INCLUSIVE BY DESIGN:
CREATING A DATING APP BUILT ON
INCLUSIVE DESIGN PRINCIPLES

by

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Abstract

Inclusive design is an approach to design that puts the diversity of people at the centre of its focus. By following this approach, designers can help users avoid unnecessary barriers and frustrations that lead them to feel excluded from the product or service. This study uses this approach to examine whether current popular dating applications such as Tinder, Bumble, and Grindr create barriers for their users especially those who identify as People of Colour and people who identify as transgender, non-binary, genderqueer, gender non-conforming or any other gender identity existing outside of the traditional female-male binary. By listening and using empathy to put these users at the centre of the design process, my objective is to build a dating app that will meet their needs, reduce unconscious bias, and create a safe and equitable experience for everyone.

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Introduction

Inclusive design is an approach to design that puts the diversity of people at the centre of its focus. This approach understands that there is not one type of user, and that people live diverse experiences with different abilities and views, also that the needs of even one single user changes over time (Persson, Åhman, Yngling & Gulliksen, 2014). By following this approach, designers can help users avoid unnecessary barriers and frustrations that lead users to feel excluded from the product or service. This approach examines the needs of users who may not fit into the main target group. By addressing their needs, value is added to the product or service because removing these barriers actually results in improving the experience for all users. Inclusive design puts empathy at the centre of its process. Designers and researchers put themselves in the user's shoes by reaching out to them, asking them what their needs and frustrations are so they can understand how they feel. This process ultimately affects design decisions and creates a product or service that is equitable, fair, and easier for everyone to use!

This study examines whether current popular dating applications such as Tinder, Bumble, and Grindr create barriers for their users especially those who identify as people of colour and people who identify as transgender, non-binary, genderqueer, gender non-conforming or any other gender identity existing outside of the traditional female-male binary. I investigate whether or not dating apps are support unconscious bias and perpetuate traditional gender norms and stereotypes regarding race creating an unfair advantage for users who do not fit into these expected social norms. Despite the fact that many organizations are creating and publishing toolkits for building digital

products based on principles of inclusive design (Government of Ontario, 2017), there has yet to be a dating app that has been built with these principles from the beginning of the design process. This project seeks to answer the question: how might we develop a dating app that is inclusive?

This research study uses participatory design research methodologies in order to discover what frustrates users in these demographics when using dating apps and what their specific needs are. Participatory research can mean getting the users involved in the design process from simply having a brainstorming session to having users sketch interfaces (Nunnally & Farkas, 2017). By following this method, designers are listening to user's needs and frustrations, and allowing them to give input in the design process. In this study users will have the opportunity to inform the design process through a focus group and diary study, as well as give input into the design in a usability test. This study will use multi-method qualitative research methods to capture different parts of the problem as well as validate participant response.

Using the information gathered from the research study, I will build a new dating app prototype that takes into consideration these user's needs. By listening and using empathy to put these users at the centre of the design process, my objective is to create a dating app that will meet their needs, reduce unconscious bias, and create a safe and fair experience for everyone.

Literature Review

This project will examine whether current popular dating applications such as Tinder, Bumble, and Grindr utilize inclusive design principles in order to avoid unnecessary barriers for some users, especially in regard to race and gender identity. Toolkits and frameworks are being created by major organizations such as the University of Cambridge (Inclusive Design Toolkit, n.d.), Microsoft (Inclusive Design at Microsoft, n.d.), and the Government of Ontario (Government of Ontario, 2017) in order to help create a more equitable experience for users of different abilities, sexuality, gender identity, and race.

As dating apps become a more popular way for people aged 18 to 29 to meet new people (Smith, 2016), the algorithms (how dating apps are coded) have been designed to exclude people (Gieseking, 2017). Even though the code supports exclusion, users of dating apps also exclude each other based on race (Robnett & Feliciano, 2011). Most popular dating apps rely on profiles that have photos and a short description as the main feature for attracting matches, this method enforces unconscious bias in its user. Even though many dating apps are beginning to improve their setting options, most popular dating apps have restricted gender settings and reinforce the traditional gender binary and therefore could exclude many who identify outside of it.

This project seeks to answer the question: how might we develop a dating application that is inclusive? By using participatory design, research methodologies

commonly used in inclusive design settings, I will put the user at the centre of the design process by listening to what issues and barriers they face when using these apps and using their feedback to create a dating app that removes these barriers and creates an equitable experience that benefits all users.

i.   What is Inclusive Design?

