The Basics of User Experience Design

by the Interaction Design Foundation

Preface

If you're looking to gain an introduction into the world of user experience (UX) design—or maybe even freshen up your knowledge of the field—then this UX design book is the ideal place to start.

The sheer number of topics covered in UX design is mind-boggling: there's interaction design (the psychology of motion and feedback), design thinking (an iterative, empathy-based problem-solving process), and usability (how easily a product can be used), just to name a few. That's what makes the field so fascinating to so many people. Whether you are a business manager working on a new product, or an aspiring designer wanting to learn about user-centered design, the field of UX design has something to teach you.

On top of that, UX design is a booming industry worldwide. Job opportunities are increasing for UX designers like never before—an estimated 13% increase from 2010 to 2020. UX designer pays are also moving up, upwards of $110k in cities such as San Francisco and New York.

That's why we, at the Interaction Design Foundation, put together this ebook. In nine highly readable chapters, we'll cover a wide range of topics that everyone starting out in UX design should know. Each chapter acts as a mini crash course, introducing key concepts, best practices, and guidelines. At the end of each chapter, we'll summarize the key learning points in a section called "The Take Away".

If we've done a good job, each chapter should pique your interest in a specific topic under the giant umbrella of UX design. I hope you'll enjoy this short but informative ebook, and that this will be the beginning of a wondrous and never-ending journey of learning.

Mads Soegaard

Founder, Interaction Design Foundation

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1. A Brief Introduction to User Experience (UX) Design

Read time: 3 mins

User experience (UX) design can be a complicated and overwhelming field for newcomers, as it encompasses a wide range of topics (from accessibility to wireframing). Some of these topics overlap, while some of them complement one another. Therefore, it's important to come to a common and basic understanding of what the term “user experience” means in a design context.

Complexity and Perception

User experience design, as its name suggests, is about *designing* the ideal *experience* of *using* a service or product. As such, it can involve all types of products and services—think, for instance, about the design involved in a museum exhibition. However, in the main, the term *user experience design* is used in relation to websites, web applications and other software applications.

Since the second half of this century’s first decade, technologies have become increasingly complex, and the functionality of applications and websites has become far broader and far more intricate. Early websites were simple static pages that served up information to feed curious searchers; however, a few decades later, what we can find a wealth of online are sites that are interactive and offer a much richer feel for users.

You can add all the features and functionality that you like to a site or application, but the success of the project rides on a single factor: how the users *feel* about it.

> *“Humans have always been emotional and have always reacted to the artifacts in their world emotionally.”*
>
> *—Alan Cooper, President of Cooper*

The questions that we as UX designers are concerned with are these:

- Does the site or application give the user value?
- Does the user find the site or application simple to use and navigate?
- Does the user actually enjoy using the site or the application?

A UX designer can say he's or she's doing a good job when the answer is "Yes!" to **all** of the above.

What is User Experience (UX)?

In general, user experience is simply how people feel when they use a product or service. In most cases, that product will be a website or an application of some form. Every instance of human-object interaction has an associated user experience, but, in general, UX practitioners are interested in the relationship between human users and computers and computer-based products, such as websites, applications and systems.

What is a UX Designer?

A UX designer is someone who investigates and analyzes how users feel about the products he or she offers them. UX designers then apply this knowledge to product development in order to ensure that the user has the best possible experience with a product.

UX designers conduct research, analyze their findings, inform other members of the development team of their findings, monitor development projects to ensure those findings are implemented, and do much more.

Why Does UX Matter?

In times gone by, product design was simple; designers built stuff they thought was cool and that they hoped their clients would like. Unfortunately, there are two problems with that approach. The first is that, back then, there was far less competition for people's attention online. The second is that there's no consideration for the user of the product at all in that approach—the success or failure of a development project was down to luck as much as it was down to the judgement of the design team.

Focusing on UX enables design to focus on the user. It increases the chances of a project's success when it finally comes to market, not least because it doesn't gamble on the faith of users in taking to a product just because it's a brand name.

Where Can UX Design be Found?

