THINKER, DESIGNER, FOUNDER: A DESIGN THINKING

ENTREPRENEURIAL WORKSHOP

FOR UNDERGRADUATE

DESIGN STUDENTS


by

Carolyn Kilday, BFA


A thesis submitted to the Graduate Council of
Texas State University in partial fulfillment
of the requirements for the degree of
Master of Fine Arts
with a Major in Communication Design
December 2019

Committee Members:

Claudia Röschmann, Chair

Hannah Park

Mary Shepard Spaeth

**FAIR USE AND AUTHOR'S PERMISSION STATEMENT**

**Fair Use**

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in the Copyright Laws, brief quotations from this material are allowed with proper acknowledgement. Use of this material for financial gain without the author's express written permission is not allowed.

**Duplication Permission**

As the copyright holder of this work I, Carolyn Kilday, authorize duplication of this work, in whole or in part, for educational or scholarly purposes only.

**DEDICATION**

This thesis is dedicated with love to my husband, Robert Luedtke, for his encouragement and support of my professional, educational and creative goals. I would be lost without you.

This thesis is also dedicated to my father, Kieran Kilday, who first sparked and encouraged my interest in art and design and to my mother, Margaret Kilday, who through her insatiable love of literature inspired me to embark on a lifelong love and respect for the written word.

# ACKNOWLEDGEMENTS

# TABLE OF CONTENTS

**Page**

# LIST OF FIGURES

"Your time is limited, so don't waste it

living someone else's life."


Steve Jobs

CHAPTER I.

Introduction/Background

With the rise of technological changes and market shifts that demanded better design for business success, graphic designers in the twenty first century (GD21) have been exploring more creative applications for their creative problem-solving abilities, such as conceptualizing business ideas and forging their own financial futures. Since the role of the GD21 has expanded greatly from the role of the graphic designer in the twentieth century (GD20), design education must evolve as well (Muratovski). The goal of this research is to design a teaching tool in the form of a workshop that will teach graphic design students to understand and employ design thinking as a methodology to solve problems, which will lead to the development of entrepreneurial concepts. Additionally, this teaching tool will also teach business skill development to graphic design students by introducing them to Business Model Canvas. This workshop will also expose graphic design students to their growing opportunities, such as design entrepreneurship so that they will be empowered to use their design expertise for the realization of their own business success.

A. Graphic Design Defined

Katherine McCoy, distinguished graphic designer and former co-chair of Cranbrook Academy of Art, says that graphic design has never been easily defined. For example, it straddles dualities such as craft and language or business and art, and has an "identity crisis," which is apparent through "multiple titles in which graphic design is

named, i.e., graphic design, visual art, visual communication" (Bridges, Amanda, p. 2).

"The multivalent character of graphic design continues to shift between opposing values.

Is this fluidity an indicator of the field's persistent immaturity, or a confirmation of its

relevance to a rapidly changing world?" (McCoy, p.1). In these statements, McCoy is

saying that graphic design is a field that has been hard to define in the past and continues

to be hard to define because it is always modifying in response to changes in the world.

In a book entitled, The AIGA Guide to Careers in Graphic and Communication

Design, Juliette Cezzar, an Assistant Professor and Associate Director of the Bachelor

of Fine Arts (BFA) Communication Design program at New York's Parsons School of

Design, ranked the number one design school in the United States, defines graphic design

this way:

> Graphic design, also known as communication design, is the art and practice of
> planning and projecting ideas and experiences with visual and textual content.
> The form it takes can be physical or virtual and can include images, words or
> graphics. The experience can take place in an instant or over a long period of
> time. The work can happen at any scale, from the design of a single postage stamp
> to a national postal signage system. It can be intended for a small number of
> people, such as a one-off or limited-edition book or exhibition design, or can be
> seen by millions, as with the interlinked digital and physical content of an
> international news organization. It can also be for any purpose, whether
> commercial, educational, cultural, or political (Cezzar, p.15).

Cezzar describes the discipline of the GD21, which expanded greatly from the role of the GD20 due to technological advances such as the development of the personal computer and the internet, which led to the design of websites, the smart phone, the tablet, and software applications (apps). An app is an application or piece of software that runs on a smart phone or tablet and is designed and coded to fulfill a purpose for the user. The development of the internet led to the Internet of Things (IOT) devices, which are objects that can transmit data, are connected wirelessly and can transmit data without human interaction. These new technologies led to the new area of interaction design, which created new opportunities for the GD21. In an article called, "What is graphic design?" Juliette Cezzar says, "Interaction design differentiates itself from other kinds of design by adding another consideration: responding to the actions of the viewer or the user." The role of the GD21 encompasses all the professional tasks required of the GD20, but also expanded to include interactivity (Cezzar, J.). The roles of the GD20 and the GD21 are explained in detail in the next section.

### B. Comparison of GD20 and GD21 Roles

At the beginning of the twentieth century, the GD20 was known as a commercial artist. This term suggests that the role of the GD20 was primarily involved with solving aesthetic problems. The roles performed by the GD20 included brand design, editorial design, book design, exhibition design, environmental design, movie title design, and the beginnings of web design, which are defined in the following paragraph.

In a book called, "Designing Brand Identity: An Essential Guide for the Whole Branding Team," Alina Wheeler says that brand identity design is "tangible and appeals

to the senses. You can see it, touch it, hold it, hear it, watch it move. Brand identity fuels recognition, amplifies differentiation, and makes big ideas and meaning accessible" (Wheeler, p. 4). Brand designers ensure that the brand of a company is consistently and systematically presented throughout all company communication. The GD20 was also responsible for editorial design, which is the design of the written and visual content in newspapers and magazines to increase visual interest and readability. In book design, through formatting, sequencing and the layout of written and visual content, the GD20 increased the coherence of the content. The GD20 also engaged in three-dimensional formats known as exhibition design, and environmental design. Exhibition design is the concept and execution of creating visitor experiences, which includes the design of educational and engaging interactive screen-based technology, and the design of graphics, lighting and audio to be displayed in physical spaces. Exhibition design is multidisciplinary because it requires the integration of print and environmental graphic design, interior design and includes interactive design that the user or participant engages with. Environmental design refers to the design of signage graphics used in exterior and interior spaces that reinforce the brand experience and often includes way-finding, which can be defined as the system of information and graphics that help people navigate through a physical space. Towards the end of the twentieth century, with the birth of the internet, the role of the GD20 expanded beyond print as it included the beginnings of website design and movie title design. Movie title design, pioneered by Saul Bass, included the design and sequencing of introductory titles and ending movie credits. The role of the GD21 includes all the skills required for the GD20, but has also expanded to include new roles requiring new skills as Figure 1 on the next page shows.

| GD 20 ROLES –1999 | GD 21 ROLES 2000 – Ongoing |
|---|---|
| Brand Identity Design | Brand Identity Design |
| Editorial Design | Editorial Design |
| Book Design | Book Design |
| Exhibition Design | Exhibition Design |
| Environmental Design | Environmental Design |
| Movie Title Design | Movie Title Design |
| Beginnings of Web Design | Web Design |
| | Responsive Web Design |
| | UX Design |
| | UI Design |
| | Motion Graphics |
| | Experience Design |
| | Design Research |
| | Design Management |

Figure 1.0    Comparison of GD20 and GD21 Roles

The following quote by Phillip Meggs, author of Megg's History of Graphic Design, explains how the GD21 roles in this chart evolved.

In the 1990's, new digital technology and the introduction of advanced software expanded the creative potential of the graphic designer by making possible unprecedented manipulation of color, form, space, and imagery for both print and onscreen design. The Internet and the World Wide Web transformed the way we communicate and access information and led to a period of pluralism and

diversity in design. The widening of the design profession has been ignited

through not only the creation of new computer software and the Internet, but also

the expansion and increased quality of design education. (Meggs p.530).

The new roles performed by the GD21 include responsive web design, UX

design, UI design, motion graphics, experience design, design research and design

management, which are defined in the following paragraph.


Responsive web design automatically responds and displays correctly when

a user switches between devices or resolutions. UX design includes competitive analysis,

the development of user personas, the design of user flows, wireframes and the

development of a minimal viable product that can be tested. Once the UX has been

designed, the UI designer makes the design aesthetically pleasing and ensures that the

brand is being consistently presented through the overall look and feel. While UX design

is primarily concerned with making tasks easy to accomplish for the user, UI design is

primarily concerned with the user's visual and emotional connection to the software or

computer. Graphic designers today also create motion graphics, in which animation or

digital footage give the illusion of movement. Experience design is defined as,

"the process of creating products that provide meaningful and personally relevant

experiences," according to the Interaction Design Foundation, a non-profit established

in 2002 in Denmark to increase knowledge about human and computer interaction.

Experience designers are concerned with "the why, what and how of product use." The

why represents the values and feelings associated with owning the product, the what

represents the tasks the user wishes to achieve with the product and the how represents

the way in which users interact with a product both functionally and aesthetically (interactiondesign.org). The role of the design researcher is to develop empathy for users through observation or focus groups, synthesize their collected data, and communicate through the development of user personas (fictional characters based on user research) in order to develop product solutions that meet the users' needs. With the rise of design driven businesses, the new role of design management has emerged. Design managers interface with multiple stakeholders such as designers, product managers, marketing staff, developers and management staff to ensure that the overall vision of a company is delivered through adherence to the brand values.

C.  The Rise of the Concept that Good Design is Good Business

In the mid twentieth century, design master Paul Rand, who was known for his corporate identities for companies such as IBM, Westinghouse, American Broadcasting Corporation, and United Postal Service, elevated the role of design because he understood, practiced and implemented the idea that good design was essential for good business. Rand pioneered the first change in the role of the GD20; the marriage of business and design (Heller).

In a 2011 study, the Design Management Institute (DMI), a Boston-based non-profit focused on design management, found that, "design-driven companies outperformed the Standard and Poor's 500–a stock market index of 500 large publicly traded companies– by 228%. These companies included Apple, Coca-Cola, Ford, Herman Miller, IBM, Intuit, Newell Rubbermaid, Nike, Procter & Gamble, Starbucks, Starwood, Steelcase, Target, Walt Disney, and Whirlpool"(Westcott).

But what exactly is a design driven company? According to the DMI, design is "an integrative resource to innovate more efficiently and successfully"(Wescott). In a design driven company, design can be defined as the process used to analyze through customer observation and feedback in order to reframe what the customer needs and desires. It puts the desires of customers/users first to create cohesive, systematic experiences with all aspects of a company from its hardware to its software to its branding, both physical and online, and includes its interactions with service. Design driven companies develop empathy for their customers through observation by ethnographers and cultural anthropologists, so they can understand not only what they want, but also why they want it. Design driven companies make sure that a designer is involved in all strategic business decisions. That designer can be a graphic designer, a brand designer, an experience designer or a design manager. According to the Design Management Institute, (DMI):

> Design management encompasses the ongoing processes, business decisions, and strategies that enable innovation and create effectively designed products, services, communications, environments, and brands that enhance our quality of life and provide organizational success (dmi.org).

