MASTER OF FINE ARTS THESIS PROJECT

LIBERTY UNIVERSITY

BREANN CARTY

# Seeing by Creativity

A CREATIVE EXECUTION DESIGNED TO BRIDGE THE GAP FOR THE VISUALLY IMPAIRED

SCHOOL OF VISUAL AND PERFORMING ARTS

DEPARTMENT OF STUDIO AND DIGITAL ARTS


A THESIS SUBMITTED TO LIBERTY UNIVERSITY
FOR MASTER OF FINE ARTS IN STUDIO AND DIGITAL ARTS

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And lastly, thank you to all of my editors and testing participants. Your help was instrumental and I am beyond grateful.

# DEDICATION

I would like to dedicate this thesis to my mom. You have yet to stop inspiring me and I will be forever grateful for your love and support in my life.

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# ABSTRACT

This research explores how design can simultaneously reach people who are visually impaired, along with those who can see, by integrating inclusive design. Research reveals that the visually impaired are frequently overlooked by graphic designers. These findings further show that blind individuals feel excluded from society. The aim of this study is to generate a collection of work that effectively combines visual design and braille to provide visually impaired people with a similar experience to those who are not disabled. To determine the most effective way of combining design elements and braille, experiments within focus groups were conducted. This exploration demonstrates that expanding design to be more inclusive would further showcase the need of the visually impaired to be considered more consistently in visual communication.


CHAPTER 1

# THE PROBLEM

# INTRODUCTION

Graphic design can be seen all around us in today's society, however, rarely do we think of design being used to reach those who are visually impaired. While they may not have the same visual experience as the majority of society, those who do have limited or no visibility should still be considered in the eyes of designers. Making inclusive designs more mainstream would provide blind individuals more opportunities to experience the designs around them.

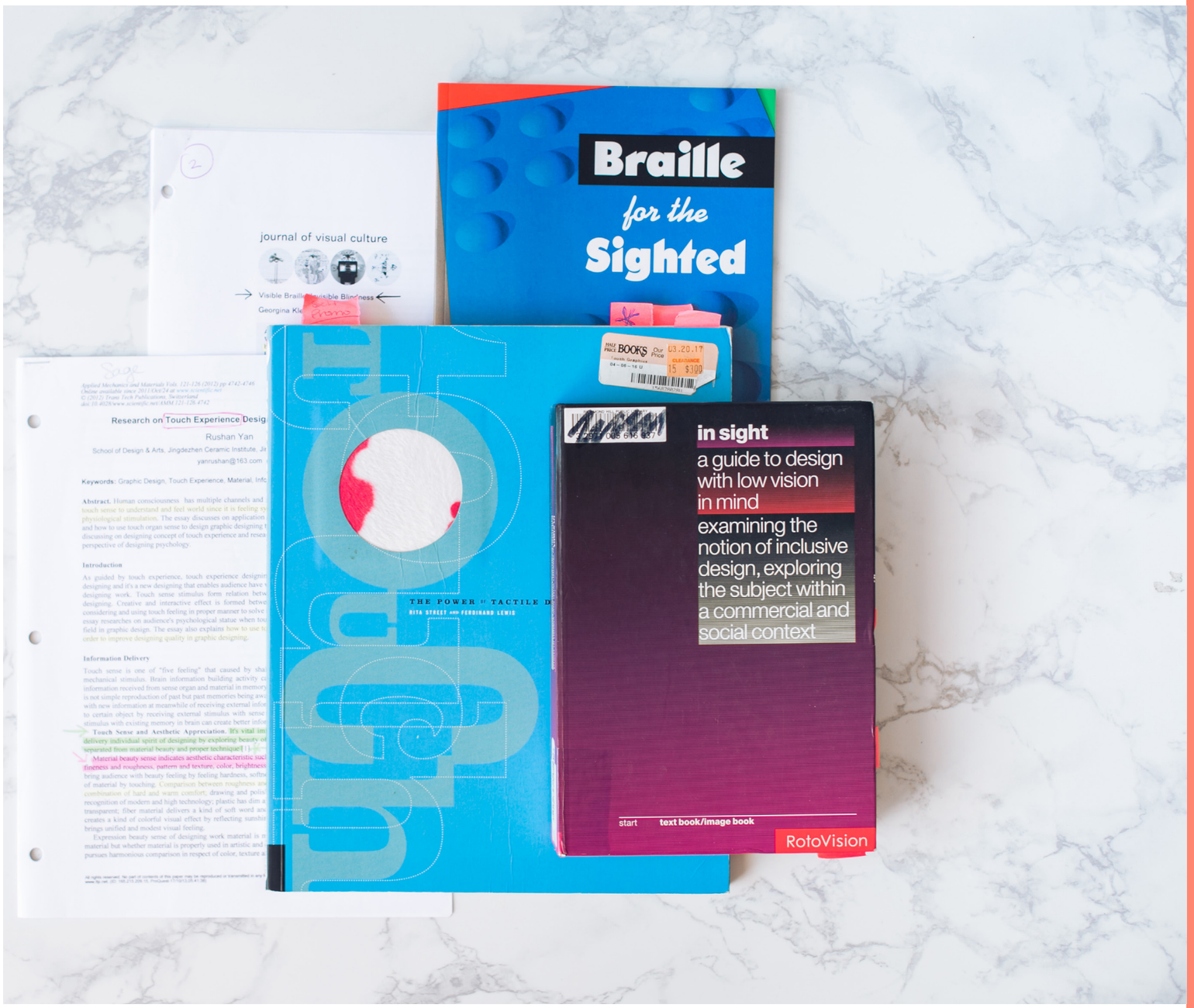
## INCLUSIVE DESIGN

As an adjective, Webster's defines inclusive as "covering or including everything; not limited to certain people". In terms of design, inclusive relates more to the latter. For this thesis the definition for inclusive design will be adopted from the Design Council that states "a general approach to design in which designers ensure that their products and services address the needs of the widest possible audience, irrespective of age or ability (2009). The research for this thesis will focus on the inclusivity of the visually impaired within graphic design.

## DESIGNING FOR DISABLED

In 1990, the Americans with Disabilities Act (ADA) was passed, providing disabled people to experience equal opportunities in their daily lives. The ADA introduced design to the term inclusive through the regulations that are stated in the act. This played a pivotal role in terms of design, now designers had to start considering the needs of a group of people who were typically neglected.

More often than not, accessibility comes more in a structural and physical form, such as architecture, instead of being integrated on a wider range of mediums. However, this can be a result of designers being reluctant to creating more inclusive designs and the lack of knowledge of how to do so. For graphic design to become more accessible, designers must become more socially aware and responsible through the designs they create and intentionally thinking about what would benefit the widest range of people, even the visually impaired.




CHAPTER 2

# RESEARCH

INCLUSIVE DESIGN

BRAILLE PRINTING

BLIND EXPERIENCES

DESIGN FOR THE VISUALLY IMPAIRED

BRIDGING THE GAP

# RESEARCH QUESTION

Following my research regarding inclusive design and graphic design for the visually impaired, I noticed a gap in research when combining the two together. Subsequently, two research questions evolved and influenced the research executed for this thesis: How can graphic design communicate effectively to the visually impaired? While graphic design is a visual art, how can designers create cohesive designs that integrate visual elements and braille?



# RESEARCH OBJECTIVE

Growing up with a mother who was a graphic designer, I have seen firsthand all of the admirable work designers create and the affect it can have on certain audiences. In exploring topics for my thesis, I found my primary inspiration in my mother-in-law who is visually impaired. To know someone close to me who is unable to experience most of design was moving. Thus, I wanted to conduct research on how design can be used to influence the lives of the visually impaired.

My goal for this thesis is to explore graphic design solutions for the visually impaired. I plan to analyze pre-existing designs to note the successes and failures. In my research, I have seen a trend of designs that are strictly for the blind, or strictly for those who can see. The aim for my creative solution will be to create designs that integrate braille and visual design elements together. This would break down the barrier between the two and allow the visually impaired to experience graphic design similarly to those with sight.

# INCLUSIVE DESIGN

Inclusive design requires a designer to be intentionally thinking about how to create a design for a diverse range of individuals. Many times, inclusive design is just associated with the physical, such as, sidewalks, architecture and other environmental features that are disability friendly. However, there is a visual aspect that is neglected. There are various intriguing advertisements, products, greeting cards, and art prints that are incapable of being appreciated or experienced by those who are visually impaired. In the realm of graphic design, there is little mention of inclusivity and accessibility being an active part of the design process. When approaching the topic of disabilities as a designer, the best way to do so is through the 'social model'. Meaning that we see disabilities and the related issues within society. "It is through this lens that designers can offer their services to create equal opportunity..." no matter what their medical disability is (Conrad, 2).

The Americans with Disabilities Act was the first step towards creating a more inclusive environment by setting regulations for places and products being more accessible. Many designers had hesitations when it first came into practice, as they feared that the guidelines would put a strain on their design process and what they were legally able to create. As designers work in an industry specifically called "the visual field," they are typically tasked with creating designs to interact with the vast majority, leaving behind those who are visually impaired, unapproached with design. In a book written by Micheal Evamy and Lucienne Roberts, titled *In Sight, a guide to design with low vision in mind*, they explain that "Designing inclusively means including people who might normally be ignored in the process of design." (12). The ADA is not meant to be an obstacle for designers, rather it is meant to be a reminder that there are other people in society that can be reached through more deliberate design.

