let's go back to the original question: Imagine you were invited to create your own version of the classroom of the future. Where would you start?

This was precisely the question that members of the eTech Ohio conference planning team presented to Be Playful, a design firm I founded, a year ago in advance of their annual statewide conference.

For the eTech Ohio team, this was not a theoretical question. In essence, they wanted to design a classroom space placed physically in the middle of the conference that would creatively suggest the possibilities for learning and teaching at the front end of the 21st century.

Furthermore, this "classroom of the future" needed to integrate dynamic and cutting-edge technology. It needed to inspire large numbers of the estimated 6,000 conference attendees to come explore and collaborate. It also needed to compete for attention in an exhibit hall surrounded by student-built robots, Wii dance contests, and a range of innovative educational programs.

More important, the solution needed to be unlike anything they had tried in the past.

As a passionate advocate for emerging technology inspiring real-time innovation in the classroom and a designer working in the international school architecture field, this project offered precisely the type of challenge that brought together all of my passions.

However, my first answer was a conditional "yes" that I wasn't sure the eTech Ohio team would accept. While many previous ideas celebrated emerging technology (and the impact of architecture), our energy focused more on *what* students (and teachers) would be challenged to *do* in a digital age learning environment.

Our proposal essentially stated:

• The classroom can't just be a showcase for technology.
• Students must be the center of the program.
• Adults must serve as mentors, sherpas, and allies.
• Students must solve real problems that they come up with.

To our pleasure, the eTech Ohio team said "yes." They were willing to support our idea of "seeing" students actively working, collaborating, solving problems, communicating, creating, and presenting.

To that end, DT made for the perfect partner as 45 high school students from 14 diverse schools in Ohio (as well as a school in Indiana and another in Georgia) trekked their way through the snow and ice to participate in the first-ever Prototype Design Camp.

Their process took the following form:

Find a problem worth solving. Students spent three intense days (from 7:30 a.m. to 5 p.m.) working in teams of six to seven that set out to find, explore, and solve a remarkable problem fo-

cused on the future of learning. Students—as researchers and ethnographers—interviewed conference attendees, global partners, and virtual participants (via several digital platforms) on Day 1, leading to a range of design problems they wanted to consider.

Explore a range of remarkable possibilities.
Once students returned to the classroom, they filled the space with colorful Post-It Notes and sketches rich with multilayered questions and descriptive idea sparks until each team identified their preferred problem. Problems ranged from how to empower young people to become global journalists while still in school to how to stretch the boundaries of a physical classroom and how to

redesign the underlying relationship between learners and teachers. Working face to face with a cadre of professional designers, educators, and technology experts from around Ohio and the United States, design teams spent a day and a half exploring ways to come up with solutions worth prototyping.

Ask big questions of innovative thought leaders.
In addition to having access to mentors within the physical prototype classroom, students also worked virtually with a range of national and global experts via Skype and various social media channels. This included ed tech visionaries Stephen Heppel in England and Ewan McIntosh in Scotland, Ming-Li Chai

from Microsoft's corporate futures team, "Project Runway" finalist Althea Harper, TEDx curators, and others. Simultaneously, Prototype Design Camp students and mentors collaborated with educators around the world via Twitter, Facebook, live streaming of key conversations, and live blogging.

Rapidly prototype a physical concept.
Student teams spent a full day trying to make their most inspired ideas come to life. In addition to an assortment of cutting-edge technologies, including 3D projectors, iPads, and an immersive menu of web 2.0 tools and social networks, the students had a range of art supplies, building materials, and props. We gave them permission to redesign the classroom as needed, from deploying an array of furniture to crafting just-in-time spaces. The attitude was "by any means necessary." Perfection was not

Next Steps

Here are a few ways to learn more about design thinking and customizing your classroom practice and professional development.

1 **Learn about design thinking in general.**

Read "Design Thinking" on Wikipedia: http://en.wikipedia.org/wiki/Design_thinking.

Watch "Deep Dive: IDEO's Shopping Cart" episode on *ABC's Nightline*: www.youtube.com/watch?v=M66ZU2PCIcM.

Watch "Innovation through Design Thinking," a presentation by Tim Brown (of IDEO) at MIT: http://mitworld.mit.edu/video/357/.