Design managers coordinate teams of designers in corporations and design studios to ensure consistency and quality. The role of the design manager is to manage graphic design teams to ensure that a company's brand and vision is being systematically realized through cohesive graphic standards.

The concept of the design driven company started with the idea that good design is good business. How did this idea come to fruition and how can good design be defined?

Following the death in 1956 of IBM founder, Thomas Watson, his son, Thomas Watson Jr. took the reins of the company and spearheaded a restructuring of corporate communications due to his concern for a lack of consistency across departments. After visiting the corporate headquarters for Olivetti, Watson Jr. was inspired to follow their example, which included consistent and modern branding across platforms including stores, products, advertising materials and all corporate communications. Watson Jr. was the first to say, "Good design is good business,"(ibm.com) and he drove the concept that good design meant consistency in messages and aesthetics. Watson Jr. hired Eliot Noyes, an architect and curator of industrial design at the Museum of Modern Art in New York, who said, "In a sense, a corporation should be like a good painting; everything visible should contribute to the correct total statement; nothing visible should detract" (ibm.com). Noyes hired legendary designers such as Charles and Ray Eames, Eero Saarinen and Paul Rand and together, the team made IBM the first modern brand with a consistent look and feel across logos, corporate materials, exhibition design, furniture design and architectural design. Charles and Ray Eames were a husband and wife team of industrial designers most known for furniture design and for educational films that promoted math, science and technology, such as *The Powers of Ten*. Along with architect Eero Saarinen, they also designed the IBM Pavilion at the 1964 World's Fair, in which a film called *Think* was projected on 22 screens inside an egg-shaped theater. This film "focused on the

influence of computers in contemporary society, and the similarity between the ways that man and machine process information" (eamesoffice.com).

Eero Saarinen, Finnish American Architect and Industrial designer, was commissioned by Watson Jr. in 1956 to design the IBM campus in Rochester, New York. "Watson specified a modernist building to symbolize IBM's transformation from a national company headquartered in the East to a corporation undergoing exponential growth, with facilities and companies all over the world" (Vitullo-Martin). Saarinen designed the building with a glass membrane wall that was the thinnest exterior wall of its time and was IBM blue. Saarinen's design reflected the corporate culture of IBM because it embraced new technologies and also stayed true to the brand.

Noyes hired graphic designer Paul Rand to revamp and unify IBM's corporate communications. Rand designed the IBM eight bar logo and the graphic standards manuals, which defined the brand guidelines that assured consistency of logo usage, typography and grid systems across all corporate marketing material (Meggs, p.444).

In an article in *Fast Company* entitled, "How Paul Rand pioneered the Era of the Design–Led Business," author Carey Dunne says, "We live in an era that acknowledges the business value of good design. Research proves it. But it wasn't always so." She goes on to say, "today's design-led businesses owe much credit to the work of visionary graphic designer Paul Rand" (Dunne). While good design might be hard to define, it became understood that some factors of design clearly influenced the bottom line and corporate profits.

Paul Rand (1914-1966) was a prominent American graphic designer who is best known for corporate identity, designed in the fifties and sixties for companies such as

IBM, ABC, UPS, Cummins Engine, and Westinghouse. Paul Rand elevated the role of the graphic designer by clearly communicating the thought processes behind his concepts in beautifully presented brand books to people who were not visual thinkers. Through this process, he gained his clients' trust for the role that cohesive corporate identification and communications could play in business strategy.

According to graphic designer Louis Danziger:

> He [Rand] almost singlehandedly convinced businesses that design was an effective tool. [. . .] Anyone designing in the 1950s and 1960s owed much to Rand, who largely made it possible for us to work. He more than anyone else made the profession reputable. We went from being commercial artists to being graphic designers largely on his merits (Heller).

Through the influence of Paul Rand, graphic design experienced a "coming of age" as it transitioned into an essential component of business success.

In the 1980s, inspired by the cohesiveness of IBM's corporate communications, Steve Jobs hired Paul Rand to design a logo for his computer company, NeXT. Jobs, a long-time admirer of Paul Rand, became a pivotal figure in the rise of the design-led business.

Jobs had a love for simplicity that was developed through his practice of Zen Buddhism. At the 1981 International Design Conference in Aspen, Colorado, Jobs was

exposed to and inspired by the principles of the Bauhaus movement that operated in

Germany from 1919–1933 (Isaacson). The Bauhaus movement was a major influence

on modern design internationally and especially in America since many members of its

faculty immigrated to America in 1933 when the Nazis rose to power in Germany. The

Bauhaus Manifesto called for a union of art and design. The phrase "Less is More,"

attributed to the last director of the Bauhaus movement and famous architect, Ludwig

Mies van der Rohe, means that simplicity leads to good design (Meggs, p.352). For

example, the architecture of Mies van der Rohe does not need to rely on unnecessary

decoration because it celebrates the integrity of materials such as glass and steel to define

clean rectilinear spaces. The "Less is More" design philosophy can be seen in The

Farnsworth house, designed by Mies van der Rohe in 1950 to have walls of glass, which

allows the building and landscape to be perfectly integrated. This is just one example

how simplicity was understood as good design.

The cornerstone of Jobs' approach to design and the key to the success of Apple's

products was simplicity, which to Jobs meant that the products should also be easy to use

(Isaacson). An example of this is the metaphor of the desktop and how it was applied to

the user interface on the Macintosh computer. When the Macintosh came out in 1984,

Jobs understood that the interface should be intuitive. The mid-1980s was a time in which

people were intimidated by the personal computer. Jobs used the metaphor of the desktop

in an office for the Macintosh because people felt comfortable with experiences that they

were accustomed to. For instance, people know what to do when they go to their desk.

When a person goes to their desk, they might want to do tasks such as write a memo, open

a file folder and read over some documents held inside, add an event to their calendar or

find a calculator to add up some numbers. The way in which people interact with their physical desktops served as a model when the Apple desktop was designed so that it would also feel familiar and easy to users (Isaacson).

In a Smithsonian magazine article entitled, "How Steve Jobs' Love of Simplicity Fueled a Design Revolution," Walter Isaacson said that Jobs wanted Apple's mantra to be: simplicity. He then emphasized this by quoting Jobs:

> We will make them bright and pure and honest about being high-tech, rather than a heavy industrial look of black, black, black, black, like Sony. The way we're running the company, the product design, the advertising, it all comes down to this: Let's make it simple. Really simple (Isaacson).

Jobs then went one step further by also making the Macintosh user-friendly. From its small, playful frame to the first "hello" that popped up on its graphical user interface, the Macintosh did not intimidate. Instead, it humanized itself and invited its user to be a friend.

Through his love of simplicity, Jobs reimagined the possibilities of the personal computer. The vision of these new possibilities was communicated in the introduction of the Macintosh in 1984. That year during the Superbowl, Apple ran a television ad, which opened on a gray industrial scene, in which rows of gender-neutral minions marched, while an onscreen talking head, "Big Brother" spoke of a "unification of thoughts." A female athlete runs forward, throws a hammer at the screen and the ad ends with a voiceover reading the line, "On January 24th, Apple Computer will introduce Macintosh

and you'll see why 1984 won't be like 1984" (Taube). The ad references George

Orwell's novel 1984, about a society which persecutes individualism in order to maintain

power. The meaning of the ad was that the Macintosh would foster individualism and

creativity and therefore be different from the leading computer company of that time,

IBM. Even though the ad did not test well with research companies before it ran, the ad

proved to be a marketing success. Thirty years after the ad ran, in an article entitled,

"How The Greatest Superbowl Ad Ever—Apple's 1984—Almost Didn't Make it to

Air," author Aaron Taube says,

> Mesmerized by the ad's state of the art cinematography and alluring message
> about the promise of technology, consumers flooded electronics stores across the
> country when the Macintosh debuted the following Tuesday. Those consumers
> would go on to purchase $155 million worth of Macintoshes in the three months
> after the Super Bowl (Taube).

Both the revolutionary product development and the advertising of the Macintosh

made Apple innovative and successful, while establishing it as the first design

driven company.

In 2001, Apple introduced the iPod, which revolutionized how people listened to

their music. This revolutionary product was a solution to the problem of existing MP3

players of the 1990s, which held about a CD's worth of songs, were too big and were

very difficult to navigate. With the iPod, Apple created an easy way to access, download

and listen to music by creating an easy to use interface with its own ecosystem because it was connected to iTunes (Edwards).

In 2007, Steve Jobs introduced the iPhone at Macworld in San Francisco by calling it an iPod, an iPhone and an Internet connection device. Most smart phones in 2007, like the Blackberry, Motorola, and the Palm used keyboards and styluses and were difficult to navigate. The iPhone used a revolutionary interface consisting of one large screen, which eliminated the need for keyboards. The large screen showed apps and used multi-touch technology that allowed for using fingers to navigate, which eliminated the need for styluses. The iPhone synced data from personal computers like music, photos, and emails through iTunes. It was a device connected to the internet and it was also a camera. The functional sophistication and the simplicity of the user interface of the iPhone revolutionized the smart phone industry.

In an article entitled, "How Apple's iPhone changed the world: Ten years in ten charts," Rani Molla says, "The iPhone made Apple the world's most valuable company. Apple is now worth twice as much as Exxon Mobile and three times as much as General Electric, traditional blue-chip stocks."

Like Apple today, many other corporate cultures enlist design as a fundamental part of their business agenda. One example of this kind of a company is Google. When Larry Page took over as CEO in 2011, he made design a priority in order to compete with Apple.

"Owing to its relentless design perfectionism, Apple was on the cusp of becoming the most valuable company in history. To compete with Apple's tech cachet, Google's products had to be well-designed" (Kuang).

Understanding that he had to make design a priority, Larry Page asked a small group of designers to implement a common visual language, which could then be shared with all the product teams so that they could build on it. This strategy allowed the entire company to become a part of the design culture, while maintaining a consistent user interface.

Google calls its new design language Material Design. It offers consistency in not only the look and feel, but also interaction behaviors on phones, tablets, and desktops. This new Google design language was created because it was considered essential in order to compete with Apple's products. Material Design was instrumental to Google's business success.

Each of these companies, Apple, Google, and IBM implemented design as a strategic and essential resource to define their corporate strategy.

Design-led businesses, like the companies listed above, were catalysts in the change from the GD20 as visual problem solver to GD21 as strategic business partner. With the development of the world wide web in the late twentieth century, more changes in the role of the GD20 to GD21 transpired.