Organizations such as the Government of Ontario have developed open-access, comprehensive toolkits in order to improve the quality of any digital product through the application of guidelines for inclusive design. The Government of Ontario defines inclusive design as "Designing for the full range of human diversity in ability, language, income, culture, gender, age and other characteristics," (Government of Ontario, 2017, para.1). Using Inclusive design methodologies may benefit users not only belonging to minority groups but other users too. However, this tool specifically is listed by the Government of Ontario (2017) on their Inclusive Design Toolkit website as an optional tool to be used for anyone who is interested in creating more inclusive services (Government of Ontario, 2017).

Rather than a genre of design, Inclusive design is a mix of business strategy and design practice (Clarkson, 2003), it is the intentional action of designing with diversity in mind for the sake of better business practices and ease-of-use for users. Companies have the freedom to create their own business strategies to determine the success or failure of their business, so one could understand why the Government of Ontario

(2017) does not impose this strategy on businesses despite whatever success it may bring to those companies.

Large organizations like Microsoft, however, have taken initiative on their own to promote inclusive design within their own company. Identifying the value of inclusion, Microsoft created a team that focuses on how diversity can bring strength to a product: "Designing for inclusivity not only opens up our products and services to more people, it also reflects how people really are," (Inclusive Design at Microsoft, n.d., para.3). They were able to do this by recognizing that unconscious bias comes into play and that this happens when designers do not reach out to their users to find out what problems they may face and then using empathy to place themselves in their position: "If we use our own abilities as a baseline, we make things that are easy for some people to use, but difficult for everyone else," (Inclusive Design at Microsoft, 2016, p.6.). By understanding the barriers your users face, you are actually creating a more successful product and reducing barriers overall within society as a whole.

Part of the reason why some major corporations like Microsoft have taken note of inclusive design and embraced it in their corporate business strategy is because academics have been studying and implementing this strategy for years and are aware of its positive impacts. At the University of Cambridge, the Engineering Design Centre (EDC) stated that "Products that are more inclusive can reach a wider market, improve customer satisfaction and drive business success," (Waller, Bradley, Hosking & Clarkson, 2015, p.297). This eventually led to major corporations like Nestlé (Waller et

al, 2015) accepting this research and adopting an inclusive approach to design and business strategy.

Previously, much of the work around inclusive design has been related to accessibility, designing for people with disabilities. Because of this, much work was dedicated to making design patterns that can be replicated and followed in other projects (Newell, Gregor, Morgan, Pullin & Macaulay, 2010). Moving forward, as seen in previous examples with corporations like Microsoft, inclusive design has begun to encompass not just accessibility but designing for a range of diversity as well. In this case, Newell et al. (2010) argue that designers must use ethnographic research methods to develop a true sense of empathy for their users in order to create solutions that work for them. Ethnographic research is qualitative research that requires having direct contact with users. Typically, this work is completed by ethnographers, which means designers do not have contact with the user group (Newell et al., 2010). To avoid this distance from the user group, it is therefore critical for designers to work in collaboration with researchers to create informed research questions and to have direct contact with users in order to build empathy to create useful products.

ii.   What is the Problem with Current Dating Apps?

In the 1970s, a study in unconscious bias was conducted in collaboration with the five top symphony orchestras in the United States of America. In these tests, they replaced standard auditions in front of a panel of judges with blind auditions where the musician performed behind a screen, no other information was given to the judges. Using a

screen, the study found that the probability of a female candidate advancing beyond the preliminary round of the selection process went up by 50% and within 20 years approximately 25% the musicians in the orchestra were female (Kagetsu & Gunderman, 2017). The result was that the decision makers had to rely purely on talent of the candidates and not on their gender or race, which resulted in better hiring practices for the orchestra and better talent.

Since popular dating apps like Tinder, Bumble, and Grindr rely on photos as the main point of reference in whether a user decides to match with another user, unconscious bias could possibly play a role in the users' decision, even though it would be imperceptible to the users themselves. Unconscious bias happens when we make decisions automatically with little knowledge; our brains make quick judgements of other people and is influenced by its prior experiences (Beeman, 2017). For example, a white person sees a black person's profile photo appear in an app like Tinder, they may 'swipe left' (reject them) on the basis of unconscious bias. Their mind will recognize the face as unfamiliar to their past experiences and make a quick judgement without good reason.

We may be making these kinds of biased decisions every day without realizing it because our minds are constantly seeking out what is familiar to our own personal past experiences and leads us to have a preference towards people with the same background (socioeconomic, race, group, etc.) as ourselves (Kagetsu & Gunderman, 2017). Emphasizing the importance of image in dating apps could be supporting these

kinds of negative behaviours when selecting a match, opting to choose matches they feel the most familiar to them despite having only having knowledge of some superficial traits and little knowledge about their personality, characteristics, or interests.