UX Design can be found in a variety of project environments today, including:

- **Complex projects** — the more complicated the project, the more essential UX design is. Too many features handled the wrong way can deter users like nothing else.
- **Startups** — you may not find dedicated UX teams in a startup, but UX is always part of the objective. High-tech startups developing innovative projects need to understand how their users feel even more than established companies do.
- **Projects with decent budgets** — UX tends to get skipped in low-value projects, but any development project team with a decent budget will tend to allocate some of

their financial resource to UX so as to ensure that the budget brings a return on investment.

- **Long projects** — the longer the project, the more resources it consumes; thus, UX becomes ever more important to delivering a return on the investment.

What's the Main Methodology for UX?

The main methodology used to guarantee the user experience in most projects is user-centered design. Simply put, user-centered design is all about designing with the users' needs and expected behaviors in mind. It's important for us as UX designers to remember that user-centered design is a means of achieving good UX—and *not* the *only* methodology or tool that one can use to ensure optimal UX in a project.

The Take Away

UX design is all about guiding product development to ensure how users feel when using our products. It's not a perfect method; sometimes, even with all the UX design know-how in the world behind it, a product will still fail. However, the appropriate use of UX design does offer a much higher chance that a product will be successful for our clients than products developed without the application of UX design principles.

Become a UX Designer from Scratch

Beginner course

If you want to join one of the most rapidly growing fields in design, then look no further—Become a UX Designer from Scratch is the course for you. You'll learn the skills required to assist companies in delivering the right UX for their products through being taught tried-and-tested, industry standard techniques. You'll also discover how to create various UX deliverables with the help of downloadable templates. From customer journey maps to paper prototypes, this course will show you how to make use of such templates when creating your UX portfolio—something that will truly make an impact on your UX job applications. What's more, you'll gain access to video interviews with senior UX hirers and experts from companies such as Google and SAP—providing you insight into what skills and attributes will give you an advantage over fellow candidates during the UX hiring process. Wait no longer to kick-start your professional UX career!

Learn more about this course

How Course Takers Have Benefited

> *"The lessons are clear and easy to understand. The content in the lessons are thoroughly explained, and there's a good balance between video content vs. text content. This really is an intro or UX 101 course, which I really appreciated."*
> *— **Seth Lemon**, United States*

> *"The strength of this course is its content and the way all the lessons are organized. The experience the instructors possess is also a huge advantage to the course and its members in understanding the design methods*

effectively."
*— **Prudhvi Raj Midasala**, India*

"The course has given me a great overview of the foundation of UX design, the processes, players and understanding of the expectations of / on designers."
*— **Barbara-Anne Tane**, Australia*

View the course curriculum

About the Interaction Design Foundation

INTERACTION DESIGN
FOUNDATION

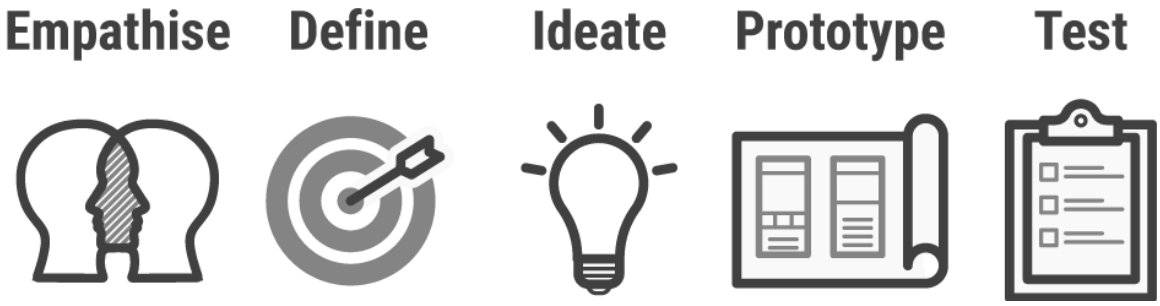
We thought this would be a good time to properly introduce ourselves, now that you've had a taste of what our ebook has to offer!

Founded in 2002, the Interaction Design Foundation (IDF) is on a mission to provide accessible and affordable design education to people across the world, through open-source educational materials as well as online, self-paced UX Design courses.

By taking our courses, you'll benefit from educational materials developed by leading practitioners and academics from top-tier universities like Stanford and MIT. Our course certificates will therefore help you land your next job in design through being recognized by industry-leading corporations.

We also provide the opportunity to network with fellow designers through our Local Groups initiative — with meet-ups in over 84 countries across the globe! You can find out more about us and our mission if you're interested.