D. New Technologies Expand the Role of the Graphic Designer

With the rise of the Internet in the late twentieth century, graphic design as a discipline expanded to include the design of digital experiences like website design. Graphic designers developed a system of visual graphics and interactive widgets that behave in consistent ways so that users will know what to expect when navigating the site. For instance, an interactive widget might be a button that turns to a specific color

and takes the user to a secondary page when a user clicks on it. This meant that not only were designers generating visual designs, they were also defining and facilitating easy-to-understand experiences for the users through the design of well-organized, systematic visual cues and behaviors. This new area of design that graphic designers began to explore in the late twentieth century is known as user experience. In his book, "The Design of Everyday Things," Don Norman, co-founder and principal of the User Experience/Usability consulting firm, The Nielsen Norman group, defines usability as "a quality attribute that assesses how easy user interfaces are to use." This development of the need for the design of how humans experience computers, websites or apps, amplified the role of the GD21.

The role of the GD21 still includes solving problems relating to communication design in its traditional forms such as branding, brand identity design, editorial design, exhibition design and book design. Today, however, practitioners must also be prepared to solve problems relating to how human beings use and experience their computers and other technology devices. Graphic designers now engage in two new tasks known as user experience (UX) design and user interface (UI) design.

Both UX design and UI design are required in the development of software applications or apps. In app design, the designer solves the problem of information hierarchy and navigation or how the user moves from one screen to the next. The UI designer next assigns the visual attributes of the app and also defines behaviors of navigation elements such as buttons, which serve as visual cues to the user on how to move through and successfully use the app.

New technologies, such as the development of the Internet and the mobile app, have given the GD21 greater challenges so that their main role now has been elevated from provider of visually pleasing aesthetics to design thinker and problem solver. In order to solve problems effectively, the new roles of UX design and UI design require graphic designers to develop a command of systematic thinking and organization. For example, when designing an app, a designer uses systematic thinking to apply a consistent set of behaviors and organizational skills to define a clearly understandable flow from screen to screen in order to make the user experience easier. In order to solve these problems, designers utilize Design Thinking (DT) skills.

E.  Design Thinking Defined

DT is a way of solving problems that is human-centric, which means that the graphic designer puts the needs of the user first. According to the Interaction Design Foundation, it is used by many organizations today such as Apple, Google, Samsung, and GE. DT is taught at many universities such as the d.school, Stanford, Harvard, and MIT. IBM embraced DT six years ago and has since employed 1600 designers across fifty studios spread across the globe. Through a program called Enterprise Design, IBM has trained 114,000 employees to use DT as a way to collaborate with teams internally as well as with clients (Powell).

It should be noted that counter arguments to the validity of DT exist. Natasha Jen, a partner at Pentagram recently gave a talk for a Design Observer podcast entitled, "Design Thinking is Bullshit." In this talk, Jen argues that the concept of DT reduces the complexity of design down to a set of linear steps and a stack of post it notes, when in

reality, design is a much more nuanced process. She also argued that DT is a commodity that is being sold by Stanford/IDEO to sell online courses and to convince people that anyone can become a designer. Although there are many disparagers to the concept of DT, there are also many proponents.

"Developed by IDEO founder, David Kelley, DT is defined as 'a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.' Thus, the method focuses on three main elements of a product or solution: people, technology, and business. All of these aspects evolve around the customer" (Turnali).

The d.school was started at Stanford University in 2005 with the core belief that everyone can learn to be a creative innovator through the practice of DT. The d.school strives to inspire creativity and collaboration to people of diverse backgrounds so that students can use the power of design to solve complex, real world problems. In "Design Thinking Bootleg," produced by the d.school, the DT process is explained as a process that is comprised of five phases: empathize, define, ideate, prototype, and test.

1. Empathize.

In the first phase of the DT process, designers must develop a clear understanding of the people for whom their work is targeted. This is best accomplished by observing people, engaging people in conversations, and watching and listening as people complete tasks. These observations and interviews can help designers gain empathy for their users because they will learn what the users value and need.

## 2. Define.

In the define phase of the process, based on the observations made during the empathy phase, the designer develops a point-of-view statement (POV), which helps designers clarify the problem.

## 3. Ideate.

When ideating, the designer conceives solutions based on the definition of the problem. The ideation phase is for generating a wide range and large number of possible solutions in order to go beyond the expected solution.

## 4. Prototype.

The prototype is meant to communicate the concept and to test possibilities. Prototyping can also help designers break large problems into smaller chunks in order to define the design problems more clearly.

## 5. Test.

By asking users to test the prototype and by observing them while testing, the designer can identify what needs to be revised in the next iteration. Although the DT process might seem linear, it is in fact cyclical. Testing, for instance, might lead a designer back through some or all the steps again. Successful design solutions will go through several iterations before a final solution is reached.

To demonstrate the iterative process, we will review a start-up business case that utilized design thinking. An example of the iterative process can be described through the story of the Embrace Infant Warmer, a product, which was developed and designed by four students at the d.school in a course called Extreme Affordability. In this course, the students learned that each year, 15 million premature and low birth babies were born and that over a million of them died due to hypothermia. Hypothermia is a problem that an incubator could solve, but the average cost of an incubator was $20,000.

1.  Empathize. Business Case example.

Initially, the students thought that they would solve this problem by designing a less expensive incubator. However, by utilizing the first step of the DT process: empathy, a new problem was defined. Observation in Nepal led the students to realize that hospital incubators were not being utilized because mothers who lived thirty miles or more from the hospital chose to take their babies home after a few days rather than leave them at the hospital for weeks.

2.  Define. Business Case example.

This meant that the babies fought for their lives at home, not at the hospital. The students realized that the problem they needed to solve was how to design a device that would help mothers keep their babies alive in remote areas.

3. Ideate. Business Case example.

Based on the defined problem, the team began ideation by asking how might we design an incubation device that would allow for an infant to maintain body temperature without being connected to electricity.

4. Prototype. Business Case example.

The team came up with a product that looked like a small sleeping bag and has a paraffin pouch inside with a built-in thermometer. This prototype allowed for portability and was ready for testing.

5. Testing. Business Case example.

While testing the prototype through interviews with mothers, the student designers learned that the users had an issue with the thermometer on the design. Indian mothers held the belief that western medicine was too strong and felt the psychological need to correct it. For instance, if they were told to set the thermometer to 37 degrees Celsius, they would set it to 30 degrees Celsius.

6. Testing Leads to Iterative Design Process. Business Case example.

The Embrace team took that user feedback and redesigned the product by changing the numerical thermometer to an indicator that changed to "OK" when it reached the right temperature. This case study is an example of a product that went through an iterative process to arrive at a better solution. This case study also shows how

using DT to solve problems can lead to entrepreneurial concepts that fulfill a specific need.

## 7. Results. Business Case example.

In 2018, the Embrace warmer has saved 200,000 babies in 15 countries through its partnership with hospitals and non-profits. Embrace is now run by one of the original design students, Jane Chen, the current CEO. Chen realized the impact her company could make, decided to make her company a nonprofit and found an angel investor in Marc Bienoff, CEO of Salesforce. Chen then started Little Lotus, a for profit company aimed at the US market, that makes sleeping bags and swaddles to help babies sleep better. Little Lotus has a 1:1 model, which means that every purchase of a Little Lotus product buys an Embrace warmer to help a child in a developing country. Little Lotus had sales of 1 million dollars in 2017 and according to the Huffington Post, Chen hopes to grow Little Lotus so that she can give Embrace warmers to 1 million babies in need. In the case of the Embrace warmer, the methodology of DT as a way to solve users' problems led designers to a successful business as well as a philanthropic organization. So how might we utilize this process to the GD's toolkit to solve business-related problems?

## F. The GD21 Expanded to Include Design Entrepreneurship

When the role of the GD21 expanded to include interactivity, DT arose as a way to solve user problems. As designers and graphic designers became adept at problem solving through DT, the GD21 began to play a more crucial role in business. Since problem solving is often a catalyst for business concepts, this also led to the rise of design

entrepreneurship because many business ideas are generated through problem solving. For example, Blue Apron, a company that delivers healthy ingredients and recipes for cooking meals at home, solves the problem that busy professionals have—spending too much money eating out due to their lack of time for meal planning and grocery shopping. This is just one example of how problem solving led to a business concept. Through mastering DT, designers have become adept at problem solving, which is relevant to business concept generation.

But how did this development transpire? In an article titled, "Paradigm Shift: Report on the New Role of Design in Business and Society," Gjoko Muratovski explains that when corporations began to value design as crucial to their financial success, designers were then asked to play leadership roles and thus, began to shape businesses.

For example, Jonathan Ives, who led the product design team at Apple, became the Chief Design Officer in 2015. Jonathan Ives is an example of a designer who went beyond the design of products to the design of the business itself. As Steve Jobs said of Jonathan Ives,

> The difference that Jony [Jonathan Ives] has made, not only at Apple but in the world, is huge… He understands business concepts, marketing concepts… He's not just a designer. That's why he works directly for me. He has more operational power than anyone else at Apple except me (Jobs).

The story of Jonathan Ives and Apple is just one story of many in the rise of the corporate designer. This trend is then followed by the rise of the design entrepreneur,

evidenced by the many startups that have designer co-founders. According to

Muratovski,

> The value that designers add to emerging businesses is evident by the fact that in
>
> the period between 2010 and 2015, at least 27 digital startups co-founded by
>
> designers have been acquired by leading tech companies. This includes social
>
> media startups such as AirBnB, Snapchat, Behance, Tumblr, and Instagram
>
> (Muratovski).

In addition to co-founding businesses, designers have also begun to think more like entrepreneurs and to realize that rather than following the old business model of providing a service to clients, they could use their design knowledge to launch their own business ideas and become design entrepreneurs. So, what exactly is design entrepreneurship?

In order to understand design entrepreneurship, it is first important to define entrepreneurship and then to define design entrepreneurship.

What is entrepreneurship? In an article in the Harvard Business Review entitled, "Entrepreneurship: A Working Definition," Thomas R. Eisenmann, Professor of Business Administration at Harvard University, outlines the definition for entrepreneurship used by the Harvard Business School, which was formulated by Howard Stevensen, Professor Emeritus of Business Administration at Harvard University as "entrepreneurship is the pursuit of opportunity beyond resources controlled." He defines "pursuit" as a singular purposeful focus that is fueled by a sense of urgency, "opportunity" implies that the

concept for the business is unique and "beyond resources controlled" implies that the business has limited funds to access for development and therefore requires bootstrapping or keeping expenses really low as the idea is being developed. Eisenmann explains that entrepreneurial efforts take on risk in four forms: demand risk, technology risk, execution risk and financial risk. Demand risk refers to whether there will be an audience or client base for the venture. The technology risk refers to whether new technologies developed or proposed by the venture will be technically sound and adaptable by the target audience. Execution risk is the risk of whether the entrepreneur can attract partners, customers and deliver products or services beyond expectations. Finally, there is financial risk, which is determined by the amount of capital needed.