> DESIGNING INCLUSIVELY MEANS INCLUDING PEOPLE WHO MIGHT NORMALLY BE IGNORED IN THE PROCESS OF DESIGN

Designers have an opportunity to communicate with their audience through items that can be seen by anyone who examines a product in-store, observes promotional material on the street, or even scrolls through a website in on their phone. Yet there is hesitancy to start incorporating inclusivity in design, to benefit those who cannot do it themselves. Gaining a better understanding of the daily lives of the visually impaired, graphic designers could "enhance their experiences" and create designs that would benefit both those who are blind, and those who have sight (Conrad, 4). There are many products that could be easily become blind friendly such as the packaging of a product or a simple greeting card. The design community should become more socially aware of all the audiences that may be using or experiencing the designs being created and begin to integrate other elements that may assist the impaired.

# BRAILLE

Braille is the tactile language for the visually impaired that was created for those who are unable to see in an effort to allow them to feel as though they are to make them feel like they are being treated equally. Louis Braille created the language out of raised, embossed dots that create a braille cell. Each cell contains six dots, formatted into two columns of three dots, and the various patterns of raised dots create the letters, contraction and number in a language (Builidng Braille, Nadja Sayej, 60). Because braille is tactile language, it is important to consider the formatting of the type as well as the tactile function of the surfaces being used to avoid any disarray among the readers.

Those designing with braille must keep in mind that the letters are not only acting as a piece of communication, but additionally as a tool for guiding the individual reading through the text or the design, leading where to proceed next. With Braille, it "can only be read if it's measured correctly to fit under" the fingertips of the person reading the text (Savei, 63). Each cell is a standard and consistent size with a standard distance apart from other cells. When designing, and setting braille it is imperative that the organization of the type is carefully formatted. Even elements such as page numbers and subheads that people might think of as a minor part in the overall design, play a large part when it comes to navigating a composition for the visually impaired readers. The spacing and scale must be precise to avoid any confusion or misreading of the information given. Even the slightest change in scale, or extra spacing between cells could muddle the flow of the text.

Tetsuya Wantanabe and Hirotsugu Kaga performed a research study to test various visually impaired people in order to find the optimal font size for braille. They set up a testing with 13 visually impaired people and gave them a sheet of paper with various words in ranging font sizes. The result of the testing showed that shortest average of reading time occurred when the braille point size was set to 16 point. The authors stated that, "...as the size became either smaller or larger...the reading time grew longer." (Hirotugu, Wantabe, 4). Increasing the point size of braille font would seem to be beneficial to the visually impaired readers, but this testing shows that it may not be as helpful as some might assume. To clearly communicate with the blind audience, designers will need to put in deeper initial thinking when planning a design that incorporates braille, along with user testing to determine if it is deemed understandable by the visually impaired.

As a large part in the experience and reading of braille, the element of texture can communicate and stimulate the mind to sense various emotions. When a person's finger encounters a texture, there are multiple receptors that absorb different traits such as temperature, softness, pattern and form. From

here those collected sensations are passed on to the brain, resulting in an emotional reaction. Because of this reaction, it is vital that designers deliberately choose tactile surfaces that covey the emotion being communicated in a design. The material should not become separated from the tone of the design (Yan, "Research on Touch Experience Design in Graphic Design" 4742). Because touch replaces the sense of sight for the visually impaired, those individuals require clear communication through any elements being used, especially texture, which will assist them in perceiving the tone of the designed piece.

## BLIND EXPERIENCES

Braille can be found in various public places such as elevators, room numbers, and ATM's; however, braille is still lacking to be truly integrated with the day to day environments that people experience. The high school graduation rate among the visually impaired, along with the adults who are unemployed are appallingly low. Although there is no clear reason why these rates are so low, one can only wonder if it is a result of our society being unwelcoming to the integration of braille in our everyday world. "Blind people use public space and have a right to the same information available..." to those who can see (Kleege, 211). Having a disability should not limit a person to the amount or lack of, information and products available to them. But more times than not, design is just for those with sight, making it harder for the blind to accomplish everyday tasks.

> "HAVING A DISABILITY SHOULD NOT LIMIT A PERSON TO THE AMOUNT OF PRODUCTS AVAILABLE TO THEM"

When the U.S. Mint began their state quarter collection that featured fifty unique designs, there was one design for the state of Alabama that had a portrait of Helen Keller. The U.S. Mint boasted about this coin being the first of its kind due to the fact that it had braille incorporated into it. However, the braille was so small that it held no true functional value. Georgina Kleege, author of Visible Braille/Invisible Blindness, opposes the true intentions behind this coin design by stating, "The US Mint seems to have no plans to incorporate braille...on other coins or paper currency, where it would be truly helpful." Being blind herself, she knows and experiences the lacking of braille in her everyday routines. The US Mint along with other major companies and businesses would find it in their best interest to begin analyzing areas that they could improve the lives of the visually impaired.

The blind individuals in today's society are being overlooked by not only designers, but restaurants and retailers. By excluding braille from packaging, products, menus and advertisements it demonstrates to blind audiences that they are not fully accepted, resulting in feelings of isolation and dependency on others because they are unable to accomplish tasks alone.

Examining different methods of incorporating braille into more packaging and product design would produce an advancement towards a more inclusive environment where those who are visually impaired can feel more independent and included.

### SHOPPING AND PACKAGING

Shopping is an essential component in day to day life; and for those who have sight it can be easily accomplished, however, for those who are visually impaired, it can easily become stressful and deterring. In regards to the shopping experience for the visually impaired, there are many interactions that take place with both tangible and intangible service that affects the overall experience of the individual (Akhtar, "Retail Design and the visually impaired: A needs assessment" 121). As a result of the ADA that passed in 1993, society has become more visually impaired accessible. However, there still seems to be a strong lacking of braille incorporated within the store itself and the products on the self.

When stores and product companies fail to consider meeting the needs of the handicapped, they neglect the feelings of that whole consumer group that now feels overlooked and excluded. Visually impaired consumers deserve to be entitled to as much information as the sighted consumers are given. Braille on packaging would give blind individuals the chance to read and determine what the item is for themselves, and additionally wayfinding tools to assist the consumer through the store would be necessary measures to give that consumer group a stronger feel on inclusion.  Even by designers incorporating more strategic design choices and gave attention to the needs of the visually impaired, it would result in more inclusive design being seen throughout stores and packaging design.

## DESIGN FOR THE VISUALLY IMPAIRED

Graphic design communicates by using various images and elements to create visual messages. Blind individuals replace that visual experience and instead rely solely on touch to "determine an object's size, shapes, weights, texture, and/or temperature." (2). The way a design is organized has a large effect on how a person reads the information and how their eyes follow the layout, and when it comes to designing for those who are visually impaired, the organization of the material matters even more. Design surrounds society in daily tasks and activities, creating more designs that include special textures, braille, and clear organization would open more opportunities for the visually impaired to experience design.

The use of the embossed language of Braille and various tactile surfaces assist the blind in being able to understand the message that is being communicated to them. However, it is important to deliberately place textures, so they will not be confused with

any braille that may be within the composition. With design being visually based, it can be complicated to convert it into something people can experience without sight. “Ensuring there is a maximum contrast between elements” would be the best way to assist those who are blind (Conrad,11). In terms of design, because the sense of touch is the replacement of sight for the visually impaired audience, it is crucial that designers choose materials and textures that accurately aide them in their understanding.

There are various printing methods for braille, which makes it more possible than ever to incorporate braille into graphic design. In doing so, designers would be broadening their targeted audience and would be able to reach more people through their work. For example, The ‘C’ system, developed by Jade Aloof, was a hang tag for clothing that assisted them in determining the color, size, and price (Evamny,114). While it might have been a challenge, this innovative move of incorporating braille “promoted ‘a more socially inclusive approach to designing” (Evamny, 115). The extension of more design for the visually impaired, would be influential to the lives of blind individuals and allow them to experience design, similarly like their friends and family do, and further strength their feeling of dependence and normalcy.

> IT IS CRUCIAL THAT DESIGNERS CHOOSE MATERIALS AND TEXTURES THAT ACCURATLEY AIDE [THE VISUALLY IMPAIRED]...”

## BRIDGING THE GAP

Graphic designers are continuously overlooking the needs of their visually impaired audience. The tastes and trends of people who are able to see take lead, but designers lack in expanding their audience group to the blind. What is failed to be taken note of is how much a disability “affects the perception, use, and enjoyment of their goods” (Evamy,11). Rather than restricting the visually impaired on what they can experience, designers should shift towards being more social engaged and produce designs that are accessible for their visually impaired audience. Expanding the elements of design to include braille would grant the blind with opportunities to share in the experience of design. Instead of looking at the obstacles that would occur by the incorporation of braille designers should become “aware of what it is that unites, rather than separates” different people groups (Evamy, 35). The trait of having a disability does not remove them from the same daily activities and same products that those without a disability experience and buy. However, products on the shelf and advertisements on the streets, would lead people to believe that blind people are excluded from society. There is “little sensitivity to the fact that everyday products are also bought and used by...” the disabled community (Evamy, 114) . Finding an effective solution to incorporate braille into design has the possibility to be a positive force in bridging the gap of inclusive design.

Propelling the idea of combining braille with mainstream designs would encourage companies and designers to start doing so as well, allowing the visually impaired to reap the benefits. In 2011, Starbucks debuted a line of gift cards, one of which included a designed coffee vector illustration and Braille. The Braille embossing reads “Starbucks” directly branding the card and assisting the user in distinguishing it from the other cards that may be in the wallet or purse. Recognizing the need for attention on the visually impaired consumers, this influence move provided blind individuals an opportunity to experience design and support them in a simple daily task. As of 2013, the line of Braille cards became a permanent piece in Starbucks’ year-round gift card collection. In an interview with CNN, Starbucks shared that one mother of a daughter who was blind said her daughter “appreciates the independence the card gives her.” (Wallace, “Starbucks to Offer Braille Gift Card Year-Round”). Because of Starbucks interest in meeting their consumer’s needs they found a solution to bridge the gap that was separating them from the blind individuals. This advancement of including braille is a prime example of the possibilities there are to incorporate more inclusive design in mainstream design.