Because you've downloaded our ebook, we're going to give you a special offer: 3 months of free membership. Become a member of the Interaction Design Foundation, receive all the benefits mentioned above, and start advancing your career today!



2. What is Design Thinking and Why Is It So Popular?

Read time: 9 mins

Design thinking is not an exclusive property of designers—all great innovators in literature, art, music, science, engineering, and business have practiced it. So, why call it 'design thinking'? What's special about design thinking is that designers' work processes can help us systematically extract, teach, learn and apply these human-centered techniques to solve problems in a creative and innovative way — in our designs, in our businesses, in our countries, in our lives.

Some of the world's leading brands, such as Apple, Google, Samsung and GE, have rapidly adopted the design thinking approach. What's more, design thinking is being taught at leading universities around the world, including d.school, Stanford, Harvard and MIT. Even so, do you know what design thinking is, and why it's so popular? Here, we'll cut to the chase and tell you what it is and why it's so popular.

What is Design Thinking?

Design thinking is an iterative process in which we seek to understand the user, challenge assumptions, and redefine problems in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding. At the same time, design thinking provides a solution-based approach to solving problems. It is a way of thinking and working as well as a collection of hands-on methods.

Design thinking revolves around a deep interest in developing an understanding of the people for whom we're designing the products or services. It helps us observe and develop *empathy* with the target user. Design thinking helps us in the process of questioning: questioning the problem, questioning the assumptions, and questioning the implications. Design thinking is extremely useful in tackling problems that are ill defined or unknown, by re-framing the problem in human-centric ways, creating many *ideas* in brainstorming sessions, and adopting a hands-on approach in *prototyping* and *testing*. Design thinking also involves ongoing experimentation: sketching, *prototyping*, *testing*, and trying out concepts and ideas.

Design Thinking's Phases

There are many variants of the design thinking process in use today, and they have from three to seven phases, stages, or modes. However, all variants of design thinking are very

similar—they all embody the same principles, which were first described by Nobel Prize laureate Herbert Simon in *The Sciences of the Artificial* in 1996. Here, we will focus on the five-phase model, which the Hasso-Plattner Institute of Design at Stanford (aka 'd.school') proposed. We've chosen d.school's approach because they're at the forefront of applying and teaching design thinking. The five phases of design thinking, according to d.school, are as follows:

- Empathize – with your users
- Define – your users' needs, their problem, and your insights
- Ideate – by challenging assumptions and creating ideas for innovative solutions
- Prototype – to start creating solutions
- Test – solutions

It is important to note that the five phases, stages, or modes are not always sequential. They do not have to follow any specific order. What's more, they can often occur in parallel and repeat iteratively. As such, you should not envision the phases as a hierarchal or step-by-step process. Instead, you should understand it as an overview of the modes or phases that contribute to an innovative project, rather than sequential steps.

The Problem with Ingrained Patterns of Thinking

Sometimes, the easiest way to understand something intangible, such as design thinking, is by understanding what it is *not.*

Humans naturally develop patterns of thinking modelled on the repetitive activities and commonly accessed knowledge. These assist us in quickly applying the same actions and knowledge in similar or familiar situations, but they also have the potential to prevent us from quickly and easily accessing or developing new ways of seeing, understanding, and solving problems.

These patterns of thinking are often referred to as schemas, which are organized sets of information and relationships between things, actions, and thoughts that are stimulated and initiated in the human mind when we encounter some environmental stimuli. A single schema can contain a vast amount of information. For example, we have a schema for dogs which encompasses the presence of four legs, fur, sharp teeth, a tail, paws, and a number of other perceptible characteristics. When the environmental stimuli match this schema—even when there is a tenuous link or only a few of the characteristics are present—the same pattern of thought enters the mind.

As these schemas are stimulated automatically, this process can obstruct a more fitting impression of the situation or prevent us from seeing a problem in a way that will enable a new problem-solving strategy. Rising above this 'fog', or—more aptly—floating up and away from this confining compartment, calls for us to be innovative in our approach. Unsurprisingly, innovative problem solving is also known as 'thinking outside of the box'.