Issues surrounding racism in dating applications and websites is well-documented in journals as well as in studies by dating platforms themselves using their own data. In a report by OkCupid, data shows that white women have the highest compatibility, with almost every group but they mostly only reply to white men (Rudder, 2009). In this report, the data from users states that white people have an advantage in receiving a response to another user's message. Another study similarly found that "For those who state a preference, both white males and females are the least open to interracial dating within their genders–29 percent of white males and 65 percent of white females prefer to date only whites," (Robnett & Feliciano, 2011, pp.814-815). Most dating platforms rely on users selecting matches through photos of the user and a short description of themselves. From this data, we begin to see a trend in how unconscious bias or even explicit racism affects people's decisions of who they want to date in real life when using online dating platforms.

Since these apps use photos as the main feature of matching with another user, unconscious bias could play out in other ways as well, such as a user's expectations of traditional performance of gender, meaning many users may expect to see photos of people who express their gender identity as that being the sex assigned to them at birth. This form of unconscious bias would affect groups of people who identify as

transgender, genderqueer, non-binary, or gender non-conforming because they do not

fit into these traditional gender norms. This "…speaks to the frustration and loneliness

such beauty norms affect for app users who do not fit the panopticon driven 'attractive'

norming practices," (Gieseking, 2017, p.1662).

Almost all popular dating apps use images like a profile photo, as the main

means to attract a match and because of this, many users who do not fit in to typical

gender norms are given an unfair advantage and even face harassment and feel

excluded, as seen in first-hand account stories published in media representing

LGBTQ+ people and their stories, such as: *Them.us*, *Teen Vogue*, and *Huffington Post*.

The harassment some people face may be based on the way the code is developed.

Gieseking (2017) refers to the fact that organizations code digital products to represent

their own perceptions of the world. In the case of Grindr, the founder, Joel Simkhai,

spoke to journalist Polly Vernon (2010) of The Guardian, he emphasized that this app

was made to celebrate 'masculinity'. From the beginning, Grindr never supported the

user groups above because its own founder always envisioned one particular group of

users despite the fact that transgender people and other groups that do not identity as

cisgender male do in fact use the app. Dating apps like Grindr are reproducing and

supporting gender norms through the code and design of the app therefore excluding

users who do not fit into these expected social norms.

Overall, the people who have designed these dating apps have created a

framework that supports their limited understanding of who their whole audience

actually is. By ignoring these users, they may be creating unnecessary barriers that could create undue stress for them. By identifying these users and by seeking them out and asking them what excludes them, a designer could begin to understand and identify what changes need to be made in order to provide a better experience for everyone. The next section will address this issue as well as question whether it is possible to design something for everyone and how this issue can be resolved in regard to creating an inclusive dating app.

iii.   The Challenge: Combining Dating Apps & Inclusive Design

With so many possible diverse user groups with varying needs, how is it even possible to design one product for so many different people? In research by Bianchin & Heylighen (2017, p.S3163) we are presented with a paradox, by "…taking human differences seriously seems to imply that nothing can be designed that meets the needs of everyone, so that 'the widest possible audience' may turn out to be severely restricted." Inclusive design seeks to remove barriers so people of diverse abilities and experiences can use a product. However, this creates a paradox as this would require having to create many artefacts to solve different needs and creating many artefacts would require a lot of time and resources (Bianchin & Heylighen, 2017).

I anticipate two problems in the attempt to design a dating app that is based on inclusive design principles:

1) This problem concerns web accessibility for people with disabilities.

2) The larger social problem of racism and gender conformity: people will come to the app and use it with their own preconceived notions and unconscious bias and explicit (conscious) bias regarding race and gender.

Most people consider the term inclusive design synonymous with accessibility. The term, however, encompasses much more than just accessibility. If organizations really take diversity seriously, they need to design for people of all genders, race, sexual orientation, religions, and ethnicities, as well as varying degrees of abilities (Steinfield & Maisel, 2012, p.85). Designing with inclusion in mind means using empathy to understand the different types of users for your product. That's why that even though it is not the only part of inclusive design, accessibility plays an important role in the inclusive design process. It is essential to talk to people with different abilities and limits to create products that work for many people. In fact, organizations like Microsoft are proof that accessible design yields positive results from its users, they state that "Designing for people with permanent disabilities actually results in designs that benefit people universally," (Microsoft Design, n.d., para.4).

This project will use accessible design patterns wherever possible in order to create an inclusive design. As the final product to be presented will be a Minimum Viable Product (MVP), it will not be coded and released live with real time users. As it will not be coded, many functionalities that are normally present in an app or website will not exist. One example is that when coding a website or app to be accessible, developers will format and edit the code appropriately so that people who are visually

impaired can properly use a screen reader, a tool that reads aloud to its user in a specific order that from what is written in the code. If the code is not organized properly, the screen reader will read nonsense to the user and cause confusion which means the user will not be able to successfully navigate the website or become frustrated while doing so. As this project will not be coded, functionalities such as these will be missing from the final MVP.