A bridge between designs for the visually impaired and for those who are not handicapped, would result in a more well-balanced inclusive design. The feasible integration of braille in designs for greeting cards would allow blind individuals to be able to receive cards and have a similar experience as others. A piece of home décor with more tactile features and posters that incorporate braille into the design would present the visually impaired community with opportunities to be involved and discuss pieces of design with those who can see. As a result, the gap that deprives the visually impaired from experiences, like receiving a card, with family and friends, would be dissolved and blindness would no longer be a barrier. Design is an integral part of society that impacts the majority of what people see and experience, it is imperative that blind individuals are in contact with it as often as individuals with sight, so they are able to experience it together.

> “IT IS IMPERATIVE THAT BLIND INDIVIDUALS ARE IN CONTACT WITH [DESIGN] AS OFTEN AS INDIVDUALS WITH SIGHT.”

CHAPTER 2

# DELIVERABLE DEVELOPMENT

VISUAL SOLUTION

BRANDING

HOME COLLECTION

PAPERIE COLLECTION

GENERATIVE RESEARCH

# VISUAL SOLUTION

Following my investigative research, I began to brainstorm what pieces would be included in the collection. I examined various products that people typically use on a daily or weekly basis to gather ideas of what pieces would be beneficial if they were to become more inclusive. My hope for the whole collection is to be a positive contribution to the lives of the visually impaired, as well as be something that sighted people could experience. Taking into consideration the limitations and barriers that the visually impaired experience in both their home lives, as well as their work or daily tasks, I developed a product collection made up of two categories: home and paperie. The home collection will include wall decor such as inspirational quotes and drop caps. The paperie collection will be paper goods like calendars, greeting cards, and recipe cards. All pieces will be presented in packaging that is inclusive, easing the experience of the visually impaired consumers.

With typography and lettering being a strong passion of mine, the majority of the pieces have custom type as the main imagery. Type is typically a design element that the visually impaired cannot experience, however, cutting my custom type out of various textured mediums such as fabric and specialty papers, type became an inclusive element. The overall goal for this design collection is to give the visually impaired audience the independence they deserve and allow them the opportunity to experience design mutually with those who are able to see.


# LOGO

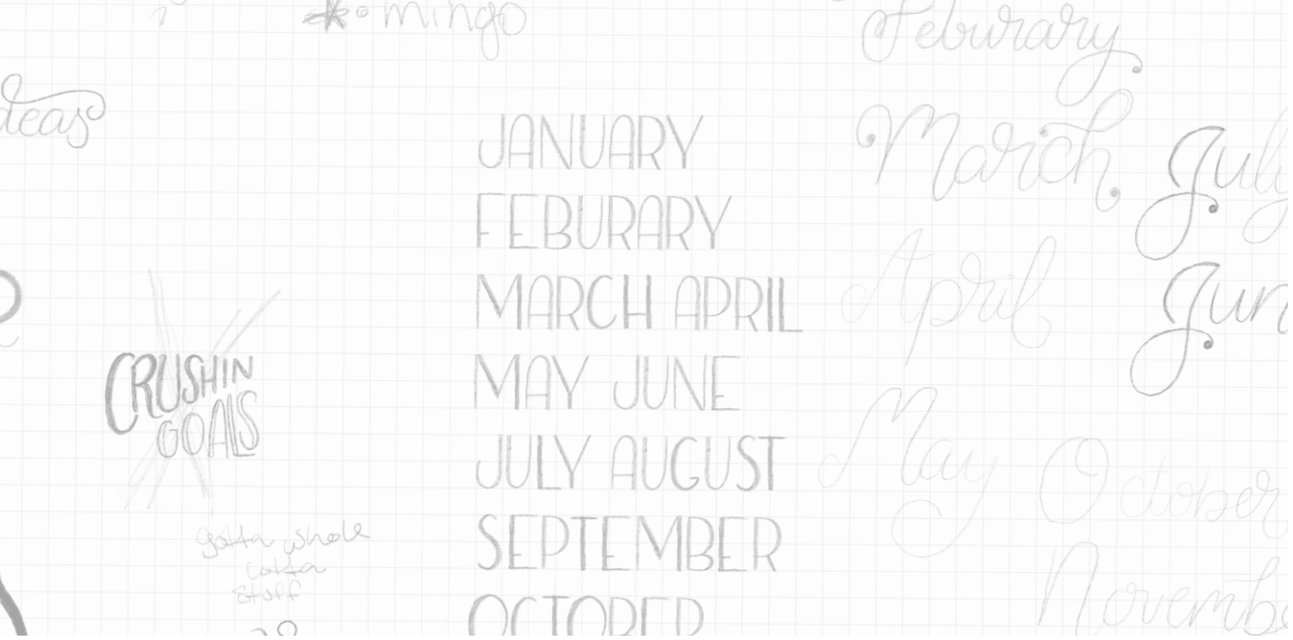
I wanted the branding of my collection to relate back to both of my target audiences, because of this I decided to create a ambigram for my logo. The reasoning being that ambigrams are meant to be capable of being experienced in different perspectives, alluding back to my concept of the collection being experienced in two different ways: visually and by touch through the use of texture and Braille. I decided to name the collection Dotted, for the sake of keeping it simple and highlighting the unique feature of Braille throughout the collection. I went through various renderings of the hand lettered logo to make sure it was more gender neutral, thus to not limit myself on the audiences my collection could appeal to.

## LOGO IDEATION


## PRIMARY LOGO




## COLLECTION LOGOS




# TYPOGRAPHY

I chose Trenda as the brand's primary font because it is simple, while still having character. Because of this, it compliements the brand well and does not compete with my designs. While creating this design collection, I found that I was repeating a specific type of my custom lettering frequently, thus I decided to make it into a font named Crissy and have it be apart of my branding.

For the Braille in my designs, I found a Braille font used by pharmaceutical companies and made sure to be intentional in the formatting and spacing of the Braille on my pieces. Through test prints I found that any size smaller than 19 pt became harder to read. I set the kerning for 175 to allow the correct amount of spacing between each cell.

TRENDA

ABCDEFG
HIJKLMNO
PQRSTUV
WXYZ

abcdefg
hijklmno
pqrstuv
wxyz

CRISSY

ABCDEFG
HIJKLMNO
PQRSTUV
WXYZ

PHARMA BRAILLE

# PAPER SELECTION

In my research, I found that paper selection was very important. It was ideal to use a thicker paper so the impression of the Braille would not break through the paper, however, it could not be too thick to where the Braille would not be distinctive. I went with Moab Lasal Matte paper because it was the right amount of thickness for the Braille to be readable. The smoothness of the paper aided in avoiding any chances of textures harming the readability of the Braille.