An Example of Problem solving: The Encumbered Vs. The Fresh Mind

Thinking outside of the box can provide an innovative solution to a sticky problem. However, thinking outside of the box can be a real challenge as we naturally develop patterns of thinking that are modelled on the repetitive activities and commonly accessed knowledge we surround ourselves with. It takes something to break away from a situation where we're too closely involved to be able to find better possibilities. Still, that is what we must do.

To illustrate how a fresh way of thinking can create unexpectedly good solutions, let's look at a famous story. Some years ago, an incident occurred where a truck driver had tried to pass under a low bridge. Alas, he failed, and the truck became firmly lodged under the bridge. The driver was unable to continue driving through or reverse out.

The story goes that as the truck became stuck, it caused massive traffic problems, which resulted in emergency personnel, engineers, firefighters, and truck drivers gathering to negotiate various solutions so as to dislodge the truck.

Emergency workers were debating whether to dismantle parts of the truck or chip away at parts of the bridge. Each spoke of a solution which fitted within his or her respective level of expertise. In the heat of the emergency, all parties carried on with their ways of viewing the problem, including the truck driver, whose initial dismay over a scraped roof had turned into a deeper concern.

A boy walking by and witnessing the intense debate looked at the truck, at the bridge, then looked at the road and said nonchalantly, "Why not just let the air out of the tires?" to the absolute amazement of all the specialists and experts trying to unpick the problem.

When the solution was tested, the truck was able to drive free with ease, having suffered only the damage caused by its initial attempt to pass underneath the bridge. Whether or not the story actually happened in real life, it symbolizes the struggles we face where oftentimes the most obvious solutions are the ones hardest to come by because of the self-imposed constraints we work within.

The freshness of a child's perspective, untainted by professional specialization, can save the day when a problem gets as big as the one above. Happily, getting that freshness doesn't involve something as drastic as trying to become a child again.

Challenging our assumptions and everyday knowledge is often difficult for us humans, as we rely on building patterns of thinking in order not to have to learn everything from scratch every time. We rely on doing everyday processes more or less unconsciously—for example, when we get up in the morning, eat, walk, and read—but also when we assess challenges at work and in our private lives. Especially experts and specialists rely on their solid thought patterns, patterns that serve them well in their respective fields, not to mention the people to whom they deliver their skills. Even so, it can be very challenging and difficult for experts to start questioning their knowledge. Pride aside, it can prove more than a little disconcerting to think that many years of education and practical experience can hinder rather than help in dealing with a problem.

Design Thinking or 'Outside the Box' Thinking

Design thinking is often referred to as 'outside the box' thinking, as designers are attempting to develop new ways of thinking that do not abide by the dominant or more common problem-solving methods.

At the heart of design thinking is the intention to improve products by analysing and understanding how users interact with products and investigating the conditions in which they operate. At the heart of design thinking lies also the interest and ability to ask significant questions and challenge assumptions. One element of outside the box thinking is to falsify previous assumptions, i.e., to make it possible to prove whether they are valid or not. Once we have questioned and investigated the conditions of a problem, the solution-generation process will help us produce ideas that reflect the genuine constraints and facets

of that particular problem. Design thinking offers us a means of digging that bit deeper; it helps us do the right kind of research and to prototype and test our products and services so as to uncover new ways of improving the product, service, or design.

Grand Old Man of User Experience, Don Norman, who also coined the very term User Experience, explains what Design thinking is and what's so special about it:

> *"…the more I pondered the nature of design and reflected on my recent encounters with engineers, business people and others who blindly solved the problems they thought they were facing without question or further study, I realized that these people could benefit from a good dose of design thinking. Designers have developed a number of techniques to avoid being captured by too facile a solution. They take the original problem as a suggestion, not as a final statement, then think broadly about what the real issues underlying this problem statement might really be (for example by using the 'Five Whys' approach to get at root causes)."*
> *– Don Norman, Rethinking Design Thinking*

Design Thinking is an Essential Tool—and A Third Way

The design process often involves a number of different groups of people in different departments; for this reason, developing, categorizing, and organizing ideas and problem solutions can be difficult. One way of keeping a design project on track and organizing the core ideas is with a design thinking approach.

