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Welcome to the first edition of the Design Reader, presented by the School of Design and Creative Technologies at The University of Texas at Austin. I'm so inspired by the outcome of this inaugural journal, which includes topics varying from design pedagogy to the role of design thinking in personal finance and artificial intelligence. Each article circles back to the value of creativity as it weaves through our lives in the realms of art, education, technology, business, and health.

In March 2016, I came to the University of Texas to launch the Center for Integrated Design (CID). Working with undergraduates and teaching design thinking has been such an extraordinary experience. Our goal in creating the CID was to bring design thinking into the core of the UT curricula on a comprehensive scale. The overwhelming popularity of our courses among students across campus showed us that our undergraduates are curious and interested in learning how design thinking and human-centered design can complement their areas of study and enrich their careers.

I've since collaborated with some extraordinary faculty around the country, who are doing similar work at liberal arts colleges and large state schools alike. In asking for submissions for this Design Reader, we specifically requested articles and case studies that examine the role of design thinking in education, business, and society. We received pieces from design educators and practitioners alike. In the following pages, our contributors share how they have embraced creativity and design methodology to develop human-centered solutions, at a time when ever-shorter product cycles require a commitment to continuous innovation.

In 2014 the Design Management Institute issued the results of its 10-year study, finding that design-led firms out-performed the S&P by 228 percent. The study finally validated what we in the design industry had been communicating to our clients and executive stakeholders for many years—in today's highly competitive business landscape, design prowess and creative potential are indispensable to organizations. Today we see that interdisciplinary teams of engineers, designers and business people are commonly working together to deliver total customer experiences. Businesses cannot afford to work any other way. Design has a critical seat at the business table.

The success of our work at the CID has led to the launch of the School of Design and Creative Technologies within the College of Fine Arts, where I have become Assistant Dean. The new school will focus on educating students for creative professions in heavy demand across a wide range of industries. We're building key partnerships with businesses, nonprofits, and government entities to give students unique, real-world connections and hands-on experiences that are valuable for creatives and non-creatives alike.

I hope you'll enjoy these stories from our community. The next edition will include articles from throughout the new school, including our Arts and Entertainment Technologies program. In the meantime, we welcome your feedback and we are grateful for your interest in creativity and the role it plays in higher education, in business, and in society.

All the Best,

Doreen Lorenzo
Assistant Dean, School of Design and Creative Technologies
College of Fine Arts, The University of Texas at Austin
Designers are Educators. Educators are Designers. What Happens When the Best of Both Worlds Collide?

By Katie Krummeck, Director of the Deason Innovation Gym at the Lyle School of Engineering, Southern Methodist University

First, a quick definition of terms: Human-centered design, forged by design firms like IDEO and frog design, is a methodology for creatively solving complex problems that puts people and their needs and motivations at the center of the design process. Human-centered design utilizes empathy as a core part of the design research process. Human-centered design has a number of modes the designer occupies; these modes shift from a focus on divergent thinking and exploration to convergent thinking that yields concrete outcomes. These modes also help keep the designer moving forward, through ambiguity and even confusion.

Educators who thoughtfully craft learning experiences for others—let’s call them educators—approach their work with a deep empathy for those they are trying to teach. To successfully craft these learning experiences for others, educators must thoughtfully construct a scope and sequence and a set of scaffolds to support learning new material. While educators may not think of themselves as designers, they share a similar process but with a different scope. Without tools from the design process, educators are left hoping to nail each lesson the first time it is taught. However, by empathizing with those who have a beginner’s mind (their students) and by carefully crafting a process of scaffolded learning, educators can more effectively design learning experiences that improve the learning outcomes for a broad group of diverse students.

Where do these worlds overlap?

There are increasing numbers of professional designers who shift their careers to enter the classroom to teach the methods of the design process outside of a traditional design education. (See the Stanford d.school, the Master of Arts in Design & Innovation program at Southern Methodist University and the School of Design and Creative Technologies at The University of Texas at Austin as examples.) Designers are particularly poised to become educators because of their awareness as self-educators as examples.) Designers are particularly poised to become educators because of their awareness as self-educators because of their awareness as self-educators who design their own learning experiences to the world of design because of how the methods of design align with a pedagogical framework for self-directed learning (see the K12 Lab at Stanford’s d.school as an example). These educators are drawn to the methods of design as a framework for creating more student-centered learning experiences. Because of this logical alignment and overlap, we can look to these individuals to gain insight into how the intersection of these two professions might accelerate positive educational reform.

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Katie Krummeck

Designers are educators. Educators are designers. What happens when the best of both worlds collide?

We can learn a lot about how to improve the K-16 education system by observing what happens when and how the worlds of design and education overlap.

In the last 20 years, design leaders have sought to integrate the traditional disciplines of the field (industrial design, graphic design, UX, architecture, etc.) to focus on divergent thinking and exploration to convergent thinking that yields concrete outcomes.

As the field of design has opened up to non-designers through exposure to design thinking, many sectors have taken up the approach, from business to health care to education. The adoption of design thinking in education has been particularly interesting because of the overlapping values and shared approaches between designers and educators, which include a professionalized approach to empathizing with others, a posture of lifelong learning and a sense of hope that the status quo can be changed. In addition, there is an increasing trend of designers moving into the classroom to train non-designers in the design process. This confluence of design thinking with education has the potential to break new ground for positive transformations in education; from pre-K to college.

From radically redesigning the syllabus, to reimagining the role of facilitators inside and outside of class, to considering student-directed learning as a Human-centered design challenge, designers are leading the way in transforming the collegiate classroom.

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These modes also help keep the designer moving forward, through ambiguity and even confusion. The methods of human-centered design are the activities that designers curate and complete to move through the modes of human-centered design and make progress toward a creative solution. The tools of human-centered design are the activities that designers curate and complete to move through the modes of human-centered design and make progress toward a creative solution. The tools of human-centered design are the activities that designers curate and complete to move through the modes of human-centered design and make progress toward a creative solution.