**TOP:**

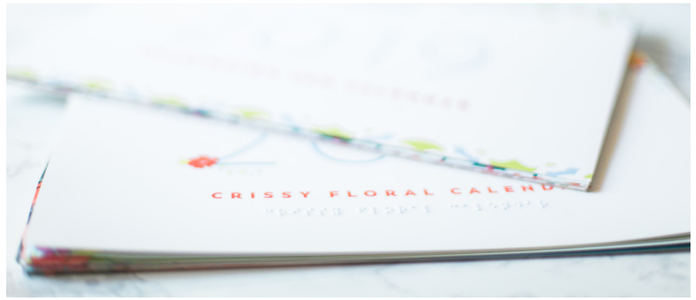
EPSON MATTE

PRESENTATION PAPER

**BOTTOM:**

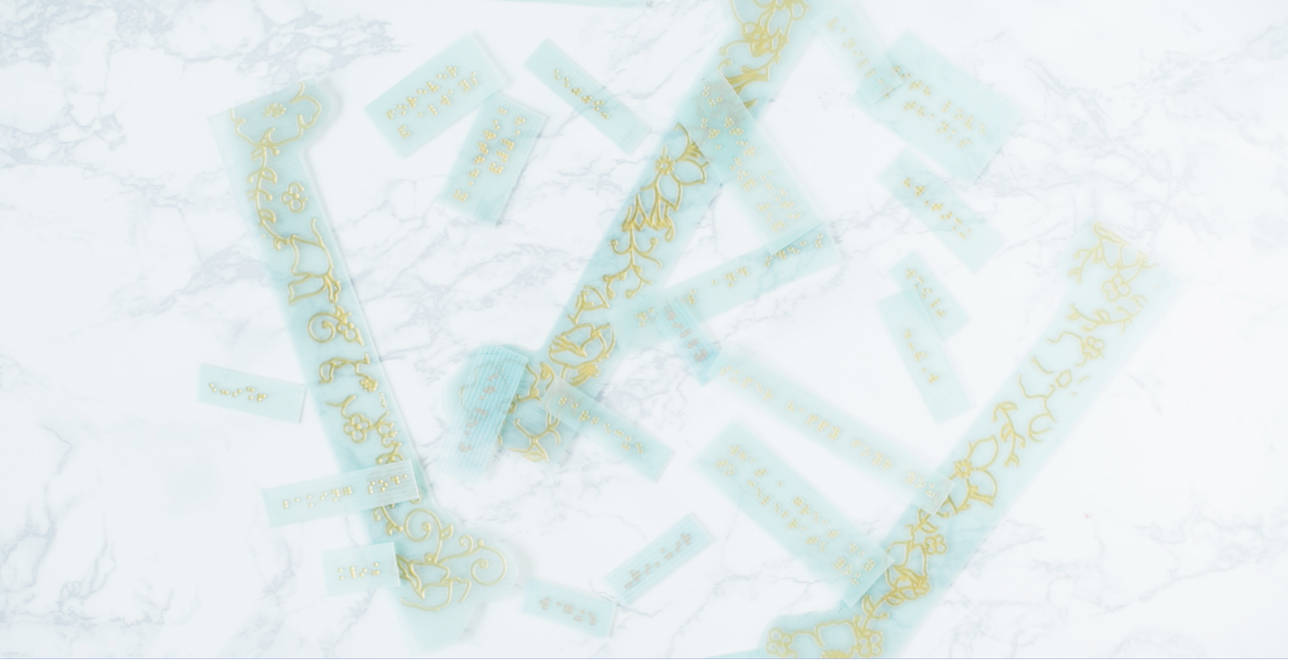
MOAB LASAL MATTE

PHOTO PAPER



SOFT TOUCH

80LB PAPER

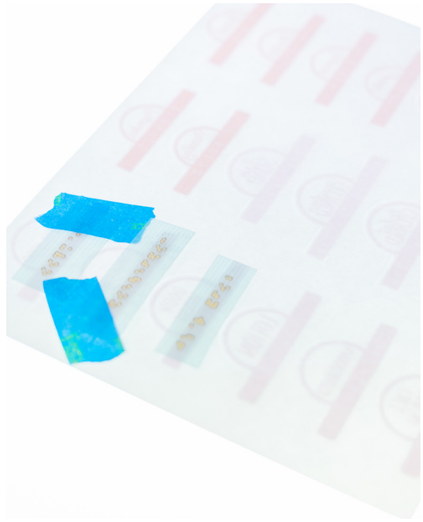


# PLATES AND PRINTING

I decided that letterpress plates would be the most ideal solution to printing the Braille onto my pieces. I ordered KF152 photopolymer plates from Boxcar Press, which are made from a thick material and has a high relief. For the embossing of the Braille I used a printing roller press to roll the plate and designed piece through. With the plates having a high relief and with the right pressure on the roller press, I was able to achieve a deep impression in the paper so that the Braille was easy to understand.



BRAILLE PRINTING PROCESS



USED A LIGHTBOX TO LINE UP THE BRAILLE PLATE WITH THE PRINTED DESIGN

PLACED THE PRINT AND PLATE INTO THE ROLLING PRESS

REVEALING THE EMBOSSED BRAILLE AFTER BEING PRESSED.


# LETTERING

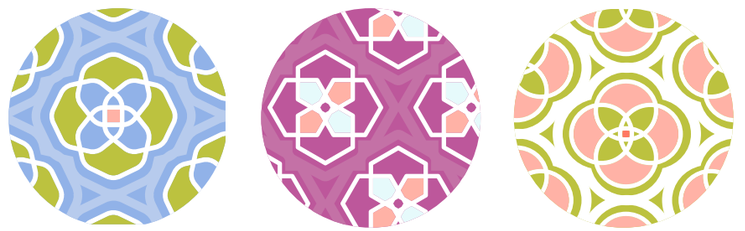
To create my lettering, I used a mix of the pencil and tracing paper, along with Procreate on the iPad Pro using the Apple Pencil to create my lettering for each design. I wanted the type be unique to each piece which challenged me to create various styles of lettering.

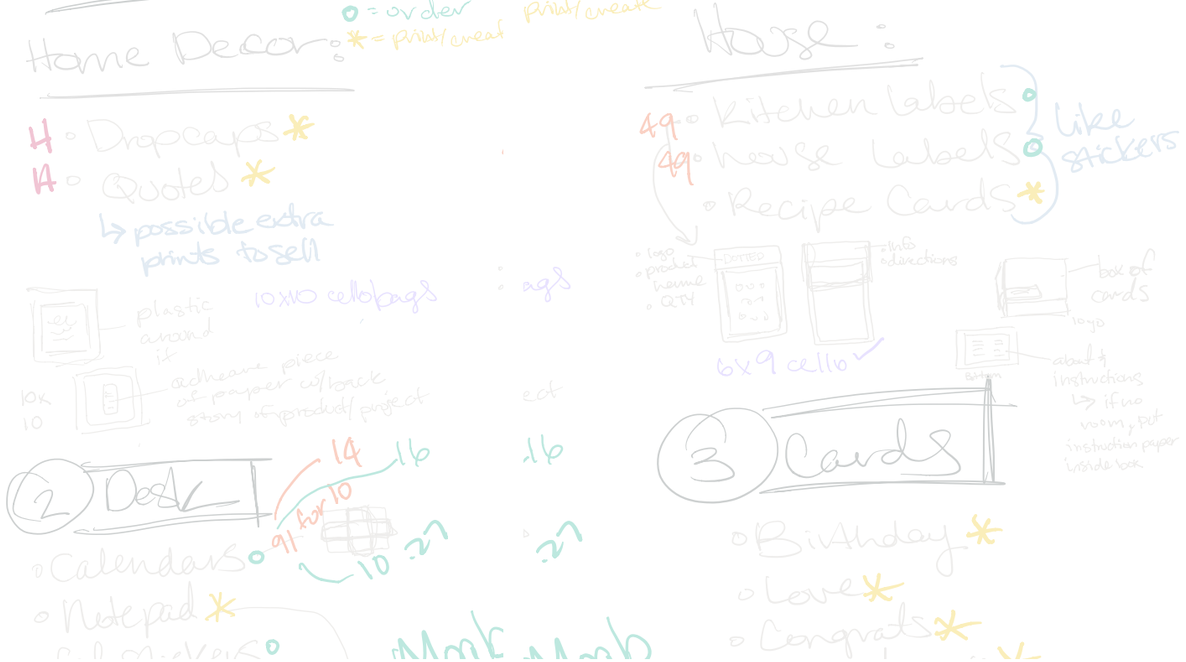

# PATTERNS

There are two different styled patterns incorporated on various products within the Dotted collection. One being composed of illustrated florals, and the other being geometric. I wanted to offer two patterns to appeal to different personal aesthetics of the prospective consumers.

CRISSY FLORAL

CHARLESTON GEO






# PACKAGING

For the packaging, I kept it fairly simple to avoid competing attention with the designed pieces. I made sure to include the Braille translation of all logo, product names and descriptions so there is an equal experience for both target audiences. I added an additional tactile component by including a branded polka dot pattern along the edges of the packaging and is topped with clear sticker paper to imitate spot UV and offer a change in texture.








# HOME COLLECTION

Once I pinpointed the specific pieces that I wanted to create for the collection I began considering what elements would not only set my pieces apart, but how to make them inclusive without becoming visually dull. My goal for the pieces in this collection was to help those who are visually impaired be able to experience the décor in their own homes. Part of my inspiration for this collection came from my personal observation of the blank walls in the home of my in-laws. My mother-in-law has retinitis pigmentosa, which is an eye disease that causes people to lose their eye sight over time. She is now legally blind and can no longer see. Her personality is very uplifting and full of joy, however, the walls in their house do not reflect the joy that is in the home. If my mother-in-law could see I know that the walls in the house would be covered in decoration. This is what led me to my development of home goods that were inclusive and something that the visually impaired people could experience along with their family and friends that would come over and visit. The pieces would provide both sides the chance to experience design together.

# HOME PRODUCT LABELS

My goal for the labels was to use design to aid the lives of the visually impaired. Many items around the house share similar shapes, like ketchup and salad dressing bottles, or shampoo and conditioner bottles. To help the visually impaired accuratley know what they are picking up, I designed a line of labels for kitchen goods, spices and home products. They feature Braille to further assist the blind, as well as hand lettering to target the visual appeal of sighted individuals. The labels were printed on a thicker vinyl paper to assure that the Braille would emboss clearly. Because of the vinyl trait of the paper, the labels are water proof, increasing durability and longevity of the labels.



**STICKERS:** KITCHEN

CONDEMENTS

Ketchup Mustard Barbecue Kitchen

DRINKS

Juice Milk Jelly Coffee Creamer

SALAD DRESSINGS

Buttermilk Ranch Italian

SPICES

Spices Basil Black Pepper Chives Cilantro
Cinnamon Cayenne Cumin Garlic
Rosemary Nutmeg Thyme Oregano
Sea Salt Paprika Parsley

COOKING:

Sugar Baking Soda Flour Vanilla

Peanut Butter Home

**STICKERS:** LAUNDRY/CLEANING

DETERGENT SOFTENER BLEACH

dish SOAP toilet CLEANER window CLEANER

dish SOAP toilet CLEANER window CLEANER
dish SOAP toilet CLEANER window CLEANER

**STICKERS:** BATHROOM

BODY WASH SHAMPOO CONDITIONER
FACE WASH LOTION MOISTURIZER

Unique edges for stronger
tactile interaction

Color coatd
for increased
organization


Label shape lends it self to easily
fit various bottles and contatiners



# WALL QUOTES

In most homes, when you walk in you will notice décor hanging on the walls, making the place feel more at home for the family. That is what I wanted to provide for the visually impaired through my hand lettered quotes; a chance to experience the décor in their home and share it with guests that visit. I chose quotes that were encouraging to reinforce the concept of the whole project. The pieces needed to be something that the visually impaired could experience, thus I decided that using fabrics and textured paper to create the pieces would allow them that experience.

Once my lettering was digitized, I had it cut out of textured paper using my Cricut die-cut machine. One challenge that I faced was the weight of my custom type. Some type turned out to be too thin when cut out, leaving the piece to have little surface for there to be an experience. Adjustments were then made to the type to make it a heavier weight to enlarge the touchable area. I used fabric for the background to enhance the textural experience. To avoid the textures becoming overwhelming I incorporated some smoother textures within the type.