Remembering "…the very idea of designing for the largest possible audience faces two connected problems, as it rather obviously operates in conditions of moderate scarcity of resources," (Bianchin & Heylighen, 2017, p.S1364) the resources of this project would require the participation of an entire team of developers and a team of designers. Generally speaking, most organizations face the problem of time, finances, and resources when attempting to build any product. Therefore, the scarcity of resources for an individual project is even greater. Ultimately, the next steps for this dating app would be to seek funding, further research, and acquire a diverse team who could fulfill the requirement of designing for a wider audience, such as but not exclusive to people living with disabilities.

Current social media and dating apps users already face these biases regularly as seen as seen in first-hand account stories published in media representing LGBTQ+ people and their stories, such as: *Them.us*, *Teen Vogue*, and *Huffington Post*. These issues, however not only exist in the attitudes of the designers and coders creating products, but also within society as a whole. How do we solve this problem when

designing with an inclusive design mindset and how do we help ensure that our products are fair? By applying philosopher John Rawls' concept of Justice as Fairness, Bianchin & Heylighen (2017) hypothesize the following solution: using Rawls' principles of justice, instead of designing one single product that could work for the largest amount of people, we must design many products across society as a whole so usability for the 'worst offs' is maximized across society. In this definition, 'society' can mean any organization, government institution, group, or any relationship that requires cooperation can be counted as a society (Bianchin & Heylighen, 2017). Understanding this concept that society is made up of many different groups and these groups must work together to create products that benefit everyone can we begin to see a solution to this problem.

In the context of an inclusive dating app, we can consider this app to be a part of one of these groups that make up society and as part of that group this specific product will help benefit the usability of people of colour, transgender people, non-binary people, genderqueer, and gender non-conforming people. As such, it will be one component in a group that makes up society that is benefitting the so called 'worst offs' that Bianchin & Heylighen make reference to. So, even though this project will not resolve all problems dealing with race and gender in society, it could help contribute to the greater pool of work being done by the many organizations that are beginning to use inclusive design frameworks, which in turn will affect people in society over time and could possibly help create a change in behaviours that could lead to increasing ease-of-use for all user groups.

Research into inclusive design practices has been completed by various

organizations and several toolkits have been published as an example to other

organizations to demonstrate how to implement these practices into their digital

products. However, these practices have not yet been implemented into the design of

dating apps. Dating apps have a well-documented data that supports the fact that

racism and unconscious bias exists within them. Furthermore, research into algorithms

and code in dating apps demonstrates that many users who exist outside the typical

gender binary have a difficult time finding matches.

Currently, a gap seems to exist between available inclusive design resources

and their use in exiting popular dating apps. This gap creates barriers for many users

and prevents them from being able to meet potential matches and develop serious

relationships with them. In addressing the paradox of inclusive design, this project will

contribute to the greater body of inclusive design work being done by governments and

other organizations within Canada which helps create a larger inclusive experience.

This project seeks to combine inclusive design research methodologies in order to

create a new dating app that embraces inclusive design principles from the beginning of

the design process and reduces barriers for all users.

Research Study

The objective of this project is to explore inclusive design principles and User

Experience (UX) research methodologies toward the creation of a new, inclusive mobile

dating application. This project breaks new ground by incorporating inclusive design

principles into the design process of mobile dating apps from the beginning of the

project as opposed to after the fact. Despite the fact that many organizations are

creating and publishing toolkits for building digital products based on the principles of

inclusive design, there has yet to be a dating app that has been built with these

principles from the beginning of the design process. By working with existing inclusive

design toolkits and implementing industry standard research methodologies, my

objective is to create a minimum viable product (MVP) that could affect real change in

the world of online dating.

Methodologies

Building a new, inclusive dating app requires qualitative human-based research from

under-served communities in order to properly identify problems these users face with

existing dating apps. It is necessary to collect qualitative information in order to inform

the design process of the MVP. This project uses participatory inclusive design

practices, this means involving 'extreme users' in the design process to help create a

final product. 'Extreme users' is a term often used by designers to define users who do

not fit into what the business, organization, or design team has identified as a 'normal'

user. "…Assumptions about what is 'average' or 'normal' have been too often based on

the young, fit, white, affluent male," (Clarkson, 2003, p.3) Assumption for what is normal

has left everyone else existing outside of this group excluded.

Understanding this assumption, I must disagree with the use of the term 'extreme

users' because it implies that these users are not 'normal' and therefore their needs are

of little importance when in reality it is a failure in the assumption of what is considered 'normal' by the business or design team. A better term to define and identify where there are problems in a design for its users is '*stress case*'. "…a stress case shows designers how strong their work is – and where it breaks down." (Wachter-Boettcher, 2018, p.40). The term 'stress case' does not make judgements on the user, it puts emphasis on the designer and their role and responsibility in providing a better solution providing a more inclusive approach that takes the burden off the user whose issues result from the designer's assumptions and unconscious bias of what they consider to be 'normal'.