What is design entrepreneurship? Before the twenty-first century, graphic designers became entrepreneurs by opening their own design businesses, which provided design services to clients. Although many graphic design business owners still follow that model, with the rise of DT, a new business approach has grown. Graphic designers are now using their DT skills to generate their own business concepts, based on problem solving. For example, Airbnb was started by Brian Chesky and Joe Gebbia, two graduates of the Rhode Island School of Design, considered the preeminent design school in the United States. They were later joined by a third partner with a technology background, Nate Blecharczyk. But the original idea for the business came when Chesky was visiting Gebbia in San Francisco and couldn't find an available hotel room. When Chesky pulled out an air mattress, Airbnb was born as a way to solve the problem of the poor supply of affordable hotel rooms in the Bay Area (Hoover). This is just one example of how design thinking helped to develop an entrepreneurial idea.

Since the beginning of the twenty-first century, the role of the graphic designer has been constantly evolving as a design entrepreneur. Where the twentieth century graphic designer operated as a small business owner who performed design services for clients, today's graphic designer can operate as a design thinker who conceives ideas that solve problems and offer massive potential for expansion and growth.

Tim Brown, CEO of IDEO, a global design firm that pioneered a human-centered approach to design, and author of the book *Change by Design*, discusses new career possibilities now open to design thinkers in an article called, "5 New Careers for the 21st Century." Brown lists design entrepreneurship as one of those options:

> Combining entrepreneurialism and design is the hot thing in Silicon Valley these days. Every start-up worth its salt has a designer on its founding team. Venture capital firms are including designers in their inner circles, too. More importantly, many of the fastest-growing companies are succeeding because they've designed a highly appealing product or service. Just look at Uber or Airbnb. If you have the design skills to craft the right product—and the entrepreneurial grit to see things through—there's never been a better time to be a design entrepreneur.

As good design means good business in the twenty first century, higher education needs to adapt curriculum that introduces entrepreneurial efforts to empower the GD21.

CHAPTER II.

Statement of the Problem

### A. Since the Role of GD21 has Changed, GD Education Should Change

The current practice in business of combining design and entrepreneurship gives businesses a higher regard for the value of design and designers. This trend has led to a change in the role of the GD21. It follows that design education should change. One of the ways design education should change is to make the GD student of the twenty first century aware of how the combination of design and entrepreneurship have led to new career possibilities and roles. Undergraduate students should be introduced to the skills necessary to prepare them for these new opportunities.

### B. GD Education Should Expose GD Students to Design Entrepreneurship Skills

In an article published in Wired magazine, entitled, "Designers make great entrepreneurs, they just don't know it yet" Jessica Alter, co-founder & CEO of FounderDating, an online network for entrepreneurs to connect, share, and find co-founders, discusses why she cannot find enough designers willing to become founders of their own companies. "For too long, designers have been trained to be agents: working at the will of someone else's vision." Alter says this training starts in design education and is reinforced at advertising agencies, design studios, large corporations and UX departments. "These services firms and departments are fed young talent by design schools who, with the occasional exception, sprinkle rather than embed entrepreneurship into their programs"(Alter).

Alter finds it unfortunate that design education does not make young students aware of the possibility of design entrepreneurship because she believes that designers and entrepreneurs share a common "key trade" : problem-solving.

On the surface, there seems to be an inherent tension between what makes a good entrepreneur and what makes a good designer. For example, an entrepreneur's job is to figure things out as they go—iterate and problem solve. It's not just about a craft: It's about what the market wants. Entrepreneurs walk a delicate balance between the needs of their customers, teams, and investors. But if you think about it, this characteristic is true of designers too. A great designer excels at iterating and problem-solving. At walking a delicate balance between the needs of their audiences, colleagues, and funders. Design is not just a service industry, but a cross-functional way of thinking that is invaluable in starting innovative companies.

C. What the GD 21 Needs to Know to Take Advantage
of New Opportunities such as Design Entrepreneurship

In the passage above, Alter emphasizes that designers have been trained to problem-solve, which can be a key component to conceptualizing business ideas. An essential concept of this thesis is that since designers and entrepreneurs both share strong problem-solving skills, design education should: (1) make design students aware of this connection, (2) teach design thinking skills, (3) offer entrepreneurship skills to design students. Entrepreneurs usually conceptualize with business ideas by coming up with

solutions to an existing problem. Graphic designers are trained to be problem-solvers

through the process of observation, listening to users and clients, and working iteratively

to arrive at solutions.

CHAPTER III.

Aims and Objectives

A. Research Goals

The goal of this research is to design a teaching tool which better prepares the graphic design student of the 21$^{st}$ century for their new career opportunities by exposing them to: (1) design thinking as a tool to generate entrepreneurial concepts and (2) business skill development.

B. Design Thinking used as Research Methodology

The five phases of DT will be employed as a research process in this thesis to move towards the aims and objectives. In the empathize and define phases, surveys will be used to determine (1) whether students consider it valuable to learn entrepreneurship and basic business skills and (2) what format they would best like to learn these skills. In the ideate phase, I will use (1) online and face to face course enrollment and completion of design entrepreneurship courses, (2) online research into existing design entrepreneurship curriculum, and (3) literature reviews of design entrepreneurship education and design thinking education to determine content and curriculum of the workshop. Research conducted in the define and empathize phases of this thesis will result in a prototype of the teaching format. In the testing phase, the teaching format prototype will be administered to a group of undergraduate graphic design students. A survey will determine the teaching format's effectiveness and serve to determine necessary iterations for future investigations.

CHAPTER IV.

Design Thinking Research

A. Empathize and Define Design Thinking Phases Lead to Workshop Format

In the DT empathizing phase of this research, thirty-six students polled unanimously said that they felt that graphic design students should learn basic business practices and entrepreneurship and they also said that a workshop (WS) would be the preferred format in which to learn this information.

In the DT defining phase of this research, the point of view statement which takes into account "the user, the need and the insight" was developed: Since the role of the GD21 has changed, how can a teaching format be developed for undergraduate graphic design students that would: (1) expose these students to the expanded possibilities open to them in their future careers, (2) teach these students DT skills, (3) introduce these students to generating entrepreneurial concepts using DT, and (4) expose these students to current entrepreneurial thinking such as Business Model Canvas (Elbogen, E.)?

B. Ideate Design Thinking Phase Leads to Workshop Content

In the Ideating phase of this research, the content and curriculum of the WS was formulated from research through attending and experiencing DT and DE workshops such as, (1) 3 Day Start up at Center for Entrepreneurial Action at Texas State University in the Spring of 2016 and (2) Design Thinking in Practice presented by General Assembly at SXSW on March 11, 2017. In these workshops, DT exercises and DE skills were practiced and observed.

From this phase of the research, the idea of a teaching tool in the form of a WS was formulated to teach undergraduate design students about the expanding role of the GD21 and introduce them to DE. Through this workshop, undergraduate design students will practice using DT methodology to conceptualize business ideas.

The idea was formulated that testing the WS would answer the following questions: How can today's undergraduate graphic design students be introduced to the new opportunity of DE? What design skills will design students need to develop in order to succeed in DE? Can design students develop their DT skills to conceptualize business concepts? Can design students be introduced to Business Model Canvas so that they can develop business skills?

In order to understand better how the GD21 is equipped to go into the workforce in the 21$^{st}$ century, research into existing DE curriculum was undertaken.

1. Research of Existing Undergraduate Level Curriculum

of Design Entrepreneurship Courses

GD USA, (Graphic Design USA), a well-respected magazine that publishes information about the profession of graphic design, produces an annual list of the highest rated graphic design schools in the country. Research shows that of these design schools, only five offered undergraduate design courses in DE; (1) Carnegie Mellon, (2) SCAD, (3) Syracuse, (4) New School Parson's and (5) Texas State University. A comparison of existing DE curriculum, specifically DT and business skills teaching methodologies was conducted and the following chart describes the research findings for these five undergraduate free elective courses.

| Undergraduate Courses in Design Entrepreneurships | Design Thinking Teaching Methodolgies | | | Business Skills Teaching Methodolgies | |
|---|---|---|---|---|---|
| | IDEO | IBM | Other | BMC | Other |
| Carnegie Mellon | X | | | X | |
| SCAD | X | | | X | |
| Syracuse | X | | | X | |
| New School Parson's | X | | | X | |
| Texas State University | X | X | | X | |

Figure. 3.1    Comparison of Undergraduate Design Entrepreneurship Courses

The DT methodologies of IDEO and IBM are compared on this chart because they are the two most widely used. Although these DT processes are both focused on understanding and serving the needs of the user, their steps are described differently. The steps in the IDEO DT method are listed as (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Test (defined on pages 18–20). The steps in the IBM DT process are: (1) Observe, (2) Reflect and (3) Make. In the observe phase of the process, designers immerse themselves in the challenges that users encounter in order to gain insight. In the reflect phase, all members of the design team synthesize their findings. In the make phase, low-fidelity prototypes allow designers to rapidly iterate in order to lead to more relevant solutions.

This chart also lists Business Model Canvas (BMC) on the business skills teaching methodology section. BMC is a one-page visual tool/chart, which is used to help people understand what is needed to run a business and is made up of the following components:

(1) Key Partners, (2) Key Activities, (3) Key Resources, (4) Value Propositions, (5)

Customer Relations, (6) Channels, (7) Customer Segments, (8) Cost Structure and (9)

Revenue Streams. This tool was developed by Alexander Osterwalder, author of Business