SKETCHED LETTERING



DIGITIZED LETTERING




Velvet fabric for a luxiorious tactile experience


Distinct texture change between the lettering and the background helps the visually impaired to feel the difference

Soft plush fabric for a
delicate asthetic

# DROP CAPS

While a drop cap seems like a simple design piece, it does have a level of personal engagement. From my experience, people will purchase a piece that starts with their first or last name, then hang it in a space to make it more personal. By adding a textural element to such a simple concept, it becomes inclusive which then allows the visually impaired an opportunity to create a space of their own using design.

The drop caps feature similar characteristics to those of the wall quotes. However, I decided to have the letter be purely made out of fabric rather than textured paper. The background was left empty to allow the drop cap to stand out and not compete with the background. For this collection of visuals, I started with each letter being different styles of scripts, and slab serifs. However after some feedback I received, I decided to alter the series to all have the same style which in return made it more cohesive.

In making each one, I had the fabric adhered to a bonding stabilizer to stiffen the fabric for me to run through my Cricut machine for cutting. With the fabric being more stable it also helped with durability of it being attached to a background surface as well as being sturdy enough that people are able to touch without damaging the piece.

## DROPCAP IDEATION

## FINAL DROPCAPS

Silk fabric for a smooth tactile experience

Soft velvet for a delicate tactile experience



# PAPERIE COLLECTION

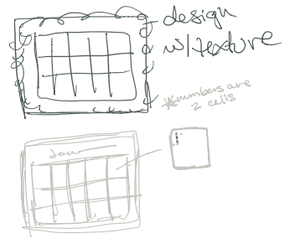
The concept behind the paperie collection was to take everyday paper goods and create pieces that are both nicely designed and functional that the visually impaired can use. Most of the pieces feature various textures such as specialty papers and gloss finish as part of the touch experience.

# CALENDARS

With the calendars, I wanted there to be both functional and artistic elements. My goal was to avoid the calendar being just decorative, instead I wanted the visually impaired and sighted individuals to be able to use it. I designed two calendars, one in each pattern, with each month having its own unique color scheme.

Originally, the only tactile part of the calendar was the Braille for the month name, days of the week, and date numbers. However, it was pointed out to me that there was a lack of interaction in the design for the visually impaired. Following some re-evaluation of the design, I decided to emboss the florals, which will allow the visually impaired to experience the design elements, compared to it being a flat surface and them not being able to know what imagery is. For the geometric pattern, I decided to use clear sticker paper to imitate spot UV finish for a change in texture. With this change, it made me think through the other pieces in the Paperie collection to make sure they were allowing the visually impaired to understand and appreciate the designed visuals.

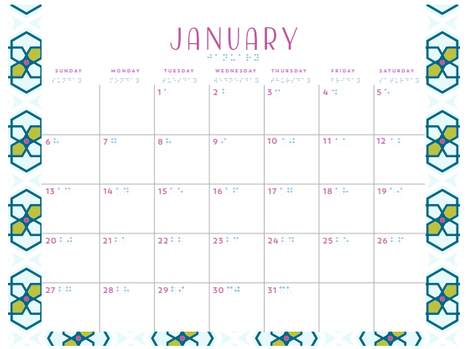
CALENDAR SKETCHES




FLORAL ELEMENT SKETCHES

FINAL LAYOUT


CRISSY FLORAL COLLECTION




CHARELSTON GEO COLLECTION

Incorporation of Braille
for functionality


Embossed illustrations to allow the visually
imapiared to experience the design





Imitation spot uv coating on top of pattern allows the visually impaired to interact with the design.







DOHOD

2019

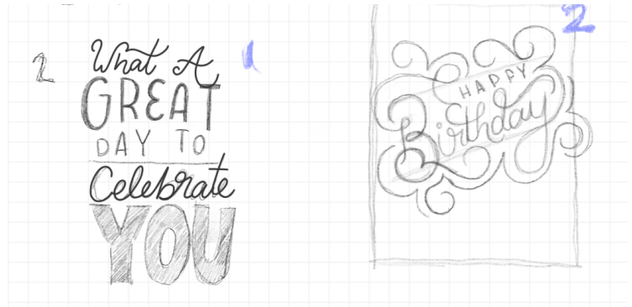
CHARLESTON GEO CALENDAR

# GREETING CARDS

My main focus for the cards was to provide the visually impaired with the possibility of giving and receiving greeting cards. Currently, most stores do not have cards that appeal to the blind, and to me that speaks loudly of how they are often ignored among designers. So, this collection of greeting cards is my attempt to include the blind in the experience of greeting cards through the incorporation of Braille and textured paper. The greeting card collection includes a total of 8 different hand lettered cards, 2 for each occasion. The occasions chosen are birthday, thank you, congratulations and love. Each card features my custom lettering cut out of specialty paper to enhance the tactile experience. Braille is also incorporated into the design of the card to act not only for functional purpose, but also as a design element.

## GREETING CARD SKETCHES

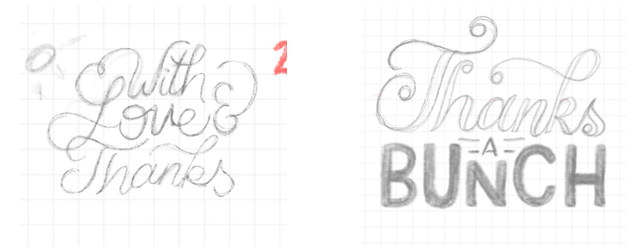
BIRTHDAY




CONGRATS

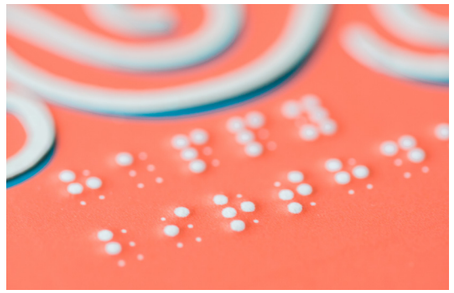

LOVE


THANK YOU



Glitter paper accent provides a texture change from smooth to rough; allowing a tacticle experience for both audiences



Felt paper accent provides a soft tone for the consumer to relate the message of the card to.


Added dimension helps provide more distinction between the various elements.

Textured paper

Added dimension


Embossed Braille


Embossed Braille

Textured paper

Smooth foil
paper with
added dimension

Textured paper


Embossed Braille

Added dimension
and textured
glitter paper

Embossed Braille





Congrats
LOVE
Love
LOVE
YOU
SUPER
Happy
FOR
You
KINDA JEALOUS BU
STILL SUPER HAPPY
Forever
& Always
TUCK WITH ME
Thanks
A
BUNCH
Congrats
Love
&
Thanks


BUNCH
Congrats
LOVE
Love
LOVE
YOU

# USER TESTING

I provided the participants with one of each visual to get thorough feedback of the collection as a whole. As I handed the individual pieces to them, I would inform them of what the piece was, what elements they were touching, and my goals and concept behind it. However, when it came to the wall quotes, I felt that it was important to wait to hear what they admired about it before sharing my goal for the piece to avoid hindering any lack of honest opinions and experiences. Once they had a moment to feel the piece, I would ask them a brief set of questions.

I had one major concern regarding the outcome of the embossed Braille on the home product labels. My initial test print of them with the Braille plate, the paper tore from the impact of the plate and the paper. I made an adjustment to the pressure of the press to lessen the force on the plate, which resulted in torn paper, but the embossing was not as clear as I thought it needed to be. Because of this, I was worried that blind people would not be able to read them, making the labels a defeat. However, when tested in my focus group, participants were able to read them flawlessly, proving that the final embossed print was successful.

All participants were able to read the Braille without any complications, thus confirming the accuracy of the spelling and formatting. As they were interacting with each piece they were all very encouraging about the product collection, sharing their positive experiences with each piece.

CHAPTER 4

# CONCLUSION

# CONCLUSION

Through my research my intention was to create designs that incorporated inclusive design and resonated with both the visually impaired and sighted individuals. Subsequent to thorough research I began exploring various way to reach both audience through design and discovered the many challenges that come with inclusive design. The affirmative feedback obtained from testing in a focus group verified that the final design collection had achieved the goal and provided a way for the visually impaired to experience graphic design.

Although it is a large feat to begin incorporating more inclusive design within modern day graphic design, I can anticipate the integration happening in the coming years.  My hope is that designers will begin to understand how important it is that we use our craft to reach as many people as we can, rather than limiting the audience due to a faster or easier design process. The ending results of this project leaves me feeling confident that despite the lack of inclusive design now, my study has proven that it is possible and with further development, Braille within design can become more mainstream than it is today. I hope that this collection can be an inspiration to designers to use their creativity to reach the unreached.

# APPENDIX

## APPENDIX A: SURVEY QUESTIONS

Survey Questions

1. Does the Braille in the design read correctly?
2. Was the Braille easy to find and understand?
3. Were any there any elements in the design that made it confusing or overwhelming?
4. What are your overall thoughts or experience with the piece?