In this project I use multi-method qualitative research to capture different parts of the problem, three types of qualitative research methods are used to collect this information from these users:

i.   Focus Group
This initial stage of the project is an explorative study comprised of five to six participants. The goal is to capture the main issues and concerns users face with dating apps, as well as gauge attitudes and ideas around dating apps (Nielsen, 1997). The goal of this stage is to collect broad knowledge of why people use dating apps as well as identifying what barriers and issues they face when using dating apps.

ii.   Diary Study

The second stage of the project requires participants to respond to a few questions once a week for two weeks. The goal of this stage of the project is to collect direct information from the participant, which is always required after conducting a focus group due to differences in opinion and potential group influence of participants (Nielsen, 1997). In this stage of the research, participants are free from this influence and can answer honestly in private. This information should validate the problems mentioned by participants in the focus group portion of the study.

iii.   Usability Test

The third stage of the project serves the purpose of validating the solutions created from the problems identified in the first two stages as well as providing feedback for iteration of the MVP to provide an even better solution to these problems and to provide quality assurance to guarantee good usability and to ensure users can successfully complete tasks within the app with ease ("Usability Testing," 2013). Participants are given a prototype and asked to navigate it with no feedback from the interviewer.

Participants

For this project, I recruited five participants who self-identify as one or more of the following categories:

a) Between the ages of 18 – 29,

b) A person of colour,

c) Identifies as transgender, gender non-conforming, non-binary, or genderqueer.

d) Uses or has used popular dating apps such as Tinder, Bumble, or Grindr in the past year.

Since this project is using multiple qualitative methods, unlike quantitative studies it is more reliable to have fewer participants (Nunnally & Farkas, 2017, p.68). This project specifically seeks out participants in these demographics because statistics from SurveyMonkey Intelligence (2016) demonstrate that the majority of users on dating apps belong to this age group. Research also shows that people from these communities face the discrimination and are underserved when using dating apps.

Focus Group Results

In this explorative phase of the study, the participants were asked general questions about where and when they use dating apps, why they use them, and questions about their negative experiences with dating apps. These questions are aimed at capturing data on user behaviour, user attitude, and for their contribution to the design of the MVP.

i.   User Behaviour

Participants were asked how often they use dating apps, where they use them, and why they use them. In the case of frequency of use, two participants said they use dating apps more than once a week, another two participants use them when travelling in other cities, and one uses them every few months. Most participants said they use them at

home, or as entertainment filling in gaps when waiting for the bus or between appointments. While one participant only uses dating apps to meet new people while travelling, the other four participants all use them as a means of "getting themselves out there" and to meet new people without having to go out to bars or clubs. These participants reported using the apps not just to date but also to make new friends. One participant stated that they use dating apps as a means to help them with their social anxiety, as it's easier to talk to someone online first then meet them in person.

i.   User Attitude

Three out of five of the participants discussed their experiences with racism, microaggressions, and being fetishized because of their race when chatting with other users on dating apps. When asked how they deal with this, they all agreed that initially when this happens they try to deflect with humour and to not take the other users' comments too seriously. Afterwards, if this behaviour continues they will block them. One user who identifies as non-binary and uses the pronouns 'they/them' spoke of their problems of dealing with other users who refuse to accept or to question negatively their gender identity. When dealing with this issue, they will assume at first that the user is just curious or does not understand and will try to educate them. If the other user still refuses to address them by proper pronouns they will also block them.

One participant who identifies as a cisgender gay male and person of colour, commented on the feeling of loneliness when using dating apps. His experience has been that when using dating apps, he often does not get matches or responses from other users.

One participant who identifies as a cis-gender heterosexual woman of colour spoke about her experience with heterosexual men, stating that in the wake of the #metoo movement, she believes many heterosexual men are afraid to offend women and don't want to "be seen as creeps," when approaching an interest in real life and online. According to the participant, according to these witnessed behaviours it can occasionally be difficult to take relationships from online to the real world due to heterosexual man's fear of offending women and the potential consequences of that action.

ii.   User Contribution

Participants were asked to reflect on what their most frequently used dating app could do to minimize their negative experiences, whether they are able to express themselves (especially in regard to gender) properly on these apps, what limits them from being able to properly express themselves, what they would like to see change, and if they could create their own fantasy dating app, what would that app look like? The latter question was asked to help stir up creativity and spur a conversation among the group which contributed to the answers of the other questions. Through their participation in this part of the focus group, I am able to start to better understand where barriers exist in dating apps and possible solutions to these problems.