Watch "Design Thinking Can Be Learned," an interview with David Kelley (of IDEO, Stanford d.school) in *Businessweek*: www.businessweek.com/video/#video=xhNXBrMjqu9x8m5wJL8yo8-79_plMSxF.

Watch "Tim Brown Urges Designers to Think Big," TED Talk: www.ted.com/talks/tim_brown_urges_designers_to_think_big.html.

Watch "David Kelley on Human-Centered Design," TED Talk: www.ted.com/talks/lang/eng/david_kelley_on_human_centered_design.html.

Read *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* by Tim Brown.

2 **Explore how design thinking is applied to education.**

Watch "Shaping Space: The d.school's Environments Collaborative, a video about Stanford University's d.school": http://vimeo.com/11438598.

"Sandy Speicher: The Mind Behind Design": TEDxSFED Talk, http://talkminer.com/viewtalk.jsp?videoid=OACRT_zUj-8&q=.

Read "Teaching Kids Design Thinking, So They Can Solve the World's Biggest Problems" by Trung Le in *Fast Company*: www.fastcodesign.com/1663416/teaching-kids-design-thinking-so-they-can-solve-the-worlds-biggest-problems.

Read "Design Thinking for Education: What If?" by Max Benavidez, *Huffington Post*: www.designthinkingforeducators.com.

Read "Design Thinking Solves Impossible Problems: Best and Worst" by Ewan McIntosh in edu.blogs: http://edu.blogs.com/edublogs/ 2010/09/design-thinking-solves-impossible-problems-best-and-worst.html.

> In short, DT is about using design to improve the human experience.

3 **Explore how DT is being applied in classrooms, schools, and education at a variety of levels.**

Watch "Emily Pilloton: Teaching Design for Change," TED Global Talk: www.ted.com/talks/lang/eng/emily_pilloton_teaching_design_for_change.html.

Learn more about Studio H: http://www.studio-h.org.

Learn more about Project H Design: www.projecthdesign.org.

Read the *New York Times* article about Pilloton's Studio H program: www.nytimes.com/2010/08/23/arts/23iht-design23.html?ref=arts.

Learn about Prototype Design Camp: http://prototypedesigncamp.com.

Learn about Design Ignites Change: www.designigniteschange.org.

Learn about Tinkering School: www.tinkeringschool.com.

Learn about Public Workshop: http://publicworkshop.us.

Learn about Project: Interaction: http://projectinteraction.org.

4 **Consider providing your students a chance to use DT to solve a real-world problem they are passionate about.**

5 **If that sparks curiosity, see if your students would like to join a global group of young people using DT to solve real problems.**

Watch "Kiran Bir Sethi: Teaching Kids to Take Charge," TED India Talk: www.ted.com/talks/kiran_bir_sethi_teaches_kids_to_take_charge.html.

Look into the international Design for Change Challenge program: http://dfcworld.com.

6 **Seek out professional development that supports educators incorporating DT into classroom practice.**

Explore the K12 Lab wiki via the Stanford d.school: https://dschool.stanford.edu/groups/k12/blog.

Attend professional development courses at Stanford's d.school K12 Lab.

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expected. Prototypes only needed to be good enough to suggest possibilities and engage audiences.

Present to a live jury of professionals and the globe. At the end of the three days, Prototype Design Camp teams presented their solutions to more than a dozen jury members from different professional perspectives. They included the founder of a nationally recognized theater group, an architect who had designed libraries around the world, an architect rebuilding schools in Africa, a professional writer based at a modern art museum, a range of artists across various media, an engineer working in both mechanical and software realms, an internationally known librarian, a graphic designer, marketing specialists, and others. We asked judges to avoid "yeah, but" reactions. Instead, they were expected to invest in the students' ideas and offer real-world applications of those ideas. The final presentation was broadcast to the entire 6,000-person eTech Ohio conference and to the world via various social media channels.

Realize that even three intense days is only scratching the surface. Despite a remarkably immersive experience where our Prototype students successfully used a DT mindset to develop exceptional solutions to authentic learning problems, the real success lay more in students and mentors committing to the process itself than in the answers they presented.

Christian Long is an educator, designer, school planner, educational futurist, and advocate for innovative learning communities. He is vice president of Cannon Design and founded Be Playful, a collaborative global design agency, and Prototype Design Camp.