Professionals who actively engage in human-centered design—let’s call them designers—approach their work with a beginner’s mindset. Instead of bringing their expertise to bear on a problem by jumping to a single solution at the start, designers practice a process of meta-cognition that allows them to explore the problem from many perspectives while withholding judgment or the urge to “know” the right answer. This process of meta-cognition is supported by design methods: activities designed to structure a process of learning. The designer’s expertise lies in designing their own process of learning; therefore, designers are self-educators who design their own learning experiences.

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What Designers Bring to Education

Most professional designers who have actively cultivated an education-based practice are doing so in college settings. Through the process of actively designing learning experiences for their students (not just content and delivery), designers push the boundaries of the collegiate classroom. Designers who teach human-centered design outside of traditional design school begin by fundamentally reimagining the role of the instructor. Instead of rote delivery, designers leverage their beginner’s mindsets, as well as the methods of the design process to create open-ended design challenges created to support the learning of their students. In this pedagogical approach, the instructor delivers content through crafting the design challenge and exposing students to the methods and modes of the design process. Quickly, the instructor moves from content delivery to a coaching and facilitation role, leaving the students to rely on the methods to move their learning forward. Because these design challenges are authentically grounded in the real world, the learning flows from inside the classroom out into the context and users for which the students are designing. Designers are also keenly aware of all the levers they can pull to create a learning experience. Suddenly, a learning experience is not just about the reading or lab work assigned and the lecture delivered. Designers know that they can influence the pace of the learning and the motivation of the learners by leveraging the tools of design to reform many aspects of the learning process. Designers in collegiate settings are doing everything from radically reimagining the format of the syllabus, to disrupting the systems and indicators of power and hierarchy, to redesigning the classroom to be modular and active. Designers are unafraid to use music, improv theater games, sketching and a playful manner to increase creativity and engagement. Designers are leading the way in reforming the higher education system by approaching the design of learning experiences from an empathetic perspective, by taking a beginner’s mindset (where sacred cows are not tended to) and by using the levers of the design process.

What Educators Can Adopt from Design

Similarly, educators who are adopting the mindsets and methods of design are reforming the K-12 educational system. From the beginning, quality educators have intuitively approached their profession as designers of learning experiences. While many educators did not have awareness of the tools and methods of the field of human-centered design, this is now changing. As the design community builds awareness that design can be brought to bear on fields that are not traditionally considered design fields, student-centered educators are adopting these tools, methods and mindsets to improve their ability to design effective learning experiences.

Educators who intentionally design learning experiences for their students also have a lot to offer designers. Many of these educators have finely tuned the instructional approaches and strategies they deploy to push students who are stuck and are not progressing in their understanding of a concept. Educators are experimenters, whether they recognize it or not. Standing in front of a group of complex individuals with varying learning needs, motivations and interests, every lesson is an experiment in engaging students in a process of learning. If an educator tries something new and seeks to learn from the experience, they are taking an experimental approach to designing learning experiences. Because cycles of facilitation and learning are well-suited for reflection and refinement, educators have a particularly well-developed disposition toward iterative design and failing forward to learn what works and what doesn’t. And, educators have a reliable group of user testers—their students!

Designers are educators, whether they are designing learning experiences as a part of their professional practice or they are designing learning experiences for others. Educators are designers—using empathy and a student-centered approach to reach more students and increase positive learning outcomes. By bringing these two communities together and by sharing the best educational practices embedded within the design process, educators and designers can work together to create one of the most insightful and exciting frontiers in education reform.
When Fidelity Labs, the innovation arm of Fidelity Investments, decided to help borrowers gain a greater sense of control over their student loans, it became apparent that it was extremely hard for borrowers to obtain a clear picture of their total debt. The Fidelity Labs team used human-centered design techniques to distill the complexity of student loans and give borrowers the agency to take control of their financial futures.

In 2014, Fidelity Labs began looking into the student debt crisis. We started where we always do—by listening to the people with the problem. For a few months, we met individuals from all walks of life whose lives were impacted by student loans. We learned everything we could about them to identify where Fidelity might be able to help.

After collecting data points, we found that the student debt crisis was affecting our customers and associates more than we originally thought. An estimated 44 million Americans struggle with student loan debt to the tune of $1.4 trillion; from our research, 79 percent said student loans impact their ability to save for retirement. We had identified a real problem, a big, abstract problem with many potential solutions.

We set out to test our first hypothesis: People with student debt are looking for help reducing their payments. We conducted surveys and usability tests on a variety of existing products and services. Not only did we confirm significant demand for saving on student loan debt, but we also learned that:

- People felt their student debt was holding them back in life
- Refinancer acceptance rates were lower than expected and loan processing time was longer than expected.
- Student debt aggregators help people who want to understand their loans or who are ineligible to refinance
- People had very positive reactions to employer incentives tied to student loans

We decided our focus would be "helping people understand their debt" with the goal of empowering people to take control of their situation in exploring various repayment options.

We started testing our second hypothesis: Including information on federal repayment programs could serve a broader base of users than showing only refinancing options.

This coded prototype allowed people to input loans, see their loan data aggregated and then "Make a Plan" by answering questions. Based on those answers, the tool then offered repayment options that may suit them based on their situation.

Our six-person team had compelling ideas on how to solve the problem. So, we made it a battle. Team "Guess-Who" worked on a concept in which the user would choose people like themselves and see how they handled their debt to find the right path. Team "Concierge" was designed to be the Mechanical Turk and walk users through each of their possible options. After two days, team "Guess-Who" found their idea was too thin, and we had consensus on "Concierge."

A week later, we had our next prototype, a two-page PDF that displayed the user’s loans, total debt and how those numbers would change under different options.

This is where the particular numbers we were showing began to become very important. In the previous round of testing, we had heard people speak emotionally about three things: their monthly payment, their loan-payoff date and the lifetime cost of their loan. Each of those variables reacted differently when different repayment options were applied to them. In this prototype, we began to understand that what we were trying to do was allow users to compare what our tech lead, Joe, called "apples and karate." In other words, two different options that affected numbers that were important to the user in different ways and had different tradeoffs and different results.