Model Strategies and Yves Pigneur, Professor of Management Information Systems at

the University of Lausanne. BMC is highly regarded in business and is used by

successful companies such as P&G, Ericsson and 3M.
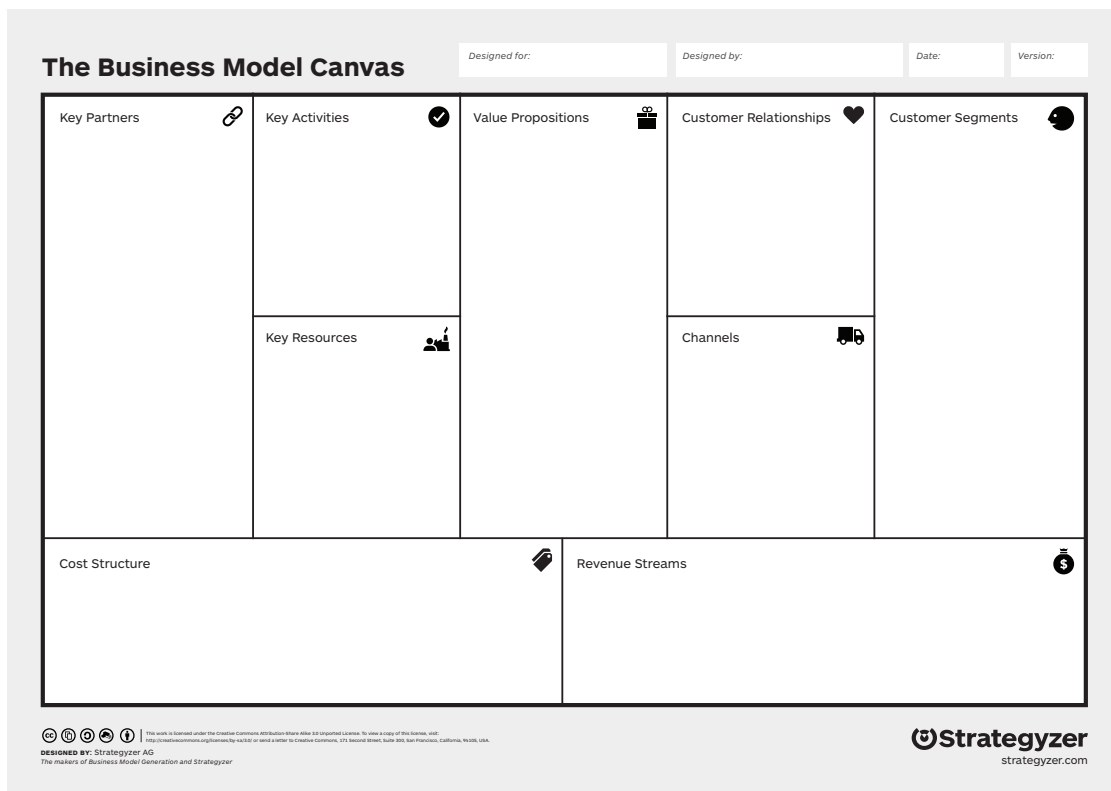


Figure. 3.2    Business Model Canvas. strategyzer.com

2.  Research of Existing Graduate Level Curriculum of Design Entrepreneurship Courses

In an online survey of design curriculum conducted, it was found that only four of

these top-rated graphic design schools currently offer graduate courses in design

entrepreneurship. Those schools are: (1) The Hasso Plattner Institute of Design also known as the d.school at Stanford University, (2) The New School Parson's, (3) The School of Visual Arts (SVA) and (4) Texas State University. The following chart outlines the research conducted into existing design entrepreneurship curriculum in graduate level DE courses.

| Graduate Courses in Design Entrepreneurship | Design Thinking Teaching Methodolgies | | | Business Skills Teaching Methodolgies | |
|---|---|---|---|---|---|
| | IDEO | IBM | Other | BMC | Other |
| d.school | X | | | X | |
| New School Parson's | X | | | X | |
| SVA | X | | | X | |
| Texas State University | X | X | | X | |

Figure. 3.3    Comparison of Graduate Design Entrepreneurship Courses

3.  Research of Interdisciplinary Design Entrepreneurship Campus-wide Initiatives

In further research, it was found that, rather than offer specific courses related to DE in their official curriculum, several universities are currently offering interdisciplinary collaborations. Two examples of these initiatives are: (1) UP/START MICA at Maryland Institute College of Art, which connects GD students with business professionals and (2) 3 Day Start-up (3DS), which was started by students at the University of Texas in 2008 with the goal of creating a program that brings students together to conceptualize business ideas over the course of three days. In both of these programs, groups of GD students, business students and/or engineering students form teams so that entrepreneurial ideas can

be conceptualized and pitched to business leaders and possibly realized as actual

businesses. The chart below outlines the methodologies used by these programs to

introduce DT and business skills teaching.

| Interdisciplinary Programs in Design Entrepreneurship | Design Thinking Teaching Methodolgies | | | Business Skills Teaching Methodolgies | |
|---|---|---|---|---|---|
| | IDEO | IBM | Other | BMC | Other |
| UP/START MICA | X | | | X | |
| 3 Day Start-up | X | | | X | |

Figure. 3.4    Comparison of Interdisciplinary Design Entrepreneurship Campus-wide

Initiatives

4.  Research of Online Design Entrepreneurship Courses

Research of online DE courses was conducted by completing two online courses:

(1) From DT to Funding, Haas School of Business, University of  California Berkeley,

Clark Kellogg, and (2) From DT to Innovation, University of Virginia, Jeanne M.

Liedtke. The chart below compares how these DE courses introduce DT and business

skills teaching methodologies.

| | Design Thinking Teaching Methodolgies | | | Business Skills Teaching Methodolgies | |
| --- | --- | --- | --- | --- | --- |
| | IDEO | IBM | Other | BMC | Other |
| From DT to Funding HAAS School of Business University of California Berkeley Clark Kellogg | | | X | X | X |
| From DT to Innovation University of Virginia Jeanne M. Liedtke | | | X | | X |

Figure. 3.5    Comparison of Online Design Entrepreneurship Courses

In the HAAS School of Business, University of California, Berkeley online course, the DT teaching methodology used is called The Innovation Cycle, which consists of the following four steps: (1) Observation, (2) Insight, (3) The ideation phase, and (4) The experiment phase.

The author effectively presents different methodologies for business skill development: (1) Business Model Canvas and (2)Business Model Navigator. The Business Model Navigator process is made up of these main ideas: (1)Who is our target customer (segment)?, (2) What do we offer the customer?, (3) How do we deliver our Goods and Services? and (4) How do we achieve value?.

In the DT to Innovation, University of Virginia online course, the steps of the DT teaching methodology are described as (1)What is, (2)What if, and (3)What wows. The business skills teaching methodology is called Learning Launch. In this process, an idea is generated that solves a problem experienced by a specific group of customers better

than the competition. The key assumptions are then tested with data gathered from potential customers to determine its viability. If the test confirms the assumptions, the project moves forward and if the data proves the idea wrong, then you pivot, change directions or shelve the business concept.

5. Based on Research, Proposed Method for Teaching Design Entrepreneurship

a. Objectives for Teaching Design Entrepreneurship

Introducing design students to the methodology of using DT to solve problems and conceptualize entrepreneurial ideas to further augment the trends in design education is a primary objective. Additionally, this research will provide a teaching format that will best be received by this generation of students. Encouraging undergraduate graphic design students to develop their DT skills in order to enlighten them to their expanded career opportunities is another objective of this research.

b. Proposed Method/Definition to Teach Design Thinking

The research in this thesis indicated that although there are multiple methods to teach DT, a majority of the schools researched were using the IDEO method/definition of the DT process. It was therefore determined that the IDEO method/definition of: (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Test would be the DT teaching method incorporated into the curriculum for the workshop.

c. Proposed Method to Teach Business Skill Development

The research in this thesis indicated that although there are multiple methods to teach business skill development, due to its highly visual method, the BMC was determined to be the most effective learning tool for graphic design students. It was therefore, determined that the BMC would be the business skill teaching method incorporated into the curriculum for the workshop.

d. Proposed Curriculum Based on Research to Teach Design Entrepreneurship

Based on the research conclusions listed above, a workshop curriculum was developed, which is summarized in the next paragraph and included in full in the appendix section of this thesis.

C. Prototype Design Thinking Phase Leads to Workshop Curriculum

In the Prototype phase of this research, the curriculum of the workshop was developed from (1) the ideation phase of the research in which DT and Entrepreneurship workshops were attended and through (2) reading current literature on DT and Entrepreneurship in order to determine what undergraduate design students would need to learn.

The curriculum of the workshop is briefly described below: (The full content of the curriculum written for the target audience, undergraduate design students, will be included in the Appendix.)

Thinker, Designer, Founder Workshop Description

Through lectures and case study examples, students will gain knowledge of growing

opportunities and trends in design entrepreneurship. A lecture will expose students to the

five phases of design thinking. Students will then practice DT in a series of exercises in

order to generate business ideas. Students will be introduced to Business Model Canvas,

a visual chart used to serve as a business plan through a lecture and then will gain

experience with business skill development through filling out a Business Model

Canvas chart.

Rationale

With the rise of technological changes and market shifts that demanded better design

for business success, graphic designers in the twenty first century (GD21) have been

exploring more creative applications for their creative problem-solving abilities, such as

conceptualizing business ideas and forging their own financial futures. The reason for

this workshop is to expose graphic design students to their growing opportunities and

to empower them to use their design expertise for the realization of their own

business success.

Goals

The workshop participant (undergraduate graphic design student) will:

• Understand the expanded possibilities open to them in their future careers as GD21s.

• Gain an appreciation of current trends and opportunities in Design Entrepreneurship.

• Comprehend and practice all five phases of DT.

• Practice the five phases of DT to generate an entrepreneurial or business concept

  that solves a problem.

• Gain an aptitude for current entrepreneurial thinking and business skill development

  through practice with Business Model Canvas.

Materials

• Lecture: Introduction to Design Entrepreneurship

• Lecture: Design Entrepreneurship Case Studies

  Business schools traditionally use case studies to tell the story of business development.

  THINKER, DESIGNER, FOUNDER workshop will present design entrepreneurial

  case studies to demonstrate how DT leads to innovative business concepts.

Curriculum

• Lecture: Introduction to Design Thinking (DT)

  The students will be introduced to the definition of DT, its origin and history and

  how it has expanded the role of the GD 21.

• Video: The Deep Dive

  Through watching "The Deep Dive" video, the students will see how IDEO uses

  the DT process to solve a common problem and redesign a product to be more user

  friendly. "The Deep Dive" is a video, produced for an episode of the late-night news

  program, *Nightline*, in which ABC visits IDEO, the well renowned design firm in Palo

  Alto and documents their design process when they are given the problem of

re-imagining a shopping cart in five days. This video gives an in-depth look into
IDEO's design process.

• DT Exercises:

Through a series of hands on exercises, students will practice the five phases of DT and

using this method of problem solving, they will generate a business concept.

1. Empathize: Interviewing and Filling out an Empathy Map

2. Define: Writing a Point of View Statement

3. Ideate: Brainstorming, Mind-mapping, Visual Brain-dumping

4. Prototype: Making a Minimum Viable Product, Wireframing

5. Test: User Testing

• Lecture: Introduction to Business Model Canvas

Students will be introduced to current trends in entrepreneurial thinking such as

Business Model Canvas. Hands-on exercises will give the students introductory

experience with business practices.