## APPENDIX B: IRB APPLICATION

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**APPLICATION FOR THE USE OF HUMAN RESEARCH PARTICIPANTS**

**IRB APPLICATION #:** 3130 *(To be assigned by the IRB)*

**I. APPLICATION INSTRUCTIONS**

1. Complete each section of this form, using the gray form fields (use the tab key).
2. If you have questions, hover over the blue (?), or refer to the IRB Application Instructions for additional clarification.
3. Review the IRB Application Checklist.
4. Email the completed application, with the following supporting documents (as separate word documents) to irb@liberty.edu:
   a. Consent Forms, Permission Letters, Recruitment Materials
   b. Surveys, Questionnaires, Interview Questions, Focus Group Questions
5. If you plan to use a specific Liberty University department or population for your study, you will need to obtain permission from the appropriate department chair/dean. Submit documentation of permission (email or letter) to the IRB along with this application and check the indicated box below verifying that you have done so.
6. **Submit one signed copy of the signature page (available on the IRB website) to any of the following:**
   a. Email: As a scanned document to irb@liberty.edu
   b. Fax: 434-522-0506
   c. Mail: IRB 1971 University Blvd. Lynchburg, VA 24515
   d. In Person: Green Hall, Suite 1887
7. Once received, applications are processed on a first-come, first-served basis.
8. Preliminary review may take up to 3 weeks.
9. Most applications will require 3 sets of revisions.
10. The entire process may take between 1 and 2 months.
11. *We cannot accept applications in formats other than Microsoft Word. Please do not send us One Drive files, Pdfs, Google Docs, or Html applications.* ***Exception:*** *The IRB's signature page, proprietary instruments (i.e., survey creator has copyright), and documentation of permission may be submitted as pdfs.*

**Note: Applications and supporting documents with the following problems will be returned immediately for revisions:**

1. Grammar, spelling, or punctuation errors
2. Lack of professionalism
3. Lack of consistency or clarity
4. Incomplete applications

***Failure to minimize these errors* ***will*** *cause delays in your processing time***

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**II. BASIC PROTOCOL INFORMATION**

**1. STUDY/THESIS/DISSERTATION TITLE (?)**
**Title:** Seeing by Creativity: A Creative Execution Designed to Bridge the Gap for the Visually Impaired within Graphic Design

**2. PRINCIPAL INVESTIGATOR & PROTOCOL INFORMATION (?)**
**Principal Investigator** *(person conducting the research)*: Breann Carty
Professional Title *(Student, Professor, etc.)*: Student
School/Department *(School of Education, LUCOM, etc.)*: Studio and Digital Arts
Phone: 8326038031 | LU Email: becarty@libery.edu
**Check all that apply:**

| | |
|---|---|
| ☐ Faculty | ☐ Online Graduate Student |
| ☐ Staff | ☐ Residential Undergraduate Student |
| ☒ Residential Graduate Student | ☐ Online Undergraduate Student |
| **This research is for:** | |
| ☐ Class Project | ☒ Master's Thesis |
| ☐ Scholarly Project (DNP Program) | ☐ Doctoral Dissertation |
| ☐ Faculty Research | ☐ Other: |

**If applicable, indicate whether you have defended and passed your dissertation proposal:**
☐ N/A
☒ No *(Provide your defense date)*: April 16
☐ Yes *(Proceed to Associated Personnel Information)*

**3. ASSOCIATED PERSONNEL INFORMATION (?)**
**Co-Researcher(s)**:
School/Department:
Phone: | LU/Other Email:
**Faculty Chair/Mentor(s)**: Kelsey Phillips
School/Department: Studio and Digital Art Deptartment
Phone: 8326038031 | LU/Other Email: kkphillips2@liberty.edu
**Non-Key Personnel** *(Reader, Assistant, etc.)*:
School/Department:
Phone: | LU/Other Email:
**Consultant(s)** *(required for Ed.D Candidates)*:
School/Department:
Phone: | LU/Other Email:

**4. USE OF LIBERTY UNIVERSITY PARTICIPANTS (?)**
**Do you intend to use LU students, staff, or faculty as participants *OR* LU students, staff, or faculty data in your study?**
☐ No *(Proceed to Funding Source)*
☒ Yes *(Complete the section below)*

| | |
|---|---|
| **# of Participants/Data Sets:** 20 | **Department:** Any |
| **Class(es)/Year(s):** Any | **Department Chair:** N/A |



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**Obtaining permission to utilize LU participants** *(check the appropriate box below)*:
**SINGLE DEPARTMENT/GROUP:** If you are including faculty, students, or staff from a single department or group, you must obtain permission from the appropriate Dean, Department Chair, or Coach and submit a signed letter or date/time stamped email to the IRB indicating approval to use students from that department or group. **You may submit your application without having obtained this permission**; however, the IRB will not approve your study until proof of permission has been received.
☐ I have obtained permission from the appropriate Dean/Department Chair/Coach, and attached the necessary documentation to this application.
☐ I have sought permission and will submit documentation to the IRB once it has been provided to me by the appropriate Dean/Department Chair/Coach.
**MULTIPLE DEPARTMENTS/GROUPS:** If you are including faculty, students, or staff from multiple departments or groups (i.e., all sophomores or LU Online), **the IRB will need to seek administrative approval on your behalf.**
☒ I am requesting that the IRB seek administrative approval on my behalf.

**5. FUNDING SOURCE (?)**
**Is your research funded?**
☒ No *(Proceed to Study Dates)*
☐ Yes *(Complete the section below)*
**Grant Name/Funding Source/Number:**
**Funding Period (Month & Year):**

**6. STUDY DATES (?)**
**When will you perform your study?** *(Approximate dates for collection/analysis)*:
**Start** *(Month/Year)*: February 2018 **Finish** *(Month/Year)*: April 2018

**7. COMPLETION OF REQUIRED CITI RESEARCH ETHICS TRAINING (?)**
**List Course Name(s)** *(Social and Behavioral Researchers, etc.)*:
Social and Behavioral Researchers
**Date(s) of Completion:** 09/13/2017

**III. OTHER STUDY MATERIALS AND CONSIDERATIONS**

**8. STUDY MATERIALS LIST (?)**
**Please indicate whether your proposed study will include any of the following:**

| | |
|---|---|
| Recording/photography of participants (*voice, video, or images*)? | ☐ Yes ☒ No |
| Participant compensation *(gift cards, meals, extra credit, etc.)*? | ☐ Yes ☒ No |
| Advertising for participants *(flyers, TV/Radio advertisements)*? | ☒ Yes ☐ No |
| More than minimal psychological stress? | ☐ Yes ☒ No |
| Confidential data collection *(participant identities known but not revealed)*? | ☐ Yes ☒ No |
| Anonymous data collection *(participant identities not known)*? | ☐ Yes ☒ No |
| Extra costs to the participants *(tests, hospitalization, etc.)*? | ☐ Yes ☒ No |
| The inclusion of pregnant women *(for medical studies)*? | ☐ Yes ☒ No |
| More than minimal risk?* | ☐ Yes ☒ No |
| Alcohol consumption? | ☐ Yes ☒ No |

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| | |
|---|---|
| Protected Health Information *(from health practitioners/institutions)*? | ☐ Yes ☒ No |
| $VO_2$ Max Exercise? | ☐ Yes ☒ No |
| Pilot study procedures *(which will be published/included in data analysis)*? | ☐ Yes ☒ No |
| **Please indicate whether your proposed study will include the use of blood:** | |
| Use of blood? | ☐ Yes ☒ No |
| Total amount of blood: | |
| Blood draws over time period *(days)*: | |
| **Please indicate whether your proposed study will include any of the following materials:** | |
| The use of rDNA or biohazardous material? | ☐ Yes ☒ No |
| The use of human tissue or cell lines? | ☐ Yes ☒ No |
| Fluids that could mask the presence of blood *(including urine/feces)*? | ☐ Yes ☒ No |
| Use of radiation or radioisotopes? | ☐ Yes ☒ No |

**Note: Minimal risk is defined as "the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in everyday life or during the performance of routine physical or physiological examinations or tests. [45 CFR 46.102(i)]. If you are unsure if your study qualifies as minimal risk, contact the IRB.*

**9. INVESTIGATIONAL METHODS (?)**
**Please indicate whether your proposed study will include any of the following:**
The use of an Investigational New Drug (IND) or an Approved Drug for an Unapproved Use?
☒ No
☐ Yes *(Provide the drug name, IND number, and company)*:
The use of an Investigational Medical Device or an Approved Medical Device for an Unapproved Use?
☒ No
☐ Yes *(Provide the device name, IDE number, and company)*:

**IV. PURPOSE**

**10. PURPOSE OF RESEARCH (?)**
**Write an original, brief, non-technical description of the purpose of your research.** Include in your description your research hypothesis/question, a narrative that explains the major constructs of your study, and how the data will advance your research hypothesis or question. This section should be easy to read for someone not familiar with your academic discipline: Graphic design is typically targeted towards individuals who are cabable of seeing the pieces, but for my study I wish to create designs that can be appreciated and experienced by the visually impaired as well. I plan to test my designs on people who are visually impaired for feedback on the effectiveness of the design and the accuracy of the braille that will be inculuded. Additionally, I will conduct focus groups that include people without visual impairments to determine the effectivness of the visual layout and composition of the pieces.