When asked what existing dating apps could do to minimize their negative experiences, two participants wished there were better filters to find matches that were more similar to them or people that were more understanding of their gender identity

and sexuality. Another two participants mirrored their wish but added that some form moderation is needed on these apps. This moderation could be self-moderation in the form of a rating system where users can rate their matches, so others would know if the person was worth meeting or chatting with.

For limits, many identified Tinder's system of making you choose which gender you show up to as problematic. Currently, Tinder makes all users choose to show up to men and/or women but does not provide any other option. Even though Tinder does allow you to properly identify yourself, it still forces users into choosing to show up to men and/or women when they might be interested in meeting other non-binary or transgender people like themselves. Participants discussed having a short video feature on dating apps, so they could get a better sense of who it was they were talking to. One participant also addressed the issue of privacy, having heard that sometimes employers will look up your dating profiles in the hiring process.

iii.   Summary of Focus Group

At this point, it appears that educating other users on the participant's experiences and identities, creating better filters, having some type of moderation, and appearance (being able to see and hear your match) are important features to consider in creating this app.

Diary Study Results

One form with nine questions was sent to each participant, once a week over a period of two weeks. This phase of the study asked participants many of the same questions

as in the focus group: where and when they use dating apps, if they experienced any negative interactions, if anything limited them from expressing themselves properly, and what they would like to see improved in the dating apps they use. These questions are once again asked to the participants in order to see if their original responses would be validated in a private setting without influence from other participants. Some new questions posed in this phase revolve around how the participant feels during and after the use of dating apps, and if their conversations with other users led to any in-person meetings. These questions are used to judge whether or not the user is achieving the goal of meeting new people, as well as having a good experience on the dating app.

Out of the five focus group participants, four participants responded to the diary study but two of them only completed one diary entry out of two. However, the information provided from the remaining studies provides enough information to go forward.

i. Frequency and Place of Use

On average, participants use dating apps approximately 2-3 hours per week. Every participant reported using the apps when they were at home in the mornings or evenings, with some participants reporting using them at work, school, or while waiting for something like public transit. Every participant had conversations with people on the app but only one met someone in real life.

ii. Negative Interactions on Dating Apps

Two main problems were reported by the participants: harassment or difficult communication with cis-gender heterosexual men, not having enough filters to properly identify gender or preference for what or whom the participant is looking for in a match.

iii.   Participant Mood While Using Dating Apps

Every user reported feeling bored before using the app and feeling bored, annoyed, or frustrated after using the app. One participant expressed that communication online is not enough to get to know someone and that they experience hesitation in trusting the authenticity of who they are talking to.

iv.   Summary of Diary Study

The diary study has validated previous information from the focus group and provides more focus as to where to begin in the design process of the new dating app. These main points must be addressed in the design of a new app based on participant feedback:

1. **Gender and pronoun settings**: giving users the ability to properly identify themselves and those whom they wish to match with.
2. **Communication**: how can we improve communication between matches?
3. **User mood**: is there any way to combat users' feelings of boredom and frustration?

These issues will be the focus of the ideation and design process going forward.

Creating Personas

After completing the initial focus group, which helped define what barriers users face when using dating apps, and a diary study that validated those barriers and their needs, I can now move forward with aggregating all of this data into an affinity diagram (*see figure 1*) to identify user goals, frustrations (barriers), tasks (where and when they use these apps), feelings, and wishes.

Goals/Needs	Frustrations	Where/When	Feelings	Wishes
Opportunity to try new things	Promotes hookup culture	Home	I assume people are curious about my identity and want to learn more	Better filters
Overcoming social anxiety	Bad social interactions	Once a week		Astrology signs
Meeting new friends	People don't respect my pronouns	Everyday	I get frustrated and block people	"Other" gender option
Dating	Microaggressions to do with my race	Work	Annoyed	Better filters
Putting myself out there	Straight guys being rude	Waiting for bus	Angry	Rating system
Screen people before meeting in person	Tinder makes me choose male or female	Weekly	Excited to meet new people	Better profiles
Meet new people	Men afraid to offend women	While travelling	Feeling ugly	"Other" gender category
Fun activities with new friends	Bad descriptions	Travelling	Upset with no matches	Knowing the person is safe
Meet new people	Images are not enough to show who I am!	Home	Fearful	Rating system
Meet people in new cities	Exoticism - "Where are you from?"	Out with friends	Angry	Videos
Hookups	Having to choose between man or woman on Tinder	Bored	Frustrated	Filters
	Not getting matches			Interest based matching
	Harrassment			Kick people off platform
	Racist comments			Privacy
	Bad pickup lines			Moderation

Figure 1 - Affinity Diagram

After aggregating this data into specific groups, we can then group together all similar responses to see what the most important goals and issues for the user are.