• Business Skills Exercises:

1. Business Model Canvas: Filling out a Business Model Canvas Chart

Timing

• Lecture: Introduction to Design Entrepreneurship ...........................................15 minutes

• Lecture: Design Entrepreneurship Case Studies ...............................................30 minutes

• Lecture: Introduction to Design Thinking ..........................................................30 minutes

• Video: The Deep Dive ....................................................................................30 minutes


• *Break* ........................................................................................................*15 minutes*

• DT Exercises:

   1.  Empathize: Interviewing and Filling out an Empathy Map .........................30 minutes

   2.  Define: Writing a Point of View Statement ................................................15 minutes

   3.  Ideate: Brainstorming, Mind-mapping, Visual Brain-dumping ...................30 minutes

   4.  Prototype: Making a Minimum Viable Product, Wireframing ....................30 minutes

   5.  Test: User Testing ..................................................................................60 minutes


• *Break* ........................................................................................................*15 minutes*


• Lecture: Introduction to Business Model Canvas ..............................................30 minutes

• Business Skills Exercises:

   1.  Business Model Canvas: Filling out a Business Model Canvas Chart ........60 minutes


• Final Discussion .........................................................................................15 minutes


Expected Outcomes

The workshop participant will:

• Understand the expanded possibilities open to them in their future careers as GD21s.

• Gain an appreciation of current trends and opportunities in Design Entrepreneurship.

• Comprehend and practice all five phases of DT.

• Practice the five phases of DT to generate an entrepreneurial or business concept

   that solves a problem.

• Gain an aptitude for current entrepreneurial thinking and business skill development

   through practice with Business Model Canvas.

Suggested Further Reading

*Business Model Generation.* By Alexander Osterwalder and Yves Pigneur.

*Conversations with Design Entrepreneurs.* By Tim Hoover and Jessica Karle.

*Change by Design: How Design Thinking Transforms Organizations and*

      *Inspires Innovation.* By Tim Brown

*Conversations with Design Entrepreneurs.* By Tim Hoover and Jessica Karle.

*Design Thinking Bootleg.* By Eli Elogen.

*Design Thinking for Entrepreneurs and Small Businesses:*

      *Putting the Power of Design to Work.* By Beverly Rudkin.

*The Art of Innovation.* By Tom Kelley and Jonathan Littman.

*The Design Entrepreneur.* By Stephen Heller and Lita Talarico.

*The Education of a Design Entrepreneur.* By Stephen Heller.

## D.  Test Design Thinking  Phase Leads to Post-Workshop

## Surveys and Test Conclusions/Iterations

In order to test the acceptance and effectiveness of the WS, research was

conducted by running the WS with a group of undergraduate students, who were then

given a follow up survey. Results from the surveys will provide input and direction for the iterative process in the design of the workshop. The questions to be asked on the surveys are listed on the next page:

# E. Post-Workshop Survey

**POST-WS QUESTIONS**

1. What is your age?    2. What is your college major?

3. What is your college level?    **FRESHMAN    SOPHOMORE    JUNIOR    SENIOR**

4. Was this workshop helpful/ informative to you? Why or why not?


5. On a scale of 1 through 10 with ten being the highest, rate how helpful/ informative this workshop was to you.

   **1    2    3    4    5    6    7    8    9    10**

6. On a scale of 1 through 10, rate how helpful/ informative was the Case Studies section of this workshop was to you.

   **1    2    3    4    5    6    7    8    9    10**

7. On a scale of 1 through 10, rate how helpful/ informative the Design Thinking section of this workshop was to you.

   **1    2    3    4    5    6    7    8    9    10**

8. On a scale of 1 through 10, rate how helpful/ informative the Business Model Canvas section of this workshop was to you.

   **1    2    3    4    5    6    7    8    9    10**

9. Going forward with your academic career, rate on a scale of 1 through 10 how likely it is that you would use Design Thinking in your future graphic design career?

   **1    2    3    4    5    6    7    8    9    10**

10. Going forward with your academic career, rate on a scale of 1 through 10 how likely it is that you would use Business Model Canvas in your future graphic design career?

   **1    2    3    4    5    6    7    8    9    10**

11. Would you like to see this workshop expanded into a class? Why or why not?


12. Would you like to see this workshop expanded into a hybrid face to face / online class? Why or why not?


13. Would you like to see this workshop expanded into an online class? Why or why not?


14. Would you like to see this workshop become interdisciplinary? For instance, would you like to work with business students in this workshop?  Why or why not?


15. Was enough time spent on each section of the workshop?
    Case Studies    **YES    NO**       Design Thinking    **YES    NO**       Business Model Canvas    **YES    NO**

16. Do you think this workshop better prepares you for a career as a graphic designer in the 21st century? Why?


17. After taking this workshop, rate on a scale of 1 through 10 how likely it is that you would pursue design entrepreneurship in some form as part of your future career path?

   **1    2    3    4    5    6    7    8    9    10**

**18.** Rate on a scale of 1 through 10 how clear the Empathize part of the DT process was explained.

    **1     2     3     4     5     6     7     8     9     10**

**19.** Rate on a scale of 1 through 10 how clear the Define part of the DT process was explained.

    **1     2     3     4     5     6     7     8     9     10**

**20.** Rate on a scale of 1 through 10 how clear the Ideate part of the DT process was explained.

    **1     2     3     4     5     6     7     8     9     10**

**21.** Rate on a scale of 1 through 10 how clear the Prototype part of the DT process was explained.

    **1     2     3     4     5     6     7     8     9     10**

**22.** Rate on a scale of 1 through 10 how clear the Testing part of the DT process was explained.

    **1     2     3     4     5     6     7     8     9     10**

**23.** Rate on a scale of 1 through 10 how clear the Business Model Canvas steps were explained.

    **1     2     3     4     5     6     7     8     9     10**

## 2. Workshop Test Conclusions/Iterations

The workshop was given to 18 Communication Design students between the ages of 19 and 27 and consisted of 7 freshmen, 5 sophomores, 4 juniors and 2 seniors Results of the surveys showed an overall positive response to the WS curriculum. When asked on question 5, to rate on a scale between one to ten how helpful and informative the WS was, 83% of WS participants responded between an eight and a ten. When asked to rate on a scale between one to ten how helpful and informative the WS sections (case studies, DT, BMC sections) were, 83% of WS participants responded between an eight and a ten.

Questions 11–14 were meant to determine whether GD students thought the WS could become a class and if so, whether the class could become face to face, hybrid or online. To Q11, "Would you like to see this workshop expanded into a class?", all WS participants answered yes. To why or why not question, comments included, "Yes, it

would be helpful or at least build it into existing curriculum," "Yes, in this modern age, this workshop is extremely applicable to real jobs." To Q12, "Would you like to see this workshop expanded into a hybrid face to face/online class?", 12 participants answered yes, while six answered no. Of the six that answered no, one participant commented that it needed to be face to face to allow for interaction. Responses to Q13, "Would you like to see this workshop expanded into an online class?", were as follows: 6 participants answered yes, 11 answered no and one did not answer the question. Comments included, "No, it would be more helpful learning these skills in person." When asked on Q14, "Would you like to see this workshop become interdisciplinary? Why or why not?", 11 of 18 participants answered yes. Comments included: "Yes because we would be able to learn from each other. Designers can teach business students, vice versa." and "Yes it would give outside/different perspectives."

Through feedback from the GD student, Q16 was meant to test the validity of the concept for the WS. The Q16, which asks "Do you think this WS better prepares you for a career as a GD in the 21$^{st}$ century?", included comments such as: "Yes, there's a lot more to being a designer than just making things pretty. There is purpose and business aspects that are very important." and "It expanded my knowledge on design and showed me the business side of design rather than just the artistic side."

Analysis of the data received from questions 15, and 18 – 24 on the post-workshop surveys indicated that improvement to the curriculum of the WS would include a clearer description of and more hands-on time devoted to: (1) the testing phase of the DT process and (2) the steps of the BMC.

CHAPTER V.

Conclusion

In Texas, the higher education board has a goal to expand education so that by 2030, 60% of Texans have a higher education degree. If higher education has a goal to recruit more high school students, higher education needs to adapt its curriculum, so it is relevant for the 21st century workforce.

Research conducted for this thesis shows that the role of the GD21 has expanded greatly from the role of the GD20 due to the growth of new technologies and also due to the rise of the concept that good design leads to business success. These trends have led to the advance of DE as a growing opportunity for the GD21. However, research into design curriculum at top graphic design schools in the United States conducted for this thesis shows that there are still only a few schools which offer curriculum that teaches DE and of these course offerings, all are free elective courses. THINKER, DESIGNER, FOUNDER, a DE WS proposed in this thesis, is intended to benefit graphic design students in the 21st century by expanding their knowledge of DT skills and business skill development so that they can be better prepared to enter the workforce and take advantage of their expanding opportunities, especially DE. In the future, this WS could become a class or be incorporated into existing curriculum in order to reach a wider base of graphic design students.

Research in this thesis was conducted by testing this workshop on undergraduate design students to see if (1) it expanded their view of their future career roles as graphic designers to include problem-solver, (2) it enhanced their understanding of their future

opportunities to include design entrepreneurs or business concept generators and business owners, and (3) it expanded their business skill development. Surveys and interviews conducted for this thesis revealed that undergraduate design students would be enthusiastic to begin learning these new skills at the freshman and sophomore level in order to incorporate these concepts into their upper division coursework and graduate better prepared for the 21st century workforce.

A. Further Research to Include All Undergraduate Levels and Graduate Levels

In future investigations, this DE WS will be tested for acceptance and effectiveness at the freshman, sophomore, junior and senior levels for undergraduates in order to determine how the curriculum might need to be modified to accommodate each class level. The DE WS will also be tested with graduate level graphic design students in order to allow for modifications that would make it most effective for advanced students. The testing for this thesis included administering the WS prototype and testing it with graphic design students in Texas. In future research, the scope will be expanded to include testing the WS prototype with graphic design students and communication design students on a national level in order to reach a wider base. Future investigations will allow for: (1) including the WS content in existing curriculum, (2) developing the DE WS into a class for undergraduates and (3) a class for graduates.

B. Further Research to Include Campus-wide Initiatives

In addition to the creation of formal DE and entrepreneurship courses, universities are now actively engaged in promoting innovation through campus-wide DE initiatives.

Further research for this thesis will include administering this DE WS in a campus-wide program in order to determine what iterations would be necessary for the best delivery to cross-disciplinary teams.

### C. Further Research to Include Online Course

Through ideating and prototyping, this DE WS will be developed into an online course. This online version will then be tested for acceptance, effectiveness and possible iterations. Inclusion of an online presence for the DE WS will allow the content and curriculum to be tested widely and to reach a larger number of WS participants.

THINKER, DESIGNER, FOUNDER, a DE WS, will empower current and future GD students to be better prepared as GD21s to enter the design-led business world and to also embrace the career expanding possibilities of Design Entrepreneurship.

### D. Further Research to Include Publication and Conference Presentations

The continued study into DE examples through researching, interviewing, writing and documenting will result in a compilation of case studies that will be published in articles, a blog and a podcast that will be incorporated into the DE WS curriculum. The emphasis of these case studies will be lessons learned by practicing design entrepreneurs from the generation of ideas to the realization of businesses. These further investigations will lead to the proposal of DE conference lectures and presentations.