Tim Brown, CEO of the celebrated innovation and design firm IDEO, shows in his successful book, *Change by Design* that design thinking is firmly based on generating a holistic and emphatic understanding of the problems that people face, and that it involves ambiguous or inherently subjective concepts such as emotions, needs, motivations, and drivers of behaviors. This contrasts with a solely scientific approach, where there's more of a distance in the process of understanding and testing the user's needs and emotions—e.g., via quantitative research. Tim Brown sums up that design thinking is a third way: design thinking is essentially a problem-solving approach, crystallized in the field of design, which combines a holistic user-centered perspective with rational and analytical research with the goal of creating innovative solutions.

Science and Rationality in Design Thinking

Some of the scientific activities will include analyzing how users interact with products and investigating the conditions in which they operate: researching user needs, pooling experience from previous projects, considering present and future conditions specific to the product, testing the parameters of the problem, and testing the practical application of alternative problem solutions. Unlike a solely scientific approach, where the majority of known qualities, characteristics, etc. of the problem are tested so as to arrive at a problem solution, design thinking investigations include ambiguous elements of the problem to reveal previously unknown parameters and uncover alternative strategies.

After arriving at a number of potential problem solutions, the selection process is underpinned by rationality. Designers are encouraged to analyze and falsify these problem solutions so that they can arrive at the best available option for each problem or obstacle identified during each phase of the design process.

With this in mind, it may be more correct to say that design thinking is not about thinking out of the box, but on its edge, its corner, its flap, and under its bar code, as Clint Runge put it. (Clint Runge is Founder and Managing Director of Archrival, a distinguished youth marketing agency, and adjunct Professor at University of Nebraska-Lincoln.)

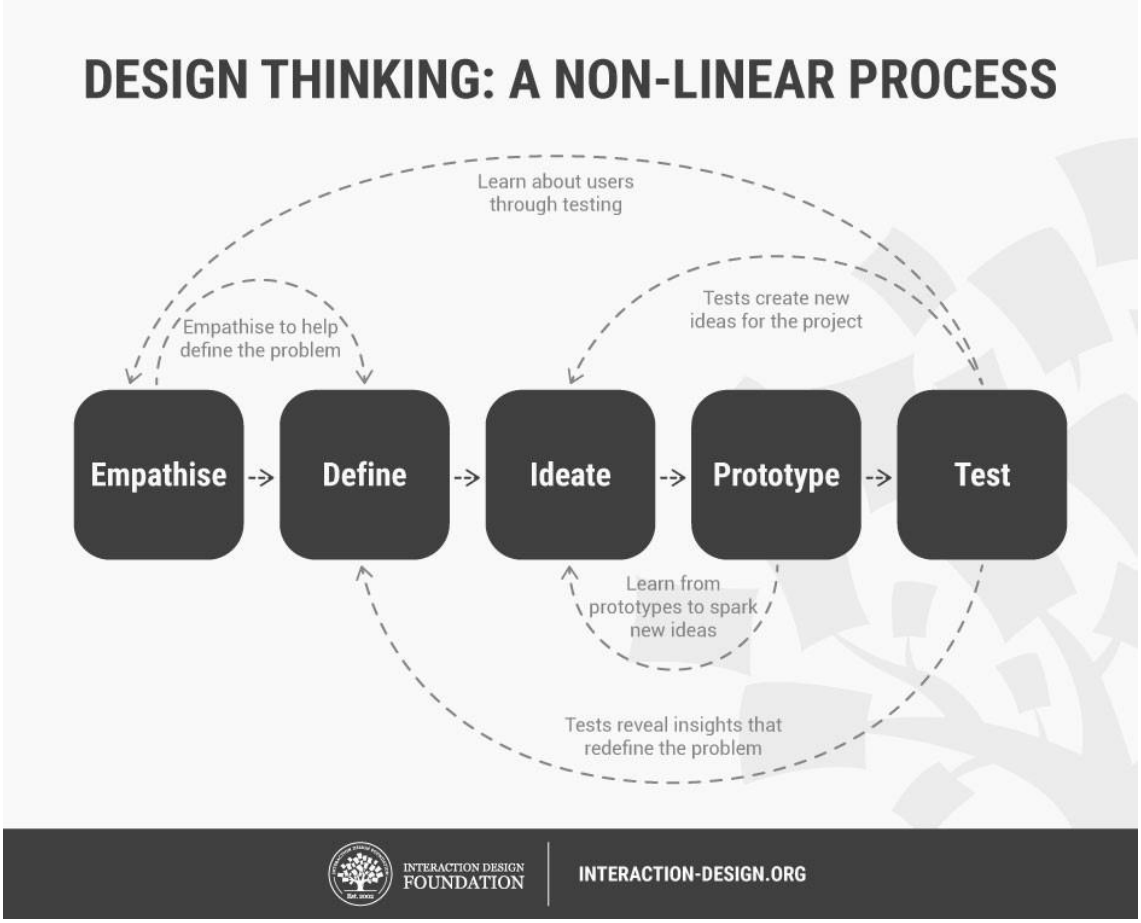
Wise words—whatever helps you gain that needed perspective, assume that position.
Author/Copyright holder: Interaction Design Foundation.