Goals/Needs

Meeting new friends

Meet new people

Fun activities with new friends

Meet new people

Meet people in new cities

Overcoming social anxiety

Opportunity to try new things

Putting myself out there

Dating

Hookups

Screen people before meeting in person

Figure 2 - User Goals

Frustrations

Microaggressions to do with my race

Racist comments

Exoticism - "Where are you from?"

Harrassment

Images are not enough to show who I am!

Bad descriptions

Not getting matches

Tinder makes me choose male or female

Having to choose between man or woman on Tinder

People don't respect my pronouns

Men afraid to offend women

Bad pickup lines

Bad social interactions

Straight guys being rude

Promotes hookup culture

Figure 3 - User Barriers

25

Using the information uncovered from the focus group, diary study, and aggregated information in the affinity diagram, it is now possible to create personas. Personas are used to help focus the needs and expectations of the end user ("Personas," 2013). Creating a couple of personas will help bring focus to the project and know which users I am designing for, so I can ensure that they will experience little to no barriers in this new app and what features to focus on to improve their experience. The two personas I created cover the demographics of this study and include the most commonly occurring information from the focus group and diary study. These personas (*see figure 4 & figure 5*) will be constantly kept in mind while ideating and designing the new dating app.
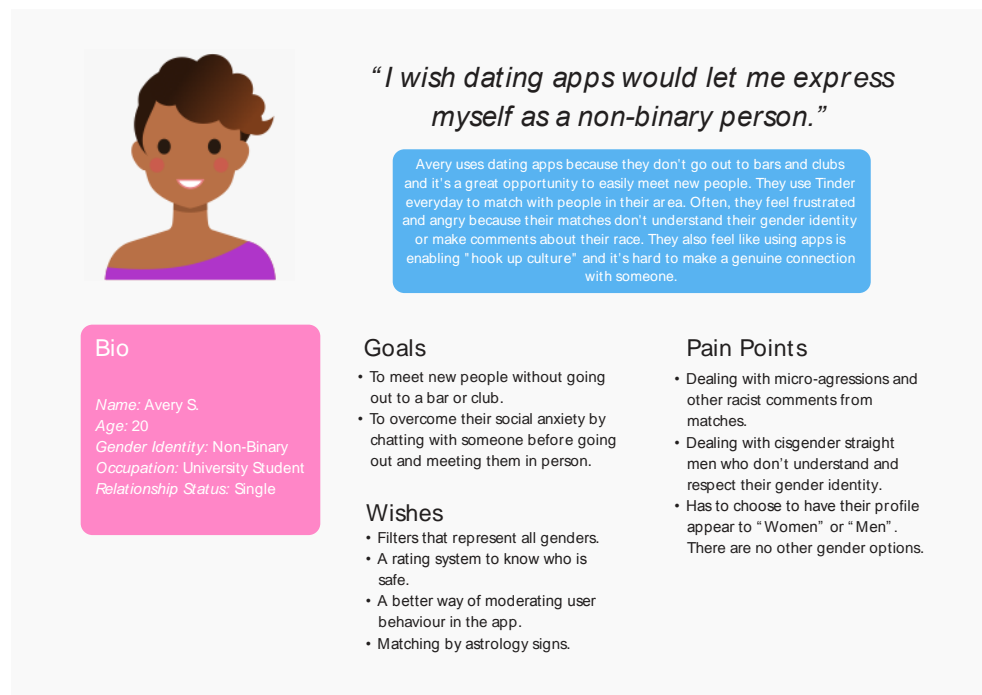
Figure 4 - Persona 1
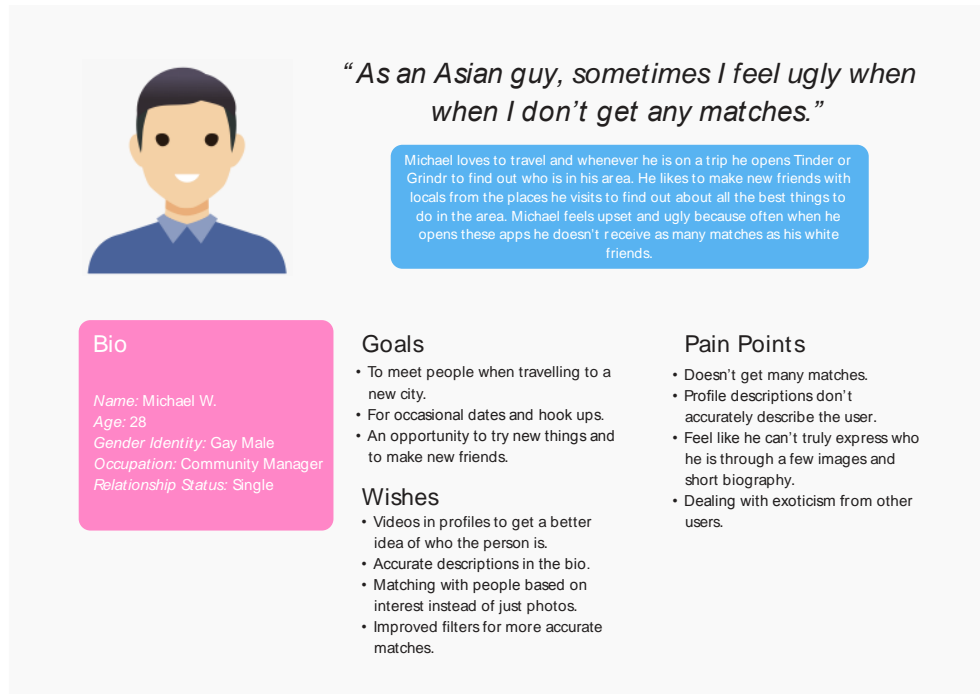
Figure 5 - Persona 2