What we were trying to learn: Is there value in showing people their real numbers, modeled out in repayment scenarios?

Our big insight: Real numbers make a huge difference in the level of engagement people had with digging into each repayment option.

We found that we can actually crunch the numbers—we were able to obtain calculations for government and private repayment options. In addition, sitting down and talking with our team as a test was a big factor in engagement. This made us wonder whether the product would translate when it was fully automated.

With our results and data in hand, we started designing and building a product, the "Student Loan Assistant," which would allow users to:

- See and understand all their loans in one place
- See calculations of various repayment scenarios based on their numbers
- Compare the differences between scenarios
- Decide to act, or not

Having reached this point, there were still outstanding questions and issues. We narrowed our focus on solving the problem of users needing to understand their current loan picture. We began by putting all the data points related to loans (payoff date, monthly payment by loan servicer, cost of interest) on a single page.
Fidelity believes in three rules of thumb to save you money over the life of your loans. By following these rules you will be able to pay off your loans quicker and pay less in interest over time.

Always pay the monthly minimum on all of your loans. Prioritize your loans in order of interest rate. When your highest rate loan is paid off, focus extra money towards next highest rate loan.

"3 RULES" LOAN SNAPSHOT

This is based on the loan data you entered or uploaded. Edit your loan data at anytime by clicking into the loan summary.

<table>
<thead>
<tr>
<th>Loan Type</th>
<th>Current Loan Amount</th>
<th>Time Until Paid Off</th>
<th>Estimated Monthly Payment</th>
<th>Estimated Interest Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature Student</td>
<td>$12,456</td>
<td>1 year 7 months</td>
<td>$170.00</td>
<td>$2,000</td>
</tr>
<tr>
<td>Perkins</td>
<td>$9,540</td>
<td>1 year 7 months</td>
<td>$144.00</td>
<td>$1,704</td>
</tr>
<tr>
<td>Unsubsidized-</td>
<td>$12,456</td>
<td>3 years 11 months</td>
<td>$300.00</td>
<td>$5,100</td>
</tr>
<tr>
<td>Stafford</td>
<td>$9,540</td>
<td>4 years 11 month</td>
<td>$200.00</td>
<td>$2,400</td>
</tr>
<tr>
<td>ED Financing</td>
<td>$9,540</td>
<td>5 years 6 months</td>
<td>$300.00</td>
<td>$5,400</td>
</tr>
</tbody>
</table>

When you can pay over the monthly minimum, focus extra money towards paying off your loans faster. By paying down extra money, you will save thousands in interest costs. For example, paying an extra $100 a month on your Stafford loan will save you over $1,100 in interest costs and will shorten the life of your loan by one year and 7 months.

By paying an extra $200 per month on your Perkins loan, you will save over $2,000 in lifetime interest costs and will shorten the life of your loan by two years and 6 months.

The key insight was that we needed to look at the bigger picture and tie these important data points together in a more meaningful and organized way. We went back and rooted ourselves in the numbers that mattered. How long will you have loans in your life? How much will they cost you overall? And, how much are they costing you monthly?

In the end, despite continuing travails, we got it to the point where users were pleased with the result.

Here is what we ended up launching with:

**Figure 3**

A couple of big changes we made here were:

- Start with the thing users know—how much they pay per month; this lets them hang on to something familiar while seeing new information
- Show age at payoff rather than amount of time until payoff; it’s easier to picture yourself at age 42 than it is to think of yourself in 10 years
- Create a visual “equation” to show the succession of how the numbers impact each other
- Give some narrative so people understand what these numbers are telling them

The first version served us well as we added more use cases. Every time we tested the evolving product, the Current Loan Picture was far and away the most valuable piece to users.

Now we had an even simpler version of the Loan Narrative that was very well received. “Wow, I’ve never seen this all in one place,” one user said. Users could finally see where they stood and what choices were available to them.

In August, we rolled out the Student Debt Tool to 9 million workplace plan participants. (These are the folks whose companies hire Fidelity to administer their 401(K) plans and other such benefits.) And the response has been equally amazing. We got 50,000 users in the first three weeks, and we keep receiving emails from people like this one:

> I used the Fidelity Labs Student Debt tool today, and I just wanted to write and thank you for simplifying a complicated process. I have been paying extra on my student loans, but couldn’t find a tool that could factor in all the varying interest rates, etc. Using this tool has alleviated the stress of not knowing the path I am on, and helping me to see that all these extra payments are going to pay off eventually.

We haven’t solved the student debt crisis, but we have given people the information they can use to take control of their loans and have a view of the light at the end of the tunnel.

Just because we launched a product doesn’t mean we stopped improving it. We already have new ideas we want to implement to make the experience even better—ways to pull in more information so that users can spend less time entering data, and tools to help people decide what debt to pay off first and what to do if they actually have a little cash left over at the end of the month.

People ask us why Fidelity is even building this product. Here’s what we said: “We can’t be in the business of helping people plan for the future without helping people figure out the present.”
Building a Design Culture Inside Government

By Ariel Kennan, Director of Design and Product, New York Mayor’s Office of Operations

The New York Mayor’s Office of Economic Opportunity used design thinking, empathy, and journey mapping to understand the experience of a homeless person engaging in the complicated process of obtaining housing. These insights helped the city use existing resources to their full potential and provide a better experience for all of its citizens.

Ariel Kennan

By practicing human-centered design, our team at the NYC Mayor’s Office for Economic Opportunity is partnering the people who use services with the public servants and nonprofit providers who deliver them. Government often organizes by business areas rather than by how a resident may be trying to access services. We’re trying to change the culture so we practice empathy and dignity, up front, in all that we do.

In winter 2016, Mayor de Blasio introduced HOME-STAT to help address street homelessness in New York. In initial conversations, it quickly became clear that stakeholders were experts on their segment of the service, but not the service end-to-end. It would have been easy for the program manager to make excuses for not giving us access as winter is their busiest season—and the most critical time for life-saving outreach—but instead she gave us both permission and access.