**V. PARTICIPANT INCLUSION/EXCLUSION CRITERIA**

**11. STUDY POPULATION (?)**
**Provide the inclusion criteria for the participant population** *(gender, age range, ethnic background, health status, occupation, employer, etc.)*: Both male and female, 18-65, visually impaired and individuals with sight

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**Provide a rationale for selecting the above population:** The design atheistic that I am planning to implement will be targeting that specific age group. I am not restricting the gender, so I am able to receive more feedback. I am requiring the participation of visually impaired individuals in order to gain feedback on the designs I am creating. Additionally, sighted individuals will be participating for feedback on the visual design.
**Are you related to any of your participants?**
☒ No
☐ Yes *(Explain)*:
**Indicate who will be excluded from your study population** *(e.g., persons under 18 years of age)*: Persons under the age of 18 and over the age of 65
**If applicable, provide rationale for involving any special populations** *(e.g., children, ethnic groups, mentally disabled, low socio-economic status, prisoners)*: I am requiring the participation of visually impaired individuals in order to gain feedback on the designs I am creating.
**Provide the maximum number of participants you plan to enroll for each participant population and justify the sample size** *(You will not be approved to enroll a number greater than the number listed. If at a later time it becomes apparent that you need to increase your sample size, submit a Change in Protocol Form and wait for approval to proceed)*: 20 visually impaired to provide feedback on the accuracy of the Braille and the effectiveness of the overall design. 20 sighted individuals to provide feedback on the overall visual design. I would like an even number of both in order to receive an equal amount of feedback from both groups.
**ANSWER THE FOLLOWING QUESTION ONLY IF YOU ARE CONDUCTING A PROTOCOL WITH NIH, FEDERAL, OR STATE FUNDING:**
**Researchers sometimes believe their particular project is not appropriate for certain types of participants. These may include, for example, women, minorities, and children. If you believe your project should not include one or more of these groups, please provide your justification for their exclusion. Your justification will be reviewed according to the applicable NIH, federal, or state guidelines:**

**12. TYPES OF PARTICIPANTS (?)**
**Who will be the focus of your study?** *(Check all that apply)*

| | |
|---|---|
| ☒ Normal Participants (Age 18-65) | ☐ Pregnant Women |
| ☐ Minors (Under Age 18) | ☐ Fetuses |
| ☐ Over Age 65 | ☐ Cognitively Disabled |
| ☐ College/University Students | ☒ Physically Disabled |
| ☐ Active-Duty Military Personnel | ☐ Participants Incapable of Giving Consent |
| ☐ Discharged/Retired Military Personnel | ☐ Prisoners or Institutional Individuals |
| ☐ Inpatients | ☐ Specific Ethnic/Racial Group(s) |
| ☐ Outpatients | ☐ Other potentially elevated risk populations |
| ☐ Patient Controls | ☐ Participant(s) related to the researcher |

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*Note: Only check the boxes if the participants will be the focus (for example, ONLY military or ONLY students). If they just happen to be a part of the broad group you are studying, you only need to check "Normal Participants." Some studies may require that you check multiple boxes (e.g., Korean males, aged 65+).*

**VI. RECRUITMENT OF PARTICIPANTS**

**13. CONTACTING PARTICIPANTS (?)**
**Describe in detail how you will contact participants regarding this study** *(include the method(s) used—email, phone call, social media, snowball sampling, etc.)*: I will be posting flyers with my email for a way of contact. I have a visual that I will be posting on social media for friends or family members of a visually impaired person can pass on the information. Additionally, I will be snowball sampling in the way of asking close aquantinces of mine if they know of anyone that would be will to participate.

**14. SUBMISSION OF RECRUITMENT MATERIALS (?)**
**Submit a copy of all recruitment letters, scripts, emails, flyers, advertisements, or social media posts** you plan to use to recruit participants for your study as separate Word documents with your application. Recruitment templates are available on the IRB website.
**Check the appropriate box:**
☒ All of the necessary recruitment materials will be submitted with my application.
☐ My study strictly uses **archival** data, so recruitment materials are not required.

**15. LOCATION OF RECRUITMENT (?)**
**Describe the location, setting, and timing of recruitment:** Location: Social Media, Lynchburg Virginia, Liberty University

**16. SCREENING PROCEDURES (?)**
**Describe any screening procedures you will use when recruiting your participants** *(i.e., screening survey, database query, verbal confirmation, etc.)*: verbal confirmation

**17. CONFLICTS OF INTEREST (?)**
**Do you have a position of grading or professional authority over the participants** *(e.g., Are you the participants' teacher, principal, or supervisor?)*?
☒ No *(Proceed to Procedures)*
☐ Yes *(Explain what safeguards are in place to reduce the likelihood of compromising the integrity of the research, e.g., addressing the conflicts in the consent process and/or emphasizing the pre-existing relationship will not be impacted by participation in the research.)*:

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**Do you have any financial conflicts of interest to disclose** *(e.g., Do you or an immediate family member receive income or other payments, own investments in, or have a relationship with a non-profit organization that could benefit from this research?)***?**
☒ No *(Proceed to Procedures)*
☐ Yes *(State the funding source/financial conflict and then explain what safeguards are in place to reduce the likelihood of compromising the integrity of the research.)*:

**VII. RESEARCH PROCEDURES**

**18. PROCEDURES** (?)

**Write an original, non-technical, step by step, description of what your participants will be asked to do during your study and data collection process.** If you have multiple participant groups, *(ex: parents, teachers, and students)* or control groups and experimental groups, please specify which group you are asking to complete which task(s). **You do not need to list signing/reading consent as a step:**

| Step/Task/Procedure | Time (Approx.) | Participant Group(s) *(All, Group A, Group B, Control Group, Experimental Group, etc.)* |
|---|---|---|
| 1. In a small focus group setting, participants will feel/read through the various designed elements given. | 20 min | All (Focus Group) |
| 2. Asses the materials and their function. Visually impaired individuals will be given the survey verbally due to their disability. All other participants will fill out a written survey. | 25 min | All (Focus Groups) |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |

**19. SUBMISSION OF DATA COLLECTION INSTRUMENTS/MATERIALS** (?)

**Submit a copy of all instruments, surveys, interviews questions, outlines, observation checklists, prompts, etc.** that you plan to use to collect data for your study as separate Word documents with your application. Pdfs are **ONLY** acceptable for proprietary instruments.

**Check the appropriate box:**
☒ All of the necessary data collection instruments will be submitted with my application.
☐ My study strictly uses **archival** data, so data collection instruments are not required.

**20. STUDY LOCATION** (?)



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**Describe in detail *how and when* you will provide consent information** *(If applicable, include how you will obtain consent from participants and/or parents/guardians and/or child assent.)*: I will be sending out a consent form via email for them to bring with them on the day of the testing.

**XII. USE OF DECEPTION**

**26. DECEPTION** (?)

**Are there any aspects of the study kept secret from the participants** *(e.g., the full purpose of the study)***?**
☒ No
☐ Yes *(describe the deception involved and the debriefing procedures)*:

**Is deception used in the study procedures?**
☒ No
☐ Yes *(describe the deception involved and the debriefing procedures)*:

***Note:*** *Submit a post-experiment debriefing statement and consent form offering participants the option of having their data destroyed. A debriefing template is available on our website.*

**XIII. WAIVER OF INFORMED CONSENT OR MODIFICATION OF REQUIRED ELEMENTS IN THE INFORMED CONSENT PROCESS**

**27. WAIVER OF INFORMED CONSENT ELEMENTS** (?) ☒ N/A

**Please indicate why you are requesting a waiver of consent** *(If your reason does not appear as an option, please check N/A. If your reason appears in the drop-down list, complete the below questions in this section)***:** Click to select an option.

**Does the research pose no more than minimal risk to participants** *(i.e., no more risk than that of everyday activities)***?**
☐ No, *the study is greater than minimal risk.*
☐ Yes, *the study is minimal risk.*

**Will the waiver have no adverse effects on participant rights and welfare?**
☐ No, *the waiver will have adverse effects on participant rights and welfare.*
☐ Yes, *the waiver will not adversely affect participant rights and welfare.*

**Would the research be impracticable without the waiver?**
☐ No, *there are other ways of performing the research without the waiver.*
☐ Yes, *not having a waiver would make the study unrealistic. (Explain)*:

**Will participant debriefing occur** *(i.e., will the true purpose and/or deceptive procedures used in the study be reported to participants at a later date)***?**
☐ No, *participants will not be debriefed.*
☐ Yes, *participants will be debriefed.*

***Note:*** *A waiver or modification of some or all of the required elements of informed consent is sometimes used in research involving deception, archival data, or specific minimal risk procedures.*

**XIV. WAIVER OF THE REQUIREMENT FOR PARTICIPANTS TO SIGN THE INFORMED CONSENT DOCUMENT**

**28. WAIVER OF SIGNED CONSENT** (?) ☒ N/A

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**Please describe the location(s)/site(s) in which the study will be conducted.** Be specific *(include city, state, school/district, clinic, etc.)*: Liberty University

***Note: For School of Education research****, investigators must submit documentation of permission from each research site to the IRB prior to receiving approval. If your study involves K-12 schools, district-level approval is acceptable. If your study involves colleges or universities, you may also need to seek IRB approval from those institutions. You may seek permission prior to submitting your IRB application, however,* ***do not*** *begin recruiting participants. If you find that you need a conditional approval letter from the IRB in order to obtain permission, one can be provided to you once all revisions have been received and are accepted.*

**VIII. DATA ANALYSIS**

**21. NUMBER OF PARTICIPANTS/DATA SETS** (?)

**Estimate the number of participants to be enrolled or data sets to be collected:** 40

**22. ANALYSIS METHODS** (?)

**Describe *how* the data will be analyzed and what will be done with the data and the resulting analysis, including any plans for future publication or presentation:** All the data collected will be used to improve the designs I am creating. Additionally, some data will be included into the research chapter of my thesis.

**IX. PARENTAL/GUARDIAN CONSENT**

**23. PARENTAL/GUARDIAN CONSENT REQUIREMENTS** (?)

**Does your study require parental/guardian consent?** *(If your participants are under 18, parental/guardian consent is required in most cases.)*
☒ No *(Proceed to Child Assent)*
☐ Yes *(Answer the following question)*

**Does your study entail greater than minimal risk without the potential for benefits to the participant?**
☒ No
☐ Yes *(Consent of both parents is required)*

**X. ASSENT FROM CHILDREN**

**24. CHILD ASSENT** (?)

**Is assent required for your study?** *(Assent is required unless the child is not capable due to age, psychological state, or sedation OR the research holds out the prospect of a direct benefit that is only available within the context of the research.)*
☒ No *(Proceed to Consent Procedures)*
☐ Yes

***Note:*** *If the parental consent process (full or part) is waived (See XIII below) assent may be also. See the IRB's informed consent page for more information.*

**XI. PROCESS OF OBTAINING INFORMED CONSENT**

**25. CONSENT PROCEDURES** (?)

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**Please indicate why you are requesting a waiver of signatures** *(If your reason does not appear as an option, please check N/A. If your reason appears in the drop-down list, complete the below questions in this section)***:** Click to select an option.