E. Further Research to Include How University Design Departments can Establish

Themselves as Leaders in Design Thinking and Design Entrepreneurship

Due to the increased interest in the power of DT and DE, a multitude of

University departments are now proposing DT courses and claiming expertise. Research

into how design departments at multiple Universities are approaching this problem will

be conducted. These investigations will result in articles that will outline conclusions and

suggest proposals for Design Departments to take leadership of DT and DE.

APPENDIX SECTION


A. Surveys

1. Survey 1


1. At what institution do you study design?

2. What best describes your current school status?

   Senior        Junior        Sophomore        Freshman        Other

3. What best describes your current school?

   Large Public University

   Small Public University

   Small Private University

   Community College

   Other

4. What do you feel today's design students should be learning?

5. Have you been exposed to basic business practices and entrepreneurship in the

   classroom?

6. If you do/did learn basic business practices in the classroom, what information was

   covered?

7. Do you feel that graphic design students should learn basic business practices and

   entrepreneurship?

8. If you do think that graphic design students should learn basic business practices and

   entrepreneurship in the classroom, what information should be covered?

Best Business Practices and Contracts for Graphic Designers

Basic Business Terms

Business Plan Development

Starting a Design Consulting Business

Building a Client Base

Customer Relations

Working with Vendors

Entrepreneurial Design Opportunities

Not Applicable

9. If you do think that graphic design students should learn basic business practices and entrepreneurship in the classroom, what content delivery methods do you think are most effective?

Lectures

Handouts

Books

Exercises

Assignments

Workshops

Online Tools

Stories

Videos

Field Trips

10. Have you heard about design thinking methodology in the classroom?

11. If you did hear about design thinking methodology in the classroom, what information was covered?

12. Do you think that graphic design students should learn design-thinking methodology?

13. If you think graphic design students should learn design-thinking methodology in the classroom, what information do you think should be covered?

14. If you think today's graphic design students should learn design-thinking methodology in the classroom, what content delivery method do you think would be most effective for learning?

Lectures

Handouts

Books

Exercises

Assignments

Workshops

Online Tools

Stories

Videos

Field Trips

## 2. Survey 2

**POST-WS QUESTIONS**

**1.** What is your age?    **2.** What is your college major?

**3.** What is your college level?    **FRESHMAN**    **SOPHOMORE**    **JUNIOR**    **SENIOR**

**4.** Was this workshop helpful/ informative to you? Why or why not?

**5.** On a scale of 1 through 10 with ten being the highest, rate how helpful/ informative this workshop was to you.

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**6.** On a scale of 1 through 10, rate how helpful/ informative was the Case Studies section of this workshop was to you.

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**7.** On a scale of 1 through 10, rate how helpful/ informative the Design Thinking section of this workshop was to you.

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**8.** On a scale of 1 through 10, rate how helpful/ informative the Business Model Canvas section of this workshop was to you.

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**9.** Going forward with your academic career, rate on a scale of 1 through 10 how likely it is that you would use Design Thinking in your future graphic design career?

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**10.** Going forward with your academic career, rate on a scale of 1 through 10 how likely it is that you would use Business Model Canvas in your future graphic design career?

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

**11.** Would you like to see this workshop expanded into a class? Why or why not?

**12.** Would you like to see this workshop expanded into a hybrid face to face / online class? Why or why not?

**13.** Would you like to see this workshop expanded into an online class? Why or why not?

**14.** Would you like to see this workshop become interdisciplinary? For instance, would you like to work with business students in this workshop? Why or why not?

**15.** Was enough time spent on each section of the workshop?
Case Studies    **YES    NO**        Design Thinking    **YES    NO**        Business Model Canvas    **YES    NO**

**16.** Do you think this workshop better prepares you for a career as a graphic designer in the 21st century? Why?

**17.** After taking this workshop, rate on a scale of 1 through 10 how likely it is that you would pursue design entrepreneurship in some form as part of your future career path?

    **1**    **2**    **3**    **4**    **5**    **6**    **7**    **8**    **9**    **10**

## B. THINKER, DESIGNER, FOUNDER Workshop Curriculum

### 1. Introduction

This workshop is for graphic design students to learn about the expanding possibilities available to graphic designers today, especially in the arena of design entrepreneurship. With this tool, you will practice using design thinking (DT) methodologies to generate business ideas based on solving problems. You will also learn about current trends in entrepreneurship and practice the development of a business plan using a tool called "Business Model Canvas." Through this workshop experience, you will develop an entrepreneurial mindset, which will enhance your future career in design.

### 2. DT Defined

DT is a process that can be used to solve human-centered problems. Let's take a look at the definition from Tim Brown, CEO and President of IDEO, a global design firm known for pioneering the concept of DT and human centered design. Brown is an award-winning industrial designer, whose work has been exhibited in the Design Museum in London and the Museum of Modern Art in New York. In his book, *Change by Design, How Design Thinking Transforms Organizations and Inspires Innovation*, Brown introduces DT as a design methodology. According to Brown, "DT is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success. DT has greatly expanded the possibilities open to today's graphic designers. One of these exciting expanded roles is design entrepreneurship."

In "An Introduction to Design Thinking Process Guide," produced by the d.school, the DT process is explained as a process that is comprised of five phases: (1) Empathize, (2) Define, (3) Ideate, (4) Prototype, and (5) Test.

### a. Empathize

In the empathy phase, it is important for the designer to move beyond their own ways of thinking and feeling and put themselves in the minds of the user. What is the best way to gain empathy? First the designer will observe people, engage people in conversations, and watch and listen as people complete tasks. These observations and interviews can help designers gain empathy for their users because they will learn what they value and what they need.

### b. Define

In the define phase, designers clarify the problem they are trying to solve by developing a point of view statement, which defines: (1) who the user is, (2) what the user needs and (3) why the user needs it.

### c. Ideate

When ideating, the designer conceives solutions based on the definition of the problem. The ideation phase is for generating a wide range and large number of possible solutions in order to go beyond the expected solution. There are a number of ways to generate ideas and we will practice several of these methods such as brainstorming, mind-mapping and visual brain-dumping. Brainstorming is the process of generating as

many ideas as possible by refraining from editing. Mind-mapping is a visual way to come

up with ideas by radiating concepts around a central idea or word. A visual brain-dump is

a method to release ideas from your brain by visually sketching without order or editing.

## d. Prototype

The prototype is meant to communicate the concept and to test the proposed

solution. Prototypes can be made of simple materials and are not meant to be final mock-

ups of the final product. Prototyping can also help designers break large problems into

smaller chunks in order to define the design problems more clearly. The form of the

prototype will be determined by the product being designed. For instance, a physical

product might be mocked up from simple basic materials, while an interactive product

might be explored through the design of wireframes, which is a visual representation on

paper of how the user moves through an app.

## e. Case Studies

**AirBnb.** The concept was born when two roommates in San Francisco, Brian

Chesky and Joe Gebbia, graduates of RISD, found themselves with the problem of not

being able to pay rent. They came up with the idea to buy three air mattresses to rent out

as alternative lodging, made a website, a map and launched their idea.

An article from the website, firstround.com, entitled, "How Design Thinking

Transformed Airbnb from a Failing Start-up to a Billion Dollar Business," describes the process.

After going out into the field—and using empathy to really understand their users—the Airbnb

founders modified their product, which altered the trajectory of their business. According to this

article, in 2009, with three founders, the business was making only $200 a week and usage was

remaining flat. As Gebbia pored over the low rentals of forty properties, he noticed a pattern: all the photos were all of such low, amateur quality that users couldn't see what they were renting. As a solution, Gebbia and a team flew out to New York, spent time with customers listing properties, shot new photos of these forty properties, and posted them. Rentals doubled in one week from $200 to $400.

Re-shooting the listing's photos led Gebbia to realize that the best way to really solve problems goes beyond writing code because it requires going out into the field. He describes his process for gaining empathy this way, "If we were working on a medical device, we would go out into the world. We would go talk with all of the stakeholders, all of the users of that product, doctors, nurses, patients and then we would have that epiphany moment where we would lay down in the bed in the hospital. We'd have the device applied to us, and we would sit there and feel exactly what it felt like to be the patient, and it was in that moment where you start to go aha, that's really uncomfortable. There's probably a better way to do this."

These experiences inspired Gebbia to make "being a patient" or gaining empathy one of the core values of all AirBnb designers. For instance, all designers are given the opportunity to understand users by taking a paid trip in their first two weeks of employment, to answer a set of questions, to document and to share their experience with the company. This is important because by embracing and practicing DT, each employee becomes invested in the continued success of AirBnb.

**TeuxDeux.** The idea was conceived when Tina Eisenberg, a designer and an avid to-do list maker, was encouraged by a studio mate to abandon pen and pencil and to keep her list online. When she was unable to find a clean simple usable online tool,

Eisenberg decided to design her own. She accomplished it in one morning and Cameron Kozcon, studio mate, developer and owner of web company, Fictive Kin, developed it in a weekend. With the creation of TeuxDeux, Eisenberg designed an online tool that would be clean, simple and as easy to use as a sheet of paper and a calendar, with the added benefit that tasks not checked off would move to the next day.

Eisenberg and Kozcon first thought that the TeuxDeux app would be for personal use, but after sharing it with a few friends for free, the app got "passionate user feedback."

In order to generate income, TeuxDeux has recently moved to a subscription-based business model and now has 300,000 users. The TeuxDeux app is a great example of how a designer identified a simple need, designed a solution, collaborated with a developer and made a business out of a side project.

**PillPack.** Founded in 2013, PillPack is a medication delivery service that helps to simplify the process of managing multiple prescriptions. People who receive prescriptions from more than one doctor with different refill dates may need to take several trips to the pharmacy a month to keep medications up to date. These people may also experience the problem of keeping track of whether all medications have been taken.

J Parker and Elliot Cohen, explored a way to solve this human-centered problem. Combining his design interest and his pharmacy experience, Parker came up with the concept for PillPack. Once people sign up with a mobile app, PillPack coordinates with patients' doctors and pharmacies and delivers a box to their door every two weeks with medication presorted into packs that are labeled with easy to read dates and medications.

This case study is an example of how DT generated an innovative approach to a human problem, which then grew into a successful business: Three years after its launch, PillPack attracted $118 million in Venture capital funding and grew to 40,000 customers. According to Joseph Flagherty of *Wired* magazine, "PillPack has revealed the massive potential of combining design thinking and the drug market. Big pharma is boring to many, yet the opportunity for designers to make an impact on healthcare and a company's bottom line is staggering."

### 3. The Problem to Solve

Now that you have been introduced to the concept of using DT to solve problems and generate business ideas, you will be given a problem to solve. One of the most difficult problems college students encounter is how to eat in a healthy manner while managing the demands of school and adhering to a budget. How could you design something that would alleviate that problem?