The first draft of the journey map was created using sticky notes on a big wall. Starting in this way allowed us to easily move items, connect pieces, and start to establish patterns. But there’s a problem with sticky notes: they’re hard to share. If we wanted to communicate across stakeholder groups, we needed a shareable document. And fast.

The solution was to create a digital version to help us see the big phases in the process and how they are connected together. This format allowed us to add more detail and also share with our colleagues in other offices. We were able to show we were making progress and giving early insights. This quick win gave us cover to keep working on the deliverable itself while also doing follow-up research.

We next turned this into a detailed, designed 20-page document. We hosted a one-day workshop with a variety of stakeholders to discuss the needs of the project, bringing everyone into the room together and giving them space to reflect and share was an incredibly impactful exercise. These are people who spend most of their days responding to emergencies; they don’t always have the time for reflection. We also brainstormed enhancements to the service, encouraging participants to go wide—what can improve for policy, service delivery, budget, communications, technology, data—a chance to dream about change.

From the insight we gathered, we developed an internal narrative report structured around the journey map. It was issued to all involved agencies and providers as a document of shared understanding.

Our design research for HOME-STAT has been influential on a number of fronts through creating informed impact. By creating empathy upfront and translating it throughout the entire project, it led to the tone of the official government service being one of empathy, support, and understanding. From policy reports to cross-agency meetings, our research and design process are informing decisions and changes. Our design research and now ongoing data collection are allowing us to identify common bottlenecks, coordinate efforts, and accelerate a resident’s journey toward housing. We work behind the scenes to help agency leaders ask for change and let them shine when we have success.

Design is also informing performance management and technology, including on dashboards and case management systems. Our research directly informed which data points needed to be captured and also built a strong relationship based on empathy and listening. The technology implementation team has continued to build upon this relationship of trust.

HOME-STAT has been meaningful, impactful work for the service it delivers to New Yorkers, and it has also helped open doors to design and build trust for working in new ways. As our design team has been getting established, we have focused on showing value, getting on the map and getting people involved across projects big and small.

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By Ariel Kennan

Ariel Kennan
Thanks to support from our founding partner, Citi Community Development, we are able to spread our methodologies and mindsets through the formation of the nation’s first-ever Service Design Studio and toolkit dedicated to making public services for low-income New Yorkers as effective and accessible as possible.

We’ve created design culture building blocks: Mission, Principles, Tactics & Tools, and Goals to help us build design capacity. We have a shared mission of how we created public services. As designers, we are making public services more effective, accessible and simple for our residents.

We believe government services should be:
- Created with the people who use and deliver them
- Prototyped and tested for usability
- Accessible to all
- Equitably distributed
- Rigorously tested and evaluated for impact and effectiveness

We are exemplifying the principles in our work and also sharing them publicly and internally.

To show better outcomes through design, we've grouped our design methods into high-level tactics, with clear documentation of the process we deploy for each. By having the tactics documented, it creates shared understanding and trust upfront.

We’ve created a new service design toolkit, NYC Civic Service Design Tools + Tactics. It’s meant for public servants who are design curious, not those who are already professional practitioners. It takes on three forms: a website, a physical toolkit, and a printed book. The toolkit is organized by the tactics and includes instructions, templates, and examples. The physical toolkit also provides starter design supplies like sticky notes, highlighters, and stickers.

We used our design process to figure out needs, and we also collaborated with colleagues in content creation and testing of the tools. We plan to continue to iterate and grow the toolkit based on emerging and changing needs. The toolkit was created in the context of government, but it’s highly adaptable to any organization. We encourage everyone to use these resources to seek permission to work in new ways and hope users share feedback and successes.
Design thinking has always been seductive—the promise of creating new products, services and businesses from a process that oh, by the way, happens to be fun, creative, and satisfying. It looked so different from business thinking or engineering thinking. There were colorful Post-its and foam core prototypes instead of Excel spreadsheets and rows of code. This very difference, however, lent it an air of frivolity, and as a result, in many minds it came to be thought of as something peripheral to business growth.

Many companies experimented with design thinking. Some did it lightly, taking a Design Thinking boot camp at the Stanford d.school or hiring a design consultancy such as IDEO or frog to do a project. When the results were not business-changing, they walked away, saying, “Well that didn’t work.” But Fidelity Investments has been committed to design thinking early on, continuing to iterate, learn and refine the methodology until finding what provides the most value.

Fidelity Labs has had a growing Design Thinking team since 2005, helping people in all parts of the company adopt a design-forward approach to their work. More recently, the practice has evolved to focus on design strategy in the firm’s incubators, or small startups run by Fidelity tasked with exploring adjacent spaces to its core business. Fidelity’s design strategists apply a human-centered lens to uncover unmet needs and hidden opportunities.

Here’s how design strategy works on incubators in Fidelity Labs. Our design strategists hone in on a human need and involve product managers to size that need. When there’s an opportunity that is both emotionally deep enough to be meaningful for people and sizable enough to make a business, the incubator team goes after it and builds a new product, service, platform or experience.

Something that starts very broad, like “Why aren’t people in their 20s saving for retirement?” becomes something specific and actionable very quickly (“Young professionals have crushing student loan debt”). With an opportunity space defined, the team digs in to understand the texture and nuance of the ecosystem. They explore what it’s like for students applying to college, for their families, for college administrators and for employers trying to attract young talent after graduation. They map out the needs, pain points, personas and opportunity spaces.

This knowledge, layered together with all the market information, competitive data and business models that the product manager drives, becomes the lens the team uses to find the best business opportunity.

The team moves fluidly between the human need, to how that need could be met, to what kind of business growth that could bring. Each variable is adjusted until the opportunity is too compelling to ignore.