Generating Creative Ideas and Solutions by Holistically Understanding Humans

With a solid foundation in science and rationality, design thinking seeks to generate a holistic and emphatic understanding of the problems that people face. Design thinking tries

to empathize with human beings. That involves ambiguous or inherently subjective concepts such as emotions, needs, motivations, and drivers of behaviors. The nature of generating ideas and solutions in design thinking means this approach is typically more sensitive to and interested in the context in which users operate and the problems and obstacles they might face when interacting with a product. The creative element of design thinking is found in the methods used to generate problem solutions and insights into the practices, actions, and thoughts of real users.

Design Thinking is an Iterative and Non-linear Process



As you can see, there's plenty of flow between the steps.

Design thinking is an iterative and non-linear process. This simply means that the design team continuously use their results to review, question, and improve their initial assumptions, understandings and results. Results from the final stage of the initial work process inform our understanding of the problem, help us determine the parameters of the problem, enable us to redefine the problem, and, perhaps most importantly, provide us with new insights so we can see any alternative solutions that might not have been available with our previous level of understanding.

Design Thinking is for Everybody

Tim Brown believes that design thinking techniques and strategies of design belong at *every* level of business. Design thinking is not only for designers but also for creative employees, freelancers, and leaders who seek to infuse design thinking into every level of an organization, product, or service in order to drive new alternatives for business and society.

Design thinking is essentially a problem-solving approach, crystallized in the field of design, which combines a user-centered perspective with rational and analytical research with the goal of creating innovative solutions.

The Take Away

Design thinking is essentially a problem-solving approach specific to design, which involves assessing known aspects of a problem and identifying the more ambiguous or peripheral factors that contribute to the conditions of a problem. This contrasts with a more scientific approach where the concrete and known aspects are tested in order to arrive at a solution. Design thinking is an iterative process in which knowledge is constantly being questioned and acquired so it can help us redefine a problem in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding. Design thinking is often referred to as 'outside the box thinking', as designers are attempting to develop new ways of thinking that do not abide by the dominant or more common problem-solving methods – just like artists do. At the heart of design thinking is the intention to improve products by analyzing how users interact with products and investigating the conditions in which they operate. Design thinking offers us a means of digging that bit deeper to uncover ways of improving user experiences.

References & Where to Learn More

Don Norman. "Rethinking Design Thinking", 2013:
http://www.core77.com/posts/24579/rethinking-design-thinking-24579

Tim Brown, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation Introduction*, 2009

Bill Moggridge, "Design Thinking: Dear Don", 2010:
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Design Thinking: The Beginner's Guide

Beginner course

The world's leading companies, such as Apple, Google and Samsung, are already using the design thinking approach—because they know it's the way forward when it comes to innovation and product success. Through Design Thinking: The Beginner's Guide, you will deep dive into the five phases of this paradigm-shifting approach to problem-solving—empathize, define, ideate, prototype, and test. By receiving detailed guidance on problem-solving activities ranging from ideation techniques—such as brainstorming and using analogies—to ways of gathering feedback from your prototypes, you'll be able to download many templates involved and effectively use them in your work. Get ready to unpack,

explore, and master design thinking—using it to set yourself apart and unlock the next stage of your professional life.

Learn more about this course

How Course Takers Have Benefited

> *"The course is very comprehensive and offers a good balance of mediums to learn from."*
> *— **Reid Dickson**, United States*

> *"I enjoyed all of the tools available for download. It helped me easily share this information with others who were interested in design thinking."*
> *— **Jenna Franklin**, United States*

> *"There were lots of real world examples particularly from the instructors' work."*
> *— **Gillian Tyler**, Australia*

View the course curriculum