**Exercise.** You will use the DT steps to solve this problem.

### 4. Business Model Canvas (BMC) Introduction

BMC is a method to draft a business plan for a lean start-up, designed by Alex Osterwalder, a business model innovator, entrepreneur and speaker. There are nine business model building blocks that make up a business model canvas; Key Partnerships, Key Activities, Key Resources, Value Propositions, Customer Relationships, Channels, Customer Segments, Cost Structure, and Revenue Streams.

**Exercise.** You will use the BMC to generate a visual business plan for the idea you generated from your DT practice.


## C. Interviews


### 1. Questions asked in the interviews included:

a. In design entrepreneurship courses at [name of school,] are design thinking methodologies being used to conceptualize business ideas? If so, which methodologies are being used? For instance, are you using the d.school and IDEO process, the IBM process or your own process? My goal is to find out why different programs might employ different methods for teaching design thinking methodologies in order to find out which method is most effective for the undergraduate design student.

b. In design entrepreneurship courses at [name of school,] are business skills such as business plan development being taught? If so, do you use the Business Model Canvas or a different tool? Why are you using a particular tool? My goal is to find out why different programs might employ different methods for teaching business skill development in order to find out which method is most effective for the undergraduate design student.


### 2. List of Those Interviewed

Mariana Amatullo, PhD, Associate Professor of Strategic Design and Management, Parsons School of Design, School of Design Strategies. Interviewed April 2019.

Grayson Lawrence. Associate Professor, Texas State University.

Interviewed January 2019.

John Liddy, Entrepreneur in Residence and Director of the Syracuse Student Sandbox, Syracuse University. March 2019.

Kathryn Segovia, Director of Executive Education at the d.school. Interviewed February 2019.

Alvaro Soto, Lecturer. MFA, Faculty, Texas State University. Interviewed May 2019.

Lita Talarico, co-founder and co-chair, MFA Design Department, School of Visual Arts, Masters Workshop in Design History, Theory and Practice in Italy, writer, design consultant and architectural consultant. Interviewed March 2019.


D. Courses Taken/Training

1. From DT to Funding, HAAS School of Business University of California Berkeley, Clark Kellogg.

In this online course, the HAAS method of innovation, which is a way to find solutions to problems through a learning cycle is described and explained. This methodology is comprised of the following steps: 1. Observation, 2. Insight, 3. Innovation, and 4. Experimentation. Through video lectures and readings, skills learned in the course include: strategic thinking, design thinking and business model development.

2.  From DT to Innovation, University of Virginia,

Jeanne M. Liedtke.

This online course covers gives an overview of design-thinking to solve problems

with innovation by asking four questions: 1. What Is?, 2. What If?, 3. What Wows?, and

4. What Works?. Through video lectures and readings, skills learned in the course

include: strategic thinking, design thinking and innovation.

3.  3 Day Start-up. Spring 2016.

This weekend workshop builds entrepreneurial skills and capabilities through

teamwork and mentorship. Skills learned in the course included: business model

generation, prototype/pitch development and relationship building with business

professionals and potential investors.

4.  Design Thinking in Practice, General Assembly. March 2017.

This face to face workshop introduced design thinking methodology through

a lecture and a group exercise for the redesign of a wallet. Skills learned in the course

included: the design thinking skills of empathizing, defining, prototyping and testing.

WORKS CITED

Attwood, Kemp. "Five Ways Good Design Can Help Your Business." *Optical Cortex*,

    15 Aug. 2014, opticalcortex.com/five-ways-good-design-can-help-your-business/.

    Accessed 11 Sept. 2019.

Bridges, Amanda W. "Identification of Perceived 21st Century Graphic Design Skills,

    Content Knowledge, and Tools Needed in an Effective University-Level Graphic

    Design Program" (2012). Education Dissertations and Projects. 32.

    digitalcommons.gardner-webb.edu/education_etd/32. Accessed 2 Jan. 2019.

Brown, Tim. *Change by Design: How Design Thinking Transforms Organizations and*

    *Inspires Innovation*. Harper Collins, 2009.

Brown, Tim. "Design Thinking." *Harvard Business Review*, vol. 86. issue 6, 2008,

    pp. 84-92, www.hbr.org/2008/06/design-thinking. Accessed 8 Jan. 2019.

Cezzar, Juliette. *The AIGA Guide to Careers in Graphic and Communication Design*.

    Bloomsbury Publishing, Inc., 2018.

Dunne, Carey. "How Paul Rand pioneered the Era of the Design–Led Business." *Fast*

    *Company*, 24 Feb. 2015, www.fastcompany.com/3042762/how-graphic-design-

    legend-paul-rand-ushered-in-an-era-of-design-led-business/. Accessed 30

    Jan. 2018.

Edwards, Benj. "The iPod: How Apple's Legendary Portable Music Player Came To Be.

    *MacWorld*, 23 Oct. 2011, www.macworld.com/article/1163181/consumer-

    electronics/the-birth-of-the-ipod.html. Accessed 15 Jan. 2018.

Eisenmann, Thomas. "Entrepreneurship: A Working Definition." *Harvard Business*
*Review,*January 2013, www.hbr.org/2013/01/what-is-entrepreneurship.html.
Accessed 1 Oct. 2018.

Elbogen, Eli. Hasso Plattner Institute of Design at Stanford. *Design Thinking Bootleg*,
dschool.stanford.edu/resources/design-thinking-bootleg.

Fyffe, Steve and Lee, Karen. "How Design Thinking Improves the Creative Process:
How entrepreneurs can take a big idea to a real-world product." *Insights by*
*Stanford Business*, January 2019, www.gsb.stanford.edu/insights/how-design-
thinking-improves-creative-process. Accessed 12 April 2019.

"Good Design is Good Business." *IBM100, Icons of Power*,
www.ibm.com/ibm/history/ibm100/us/en/icons/gooddesign.
Accessed 20 Jan. 2018.

"Graphic Designers." www.bls.gov., 17 Dec. 2018. Web. 12 Sept. 2019.

Heller, Stephen. *The Education of a Design Entrepreneur*. Allsworth Press, 2002.

Heller, Stephen and Talarico, Lita. *The Design Entrepreneur*. Rockport Publishers, 2008.

Heller, Steven. "Thoughts on Rand," Interview with Louis Danzinger. *Print*,
Vol. 51, Issue 3, 1997. www.paulrand.design/life/books-
articles/articles/print/1993-print-magazine.html. Accessed 20 Sept. 2018.

Hoover, Tim. and Karle, Jessica. Kern and Burn: *Conversations with Design*
*Entrepreneurs*. 2013.

Howard, Z., Mellesa, G., and Thompson-Whiteside, Scott. "Teaching Design Thinking:

　　　　Expanding Horizons in Design Education." *Procedia - Social and Behavioral*

　　　　*Sciences*, vol. 31, 2012, pp. 162 – 166,

　　　　www.sciencedirect.com/science/article/pii/S1877042811029648. Accessed 12

　　　　May 2019.

Isaacson, Mark. "How Steve Jobs' Love of Simplicity Fueled a Design Revolution."

　　　　*Smithsonian*. 16 Aug. 2002, www.smithsonianmag.com/arts-culture/

　　　　how-steve-jobs-love. Accessed 6 Jan. 2018.

Ingle, Beverly Rudkin. *Design Thinking for Entrepreneurs and Small Businesses:*

　　　　*Putting the Power of Design to Work*. Apress, 2013.

Kelley, Tom and Littman, Jonathan. *The Art of Innovation*. Random House, 2001.

Kelley, David and Kelley, Tom. *Creative Confidence, Unleashing the Creative Potential*

　　　　*Within All of Us*. Random House, 2013.

Kuang, Cliff. "How Google Finally Got Design." *Fast Company*, 1 June 2015,

　　　　www.fastcodesign.com/3046512/how-google-finally-got-design.

　　　　Accessed August 2017.

Liedtke, Jeanne M. "Why Design thinking Works," *Harvard Business Review*,

　　　　September-October 2018 Issue. pp. 71-79. www.hbr.org/2018/09/why-design-

　　　　thinking-worls. Accessed 12 Jan. 2019.

Martin, R. *The Design of Business: Why Design Thinking is the Next Competitive*

　　　　*Advantage*. Harvard Business Press, 2009.

Molla, Rani. "How Apple's i-Phone Changed The World: 10 Years in 10 Charts."

    *Recode*, 26 June 2017, www.vox.com/2017/6/26/15821652/iphone-apple-10-year-

    anniversary-launch-mobile-stats-smart-phone-steve-jobs. Accessed 15 Jan. 2018.

Muratovski, Gjoko "Paradigm Shift: Report on the New Role of Design in Business

    and Society." *The Journal of Design, Economics, and Innovation*, vol. 1, Issue 2,

    Winter 2015, pp. 118-139.

    www.sciencedirect.com/science/article/pii/S2405872615300265.

    Accessed 12 Feb. 2019.

Osterwalder, Alexander and Pigneur, Yves, *Business Model Generation*. John Wiley

    and Sons, Inc. 2010.

Powell, Doug. "The Business Value of Design Thinking." *IBM* Think Blog, 8 Mar. 2018.

    www.ibm.com/blogs/think/2018/03/design-thinking. Accessed 29 Oct. 2018.

Ries, Eric. *The Lean Start-up: How Today's Entrepreneurs Use Continuous Innovation to*

    *Create Radically Successful Businesses*. Random House, 2011.

*Steve Jobs—One Last Thing*. Pioneer Productions, 2012.

Taube, Mark. "How The Greatest Superbowl Ad Ever—Apple's 1984—Almost Didn't

    Make it to Air." *Business Insider*. 22 Jan. 2014,

    www.businessinsider.com/apple-super-bowl-retrospective-2014-1.

    Accessed 15 Jan. 2018.

Wescott, Michael. "Design-Driven Companies Outperform S&P by 228% Over Ten

Years   DMI and Motiv Partner to Develop the 'DMI Design Value Index." *Dmi Dialog*,

    *Dmi.org*, Feb. 2014, dmidialog.blogspot.com/2014/02/design-driven-companies-

    outperform-s-by.html. Accessed 22 Jan. 2019.

"What is Design Management?" *dmi*, 25 Sept.2014,

      www.dmi.org/page/what_is_design_manag. Accessed 12 Feb. 2019.

Wheeler, Alina. *Designing Brand Identity*. John Wiley & Sons, Inc., 2018.

 "User Experience (UX) Design." *Interaction Design Foundation*,

      www.interactiondesignfoundation.com/interaction-design.org/literature/topics/ux-

      design. Accessed 22 Feb. 2019.

Zeh, Mark. *The Key Roles of Stories and Prototypes in Design Thinking*. John Wiley and

      Sons, Inc., 2016.