A project might start with a larger trend. For illustrative purposes, this is not a business that Fidelity Labs is pursuing, imagine it’s something like “people are eating more sugar, and so the dental business is booming. How might we serve the dental business community?” So, design strategists go out and talk to veteran dentists, aspiring and new dentists, schools educating those in the dental profession, patients, makers of dental equipment and people who run dental offices. We do this in-person and in-context, over video, using mobile research, or whatever it takes to get the stories and data points we need. We then identify the biggest set of unmet needs.

Let’s say in this instance it’s:

- The first and last person the patients interact with when they walk into the dental office overwhelmingly influences the quality of their experience, but hiring staff is an extreme pain point for dentists
- Getting new patients referred in and referring some patients out to specialists is time consuming and can involve inconvenient manual transfers of dental records
- All the technology in the office breaks regularly, and there’s no one who knows how to fix it

The next step is sizing the opportunity. While the first unmet need might be the most intensely felt, we see on the competitive landscape that there are already a number of emerging startups addressing this need on a platform level. We start conversations about partnerships and keep looking.

What about referrals? We size a couple of different plays—marketing support to help get new patients in, and record transfer opportunities to help with referrals out. But even if we grow the number of patients in our model aggressively year over year, we’d have to build something dental offices would be willing to pay $40,000 a year for to build a business. So we don’t start there.

What about helping dental offices with technology support? We found in our design research that every time a machine or computer goes down and the dentist steps away from a patient, their business suffers. Even more than that, the mental weight and stress of this hassle is something dental business owners would pay to remove. We come up with a couple of directions and market-size each. They seem like big opportunities. So then we start to create concepts and get them in front of people, and when we do, dental workers at all levels become physically animated in the conversations. They don’t want to let go of the materials in front of them. They ask how soon we can start helping them.

This is the moment we’re looking for, so we set out to build a business. As the team grows, the design strategist stays focused on user need. They test prototypes in the field to get data around product direction, service ecosystems and business models. They test the highest risk assumptions so the business can be built as fast and as lean as possible. They capture insights and feed them back to the team so that everything that’s being built has the best chance possible of serving deep, unmet needs.

The design strategist also keeps the user need top of mind as the new business either transitions back to the larger Fidelity organization or spins off into a separate entity. They make sure the powerful user stories and key motivators are woven into the fabric of the business.

Now, the dentist example isn’t literally one we’ve done, but watch as our incubator launches soon, because you’ll see how this example is perfectly analogous to the new business we have created. Design strategy isn’t just for making things. It’s for growing revenue, too.

By Gigi Kalaher, VP Design Strategy, Fidelity Labs
How Design Can Improve Learning Outcomes in Higher Ed

By Dr. Luke Jones, Faculty, College of Innovation and Design, and Director, Campus Recreation, Boise State University

Institutions of higher education are looking for new approaches to retain students, ensure timely progression and graduation, and maximize learning. University culture, structure, and incentives can often paralyze institutions, making it challenging to focus the work of faculty and administrators in a meaningful and timely way. Research conducted at Boise State University shows that design thinking has the potential to increase the creative capacity of university staff at all levels to rapidly improve the student experience.

Universities and colleges face a variety of economic, academic, and social pressures. Parents and students question the value of a college degree just as the nation is looking to colleges and universities to prepare students for the 21st century global workplace. Higher education is called to expand access and graduate more students with an increased focus on job readiness; yet many state governments have divested from higher education as a total percentage of their budget.

Boise State University faces many of these disruptive pressures. Close to half of our students are first-generation students. Many are under-resourced, work two or more jobs, and roll part-time and are living off-campus, away from supportive networks and resources. As a result, the retention and graduation rates of our students suffer, and we need to improve them.

I work in the division of Student Affairs and Enrollment Management. This division co-curricular learning communities and experiences that shape campus culture. Our division focuses on three strategic areas: recruitment, employability of students and increasing retention.

After spending a semester gaining trust and testing ideas, they presented their insights to division leadership. Division leadership recommended they share findings and recommendations with the university’s executive enrollment committee, a group of deans, Institutional Research staff and the provost. I learned that a few weeks before the presentation, one of the deans, frustrated by trying to make sense of retention data, remarked, “I just want to get out and talk to the students!”

“How might we use Design Thinking to increase the creative capacity of the university staff at all levels to rapidly improve the student experience?”

I can identify with both the frustration and sentiment. My experience tells me what he really needs is his team to constantly gathering insights from students so they can be learning together. The staff team from the design thinking class helped this group make sense of what was happening beyond their statistics. Their profiles and stories gave them actionable insights that led to a lengthy and lively conversation.

The staff involved in that class reported learning how to take risks and contribute as a creative team member. They stretched their thinking, embraced curiosity amid ambiguity and learned how to be conscious of biases and preconceived solutions. Additionally, staff got face time with executive leaders across the campus, something they rarely do.

The staff in that first experiment have continued sharing insights on part-time students. They have also helped other students and staff apply design thinking. The result has been a growing community ready to coach others in future design thinking experiments.

As a result of this design thinking experiment, other departments requested design thinking workshops for their staff. These workshops helped staff learn about design thinking, but so far we seem to have had limited results in changing the way teams work and in creating a culture that enables faster innovation.

The second experiment I completed this summer was a Design Academy focused on “student-centered design.” This was a non-credit bearing, seven-week experience where entire staff teams could learn design thinking and apply it to a project of strategic importance. The Learning Technology Solutions staff formed two teams to explore how to scale use of open education resources. The staff from Service Learning explored how to use social innovation in service learning experiences. Three teams of staff from the Student Affairs division explored how to improve the experience of first-generation students at Boise State.

The teams all reported similar learning outcomes as the first set of staff members, and they were able to learn how to apply design thinking. However, the results of their project was mixed. Design teams that brought their full staff, including directors, had the best results.