**Would a signed consent form be the only record linking the participant to the research?**
☐ No, *there are other records/study questions linking the participants to the study.*
☐ Yes, *only the signed form would link the participant to the study.*

**Does a breach of confidentiality constitute the principal risk to participants?**
☐ No, *there are other risks involved greater than a breach of confidentiality.*
☐ Yes, *the main risk is a breach of confidentiality.*

**Does the research pose no more than minimal risk to participants** *(i.e., no more risk than that of everyday activities)***?**
☐ No, *the study is greater than minimal risk.*
☐ Yes, *the study is minimal risk.*

**Does the research include any activities that would require signed consent in a non-research context** *(e.g., liability waivers)***?**
☐ No, *there are not any study related activities that would normally require signed consent*
☐ Yes, *there are study related activities that would normally require signed consent*

**Will you provide the participants with a written statement about the research** *(i.e., an information sheet that contains all of the elements of an informed consent form but without the signature lines)***?**
☐ No, *participants will not receive written information about the research.*
☐ Yes, *participants will receive written information about the research.*

***Note:*** *A waiver of signed consent is sometimes used in anonymous surveys or research involving secondary data. This does not eliminate the need for a consent document, but it eliminates the need to obtain participant signatures.*

**XV. CHECKLIST OF INFORMED CONSENT/ASSENT**

**29. STATEMENT** (?)

**Submit a copy of all informed consent/assent documents as separate Word documents with your application.** Informed consent/assent templates are available on our website. Additional information regarding consent is also available on our website.

**Check the appropriate box:**
☒ All of the necessary consent/assent documents will be submitted with my application.
☐ My study strictly uses **archival** data, so consent documents are not required.

**XVI. PARTICIPANT PRIVACY, DATA SECURITY, & MEDIA USE**

**30. PRIVACY** (?)

**Describe what steps you will take to protect the privacy of your participants** *(e.g., If you plan to interview participants, will you conduct your interviews in a setting where others cannot easily overhear?)*: I will be conducting any verbal surveys in a separate setting where others cannot easily overhear.

***Note:*** *Privacy refers to persons and their interest in controlling access to their information.*

**31. DATA SECURITY** (?)

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**How will you keep your data secure** *(i.e., password-locked computer, locked desk, locked filing cabinet, etc.)*?: Password-locked computer and locked desk drawer

**Who will have access to the data** *(i.e., the researcher and faculty mentor/chair, only the researcher, etc.)*?: the researcher and faculty mentor/chair

**Will you destroy the data once the three-year retention period required by federal regulations expires?**
☐ No
☒ Yes *(Explain how the data will be destroyed)*: Deleted from computer, any physical paperwork will be shredded

***Note:*** *All research-related data must be stored for a minimum of three years after the end date of the study, as required by federal regulations.*

**32. ARCHIVAL DATA (SECONDARY DATA)** (?)

**Is all or part of the data archival** *(i.e., previously collected for another purpose)***?**
☒ No *(Proceed to Non-Archival Data)*
☐ Yes *(Answer the questions below)*

**Is the archival data publicly accessible?**
☐ No *(Explain how you will obtain access to this data)*:
☐ Yes *(Indicate where the data is accessible from, i.e., a website, etc.)*:

**Will you receive the raw data stripped of identifying information** *(e.g., names, addresses, phone numbers, email addresses, social security numbers, medical records, birth dates, etc.)***?**:
☐ No *(Describe what data will remain identifiable and why this information will not be removed)*:
☐ Yes *(Describe who will link and/or strip the data—this person should have regular access to the data and should be a neutral party not involved in the study)*:

**Can the names or identities of the participants be deduced from the raw data?**
☐ No *(Place your initials in the box: I will not attempt to deduce the identity of the participants in this study)*:
☐ Yes *(Describe)*:

**Please provide the list of data fields you intend to use for your analysis and/or provide the original instruments used in the study:**

***Note:*** *If the archival data is not publicly available, submit proof of permission to access the data (i.e., school district letter or email). If you will receive data stripped of identifiers, this should be stated in the proof of permission.*

**33. NON-ARCHIVAL DATA (PRIMARY DATA)** (?)

**If you are using non-archival data, will the data be anonymous to you** *(i.e., raw data does not contain identifying information and cannot be linked to an individual/organization by use of pseudonyms, codes, or other means)*? **Note:** For studies involving audio/video recording or photography, select "No"

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☐ N/A: I will not use non-archival data *(data was previously collected, skip to Media)*
☒ No *(Complete the "No" section below)*
☐ Yes *(Complete the "Yes" section below)*

****COMPLETE THIS SECTION IF YOU ANSWERED "NO" TO QUESTION 33****

**Can participant names or identities be deduced from the raw data?**
☐ No
☒ Yes *(Describe)*: Participant names will not be recorded.

**Will a person be able to identify a subject based on other information in the raw data** *(i.e., title, position, sex, etc.)***?**
☒ No
☐ Yes *(Describe)*:

**Describe the process you will use to ensure the confidentiality of the participants during data collection and in any publication(s)** *(i.e., you may be able to link individuals/organizations to identifiable data; however, you will use pseudonyms or a coding system to conceal their identities)*: I will be using pseudonyms to ensure confidentiality.

**Do you plan to maintain a list or codebook linking pseudonyms or codes to participant identities?**
☐ No
☒ Yes *(Please describe where this list/codebook will be stored and who will have access to the list/codebook. It should not be stored with the data.)*: I will create a word document listing the linking pseudonyms. It will be a locked file on my computer that I will delete after 3 years.

****COMPLETE THIS SECTION IF YOU ANSWERED "YES" TO QUESTION 33****

**Describe the process you will use to collect the data to ensure that it is anonymous:**

**Place your initials in the box:** I will not attempt to deduce the identity of the participants in this study:

***Note:*** *If you plan to use participant data (i.e., photos, recordings, videos, drawings) for presentations beyond data analysis for the research study (e.g., classroom presentations, library archive, or conference presentations) you will need to provide a materials release form to the participant.*

**34. MEDIA USE** (?)

| | | |
|---|---|---|
| **Will your participants be audio recorded?** | ☒ No | ☐ Yes |
| **Will your participants be video recorded?** | ☒ No | ☐ Yes |
| **Will your participants be photographed?** | ☒ No | ☐ Yes |

****COMPLETE THIS SECTION IF YOU ANSWERED "YES" TO ANY MEDIA USE****

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**Include information regarding how participant data will be withdrawn if he or she chooses to leave the study*:**

**Will your participants be audio recorded, video recorded, or photographed without their knowledge?****
☐ No
☐ Yes *(Describe the deception and debriefing procedures)*:

*****Note on Withdrawal:*** *Add the heading "How to Withdraw from the Study" on the consent document and include a description of the procedures a participant must perform to be withdrawn.*
******Note on Deception:*** *Attach a post-experiment debriefing statement and a post-deception consent form, offering the participants the option of having their recording/photograph destroyed and removed from the study.*

**XVII. PARTICIPANT COMPENSATION**

**35. COMPENSATION** (?)

**Will participants be compensated** *(e.g., gift cards, raffle entry, reimbursement)***?**
☒ No *(Proceed to Risks)*
☐ Yes *(Describe)*:

**Will compensation be pro-rated if the participant does not complete all aspects of the study?**
☒ No
☐ Yes *(Describe)*:

***Note:*** *Certain states outlaw the use of lotteries, raffles, or drawings as a means to compensate or recruit research participants. Research compensation exceeding $600 per participant within a one-year period is considered income and will need to be filed on the participant's income tax returns. If your study is grant funded, Liberty University's Business Office policies might affect how you compensate participants. Contact the IRB for additional information.*

**XVIII. PARTICIPANT RISKS AND BENEFITS**

**36. RISKS** (?)

**Describe the risks to participants and any steps that will be taken to minimize those risks.** *(Risks can be physical, psychological, economic, social, or legal. If the only potential risk is a breach in confidentiality if the data is lost or stolen, state that here)*: The only rish is a breach in confidentiality if the data is lost or stolen.

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**Will alternative procedures or treatments that might be advantageous to the participants be made available?**
☐ No
☒ Yes *(Describe)*: For those who are visually impaired I plan to have assitants helping them to understand what they are holding, or any other confusions they may have due to their visual impairment.

**ANSWER THE FOLLOWING QUESTION ONLY IF YOUR STUDY IS CONSIDERED GREATER THAN MINIMAL RISK:**

**Describe provisions for ensuring necessary medical or professional intervention in the event of adverse effects to the participants** *(e.g., proximity of the research location to medical facilities, or your ability to provide counseling referrals in the event of emotional distress)*:

**37. BENEFITS** (?)

**Describe the possible direct benefits to the participants.** *(If participants are not expected to receive direct benefits, please state "No direct benefits." Completing a survey or participating in an interview will not typically result in direct benefits to the participant.)*: No direct benefits.

**Describe any possible benefits to society:** If successful this study could be used to show other designers in the field that it is possible to effectively incoporate Braille into their designs. Thus creatign more inclusive designs for the visually impaired population to benefit from.

**Evaluate the risk-benefit ratio.** *(Explain why you believe this study is worth doing, even with any identified risks.)*: I believe it is important to explore areas that could help others and benefit groups that are often overlooked. In order to create designs that will be effective, it is important that I test my designs to receive feedback from my targeted audience.

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