I am interested in changing how our division and university work together to identify needs and come up with creative solutions. With that as my goal, I have learned the following during my two years of experiments:

- The university must enable spaces for experimentation to encourage staff; innovation is stifled and staff become discouraged when procedures and structure prohibit testing insights and ideas
- The work of design thinking takes time. Gaining trust and buy-in is an important part of the process; embedding this method involves freeing capacity for staff to rise from the day-to-day grind and spend the time needed to engage in human-centered design
- Much of our work has become specialized, and disconnected areas of expertise continue to exist; to learn about students’ needs and establish effective solutions, we must find ways of organizing our work so we are learning together
- Design thinking is an effective tool to spur innovation and an adoption of new ideas; it is most effective when teams have healthy leadership, communication, team dynamics, and mutual trust
- Innovation happens as we focus less on “innovation” and more on developing “innovators”—growing a community of staff that are embedding a student-centered design mindset
- Design thinking is best implemented with coaching over an extended period of time alongside their team and leaders who have devoted time and space to apply design thinking to real challenges they are facing

My next experiment aims to incorporate these lessons. Division leadership is exploring how to deploy a set of design thinking teams, including undergraduate students, to focus on understanding the needs of students that data show are not progressing toward their degree at the same rate as other students. We are at an inflection point where design thinking can be more than a workshop or passing corporate fad and truly impact our culture, work, and students.
DESIGN
X
UXD
Fidelity Labs has created a process called ADEPT to create and evaluate the future of new product offerings. In this process, user experience (UX) designers are brought in at the pilot phase of a project, bringing their expertise to the table at a key juncture to ensure its success.

As the innovation arm for Fidelity Investments, Fidelity Labs has been working since 2006 to create what Clayton Christensen, writing in the MIT Sloan Management Review, calls a “business-generation engine.” Essentially, this means that a business can innovate not just once, but repeatedly. In doing so, it can create a lasting stream of future of new offerings. Fidelity Labs’ product design team brought a product to “catch” the product over the metaphorical fence from Assess through Pilot, and brought in our partners in UXD to “catch” the product over the metaphorical fence at Transition. That product was a success, but the process resulted in extra work that could have been avoided. Because the PD team wasn’t closely enough aligned with the UXD requirements, many elements needed to change to fit into the larger organizational structure.

Design is one of the key assets that we could either borrow or forget from core business. In one project, the Fidelity Labs’ product design team brought a product from Assess through Pilot, and brought in our partners in UXD to “catch” the product over the metaphorical fence at Transition. That product was a success, but the process resulted in extra work that could have been avoided. Because the PD team wasn’t closely enough aligned with the UXD requirements, many elements needed to change to fit into the larger organizational structure.

Other projects have taken different paths, depending on whether they were going to be ultimately transitioned back into the business lines or not. In the project that we’ll be considering, the UXD team was brought in at the beginning of the pilot phase to be hands-on with its creation. This product won’t be launching until year-end, but the early signs are that this earlier engagement will result in a product that will better migrate into the core business.

Early in the ADEPT process, Fidelity Labs product designers look far and wide for possible solutions to a customer need. The work can be messy—pencil sketches and Post-it notes, with a mandate to learn rather than to produce. Designers may intentionally test concepts that are very far from the Fidelity brand to understand what people want and why. And everyone on the team is 100 percent on that project only—a model that would make it hard for someone from another group to commit to while maintaining their primary job.

At the end of the design and experiment phases, the team has honed in on an idea and is ready to build it to test with customers at scale. At that point, it makes sense to partner with UXD to make sure that we are building the product in line with the latest thinking for the company. Think of it like a slow-motion baton pass, where the UXD team has plenty of time to get up to speed on the product before they have to run with it on their own, and the PD team has lots of help from UXD in making sure they are building a product that can scale in the organization. And hopefully at the end of it, we have a product that helps millions of Americans live better financial lives. Because no matter what letter comes before the “D” in our titles, we are all working toward that same goal.

It is this process that separates us from core business. We are evaluated on the ability to move quickly, to deeply understand customer needs and to identify compelling opportunities.

Design is an important piece of this innovation practice, sitting at the center of the creation process. But who should design in such a model? Fidelity Investments already has a large and talented user experience design (UXD) organization. This large and talented team of designers sustains and evolves Fidelity’s products on a daily basis. Is it redundant to build a team of designers at Fidelity Labs?

Product design, as part of the Fidelity Labs mandate, is charged with looking beyond conventional norms in business and development so that we can find new opportunities.

UXD brings the full toolkit to build products in the larger enterprise. They have the knowledge and background with the established corporate design patterns and templates, the established branding and identity and an understanding of known constraints and how to work with them. They also have a view into the other upcoming work in the ecosystem into which the new product will be released.

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As Fidelity Labs has experimented with more than 30 projects, we created a process for innovation that goes by the acronym ADEPT. A mix of Lean Startup, design thinking, and our own experience, it articulates a predictable process by which we create and evaluate the future of new offerings.
DESIGN X HEALTH
Design Thinking in Healthcare: How a Virtual Nurse Helps Keep People Out of the Hospital

By Cathy Pearl, VP of User Experience, Sensely

Sensely’s app uses an avatar-based nurse to have a daily check-in “conversation” with patients to help them manage their health as they deal with chronic congestive heart failure. Human-centered design is key to building a smart artificial intelligence platform that improves health outcomes for patients on a daily basis.

We’ve all had the experience of our word processor crashing before we’ve hit save, not being able to play a favorite movie because the WiFi is out or gnashing our teeth when using a website because it’s so difficult to navigate. These things can be maddening, but when it comes to healthcare, the stakes are even higher.

At Sensely, we use design thinking to find solutions for real healthcare problems. We have some pretty cool technology: a virtual nurse avatar (our most popular one goes by the name “Molly”), speech recognition, natural language processing and wireless integration with medical devices such as blood pressure cuffs. It’s easy to get distracted by the technology, but the question we must ask ourselves, over and over again, is: what is the problem we are actually solving?

One example of a problem we’re working to solve is to help people with congestive heart failure (CHF). CHF is a condition in which the heart is unable to pump adequately to meet the body’s needs, and affects about 5.7 million adults in the United States. According to the Centers for Disease Control and Prevention, heart failure costs the nation an estimated $30.7 billion each year.

“Helping people with CHF” is a pretty vague problem, however; what does it mean to “help” this group of patients? We needed a more specific and measureable goal, and so we focused our sights on the specific issue of reducing the 30-day hospital re-admission rate. The national average for heart failure patients returning to the hospital within 30 days is about 25 percent. (1)

This gave us an objective measure to reach for. We of course had secondary goals as well, such as helping patients stay healthier, but that’s much more difficult to measure. As more patients have been using our program, we came across additional benefits as well, such as the fact that some patients, given these new resources to track their own data, started managing their own diuretic medication. That had never been a specific goal of ours, but came out on its own.

Now that we had a problem defined, and a goal to go with it, we needed to design and refine the solution.

The Sensely app uses an avatar-based “conversation” with the patient to lead them through a daily check-in. Every morning, each CHF patient receives a reminder on their phone to take their check-in. After starting the app, Molly initiates the conversation by asking an open question such as “How are you feeling today?” and then follows up with instructions on taking their blood pressure and weight, and asks a few more questions. The patient’s responses are analyzed and organized. If necessary, an alert is sent to their clinician. Patients can speak or text with the avatar.

Why do we use an avatar? Many of the things we ask our CHF patients to do could be done with a simpler button-pushing app. But the next important piece of design thinking is to keep people in mind. We all know, for example, that we should eat less sugar, exercise more and get a good night’s sleep. Yet how many of us always follow these guidelines?

People often benefit from a “nudge.” “Nudge theory” is that idea that behavioral changes can come about with small modifications, such as when Google offices changed their micro-kitchens to display fruit prominently and put the sugary snacks in closed containers, leading its employees to eat healthier snacks. Another example: if I put my exercise clothes on the floor the night before, I’m just a little bit more likely to exercise when I get up the next day. If my company automatically opts me into my 401k, I’m much more likely to continue on that path. We believe the avatar and voice-enabled conversation add that “nudge” to encourage people to do these types of tasks on a regular basis.

When I speak with patients about using the app, they talk about the feeling of someone “holding their hand.” They apologize to Molly when they miss a check-in, and tell her to have a nice weekend. No one thinks they’re speaking to a person, but the act of having a conversation about this daily task makes it a little more tolerable.

There are two more aspects of design thinking we employ at Sensely that relate to the conversation the patient has with the avatar.

When the user interacts with the avatar, it’s done via a conversational back and forth between patient and avatar. The avatar gives instructions, for example, such as when to put on the blood pressure cuff. She also asks questions, such as if the patient has had any shortness of breath. It’s crucial to make this conversation follow natural human conversation principles; stilted or robotic interactions will lead to frustration and fewer successful check-ins.

One important question for us was: how do we engage these people? We decided that if we could engage them early on, they would keep coming back. So we asked patients to rate their experience with the app, and when they were engaged with the avatar, they were much more likely to come back.

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Creating these conversations is not simply a matter of saying, “We need to ask these 10 questions... and we’re done!” Think about how you interact with a customer services agent. For example, if you call a company to complain about a problem with your bill, a typical interaction has a few pleasantries before the crux of the issue is discussed. Similarly, a nurse or a doctor doesn’t simply bombard their patient with a series of rapid-fire questions.

To make sure conversations are designed well prior to being developed, we begin with a basic staple of voice user interface design: sample dialogs. Sample dialogs allow designers (and other stakeholders) to try out what the interaction might sound and feel like, and revise in a low-tech way without using up engineering resources or putting in design that will be too costly to change after it’s been developed.

A sample dialog is a possible path through the conversation—essentially, it’s like a movie or TV script. Here’s an example:

MOLLY
Hello. How are you today?

PATIENT
I’m feeling OK today.

MOLLY
Thanks for sharing. Were you able to take all your medications yesterday?

PATIENT
Yeah, I was.

MOLLY
Great. Okay, now, let’s take your weight. Please tap the scale with your foot, and I’ll wait for it to connect...Okay, we’re all set.

Note that this phase of design doesn’t try to capture every possible scenario. Instead, it looks at the “blue sky” path, in which everything goes well, and a couple of error paths for when things might go off track.

One key thing to note about the above sample dialog is the intro. Would a nurse immediately bark, “Step on the scale!”? No, he or she would presumably ask their patient a question before getting to the vitals measurement stage. As part of our design thinking, we look to real-world examples of how it’s done well. Ideally, we speak with the clinicians themselves to understand not just the content of the questions they ask, but the human aspects surrounding how they ask.

Molly also leads with a question that’s more small talk than medical. This serves a couple of purposes: it eases the patient into the interaction, to get them comfortable. In addition, it teaches them they can talk to the avatar. Some of our users are in their 70s and 80s but when Molly asks them “How are you?” they know what to do. They don’t need an instruction manual.

The other key component to making these conversations succeed is to monitor how they’re doing and find failure points. This is done by looking at patient responses to see where the speech recognition or natural language processing may have failed. In our symptom checker, we ask, “What is your main symptom?” This may seem like a fairly straightforward question, but people respond in a wide variety of ways. For the symptom “abdominal pain,” people might say, “My stomach aches,” “I have tummy pain,” or “My stomach doesn’t feel so good.” If we don’t capture and respond to the normal way humans speak, we’ll never succeed. So it’s important to continually tweak and improve the app, based on real user behavior. Design thinking is not over just because you’ve launched your product!

We also have learned that we’ll continue to test and tweak the product after deployment. For example, one client wanted a large variety of alerts to pop up on their dashboard based on patient behavior. We provided them, but within a short time, the clinicians realized it was information overload, and we scaled it down.

Although we have not yet published our results, initial indications show that our avatar-based, conversational approach is working. Patients who are using our app (and whose clinicians use our app to monitor them) have greatly reduced their 30-day hospital re-admission rate.

At Sensely, we begin by using design thinking to help determine what problem we are trying to solve. Next we use it to craft conversations that the patient can have with our avatar, and we get feedback from real people early in the process to make sure we’re on the right course. Finally, once we’ve launched, the work is by no means over. We monitor performance and work hard to understand where there are issues so that we can fix them and continue to help our patients stay healthier.
Behold and Beware, Design Toolkits

By Jon Freach, Executive Director of Design Research, frog design

The tools of design thinking are intellectual and conceptual, and while design thinking toolkits can be incredibly useful, they don’t guarantee “mastery” of design or design thinking. It’s a nuanced process that takes time and instruction to build design cognition, a sharp eye, and skilled hands.

The methods and tools of design are evolving at a rapid pace. Some are analog, some are increasingly digital, and, as Hugh Dubberly writes, many contemporary design tools “frame design as a conversation, with a goal of designing for conversation.” Throughout professional design practice, tools are frequently formalized and published. The tools of design thinking are intellectual, conceptual, and logic-based. Branded, formalized tools are relevant tools in the minds of industry.

What design methods and tools will universities teach their students? How can academic institutions keep pace with industry while applying a more critical lens to its tools? This essay explores the evolution of design thinking toolkits and tooling. By Jon Freach, Executive Director of Design Research, frog design.

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By contrast, design tools of the Information Age are made to catalyze interactions, build relationships, and enable diverse communities to creatively take action and innovate. Today’s problems are complicated, deeply systemic and may not be solvable. They are rife with dependencies that unfold over time. Hence, our designed solutions may never be “complete.” Our metaphors reflect the ever-changing, organic nature of both problem and solution. We now design “ecosystems,” “behavior change,” and “experiences.” Today, design enjoys a new relationship with industry and institutions as not only critical to problem solving, but more importantly, problem framing, the act of viewing problems through different perspectives to engender new definitions and, thus, solutions. Services are increasingly a part of any product strategy. In Service Blueprinting: A Practical Technique for Service Innovation, the authors describe a process that requires continual awareness and intentional design of “a sequence or constellation of events and steps.”

While the Industrial Age produced and thrived on instructional design manuals, the Information Age builds toolkits for a diverse set of users. A contemporary civic design problem in New York City is addressed by such a toolkit. In fact, the first sentence on NYC’s Civic Service Design Tools and Tactics website proclaims, “Governments are embracing design—not as a trend, but as a way to transform how we deliver services and information to the public.” Its audience is public servants, and a formal service design function. The Service Design Studio of The Mayor’s Office for Economic Opportunity, manages the offerings. On this site, you can learn the basics of Civic Service Design and access design thinking tools optimized to help your team follow a step-by-step human-centered design process. These tools are catalysts for collective action; they draw diverse communities of users into the process of design and iteration.

The connectedness of the Information Age brought with it added complexity and patterns of disruption, especially to industries with established business models, such as, for example: hospitality (Airbnb), food (Amazon) and transportation (Uber). This disruption and expanding competitiveness has caused many companies to panic and seek new methods to innovate their offerings and their cultures. This panic disrupts the organization as it struggles to acquire new methods, new processes and a new language for creativity, growth and change.

In Notes on the Role of Leadership and Language in Regenerating Organizations, Paul Pagano and Michael Geoghegan suggest, “It is possible for an organization to learn and grow, but only if it creates conditions that help generate new language. An organization may create new paths to productivity and regenerate itself.” Design tools and toolkits provide the syntax and semantics for such a new language that serves as a catalyst between the design disciplines and industry. Design is increasingly becoming a part of an accepted and widely understood “business acumen,” while organizations do not typically have a “design acumen.”

Contemporary design toolkits attempt to equip organizations and teams with a means for dealing with the ambiguous and complicated nature of their problems. They can add confidence to the process of answering basic questions, such as: What problem am I trying to solve? How should I solve it? What do I need to do to solve the problem? What might the outcome look like? Can my approach and solution solve similar problems in the future?
Toolkits also provide practical benefits by:

• Enabling teams to frame or reframe problems from multiple perspectives
• Facilitating externalization of insight so that teams can engage in dialogue
• Providing another way to use existing knowledge that may have been dormant, locked inside various organizational documents and employee’s minds
• Offering frameworks for visualizing problems and solutions
• Equipping teams with principles, practices and tools for learning more about people’s experiences

But, these toolkits don’t instantly make you a designer or guarantee mastery. Designing is a highly nuanced process that is shaped by one’s exposure to a diverse variety of problems, the personal experience of understanding them and a history of creatively solving them. It takes time and instruction to build design cognition, a sharp eye and skilled hands.

Kate Canales, Director of the Master of Arts in Design and Innovation (MADI) program at SMU’s Lyle School of Engineering shares a cautionary tale about toolkits:

These generalized tools can be really instructive and inspiring. . . But the application of the concepts is complex and frustrating and unique to circumstances that the authors could never cover for a massive, general audience. It’s difficult to communicate nuance or guide a user through the inevitable unpredictability they will encounter in a real project using these kits alone. I think where they have been ineffective is anywhere that they imply that usage will lead to mastery.

So we should proceed with confidence—and caution. Today’s design toolkits are often catalyzing. Designer Lauren Serota comments that “high quality work can’t often be carried forward using practices associated with business as usual.” Consider the context of the problem and the environment for solving it. Think about what the team is capable of and what it aspires to accomplish. Above all, choose your tools wisely.

🔍 A Small Sample of Design Toolkits, Books, and Tutorials (links included where available):

👩‍💻 Web Toolkits
- NYC’s Civic Service Design Tools and Tactics
- The mAgri Design Toolkit: User Centered Design for Mobile Agriculture
- Collective Action Toolkit
- Service Design Tools
- ac4d asset library
- frog Design Research Toolkit (forthcoming)

📚 Books
- frogThink Toolkit
- The Field Study Handbook
- Universal Methods of Design
- 101 Design Methods
- Convivial Toolbox: Generative Research for the Front End of Design
- This is Service Design Thinking
- The Service Innovation Handbook
- IDEO design toolkit
- Innovating for People: Handbook of Human Centered Design Methods
- Wicked Problems

🖥️ Tutorials
- Lynda.com (Design Thinking)
- IDEO U