Designing an Inclusive Dating App

While keeping the two personas in mind, designing an inclusive dating app will require breaking down barriers for them and addressing their other needs and gaps. This will require addressing the three main topics found from concluding the focus group study and diary study as well as what visual design features will be used while still supporting accessibility and inclusion.

1. **Gender and Pronoun Settings**
   Giving users the ability to properly identify themselves and those whom they wish to match with.

The first issue contains several problems: users on most apps cannot properly identify their gender or pronouns. This is not restricted to all apps and even though apps like Tinder and Grindr do let you properly identify yourself now and allow users to list their pronouns, a frequent issue for many dating app users is that as a user you can only choose to show up in the searches of either men or women. This binary makes dating complicated for those who wish to seek out matches with a similar identity to them or include a diverse range of gender identities. This is important to them because many people identifying outside of the binary feel that dating someone with a similar identity to them will have an understanding and respect for them and their identity. Not adding these categories also does not help people identifying outside of the binary, yes, you can properly identify yourself, but what value does that have if you still aren't being recognized by others? Including a spectrum of gender identities for self-identification but not for identification by others (matches) increases invisibility.

There is a clear need to properly express one's own gender and the freedom to match with people of different genders including but not exclusive to the male-female binary. For this app, I have included the option to properly self-identify gender and pronouns, and the ability to appear in searches for a diverse range of gender identities. I have included an 'Other' category where users can submit their identity, so it can be added to the list of options (*see figure 6-8*). I have also included brief educational articles that help explain what all these options mean. These 'learn more' articles are aimed at informing cisgender people who may not understand why these options are

important and to create some awareness for all users in the community and increase

visibility for people of all genders.

Figure 6 - Settings

Figure 7 - Pronouns

Figure 8 - Show Me

2. User Mood
How can we combat users' feelings of bored and frustration?

While adding settings to better represent gender diversity helps relieve some symptoms of frustration, some users still experience frustration through communication with cisgender people who do not understand or respect their gender identity, or users who commit microaggression or racist comments. Creating a safe space to learn, become educated, and to be entertained, seemed critical to dating app users. This is why I have added 'learn more' links in the settings section to provide context to users who may not understand gender diversity, but this solution does not resolve the issue of boredom and is frankly not very entertaining.

In the effort to address participants needs for better communication, better understanding of their race or gender identity, and their feelings of boredom and frustration, I have aimed to create a positive safe space, that brings the community together and helps others learn in a way that can be educational but also entertaining, I have created a community hub (*see figure 9*) where users can publish moderated articles: dating stories, sharing their experiences with dating and race, experiences of dating while non-binary or trans (or any other gender identity), or any story related to relationships, love, and dating. This user-generated content gives users the power to share their unique stories with the community and for the community to come together and learn in a positive, inspiring space.

In the diary study, almost all users reported that they use dating apps because they wish to meet new people, feelings of social anxiety, and that interactions on the app infrequently led to a meeting in real life. This problem combined with the feeling of loneliness experienced by people of colour and people identifying outside the gender binary forced me to reconsider how dating apps traditionally match users. Normally, on dating apps like Tinder, Bumble, or Grindr, users choose who they match with based on a person's appearance. This creates issues for many users since unconscious bias will affect how other users select their matches. This is part of why people of colour and people identifying outside the gender binary can have trouble even matching with other users.

I want to change this model into a new one that may work better and be more inclusive. Based on a couple of responses from the focus group and diary study, the app will match users by interest but still hold on to some of the aspects of popular dating apps. In an effort to be entertaining and innovative, users can define their interests by toggling an emoji slide bar, an interest with a picture is shown and the user slides the scale to show how much they dislike or like the interest (*see figure 10*). Originally, I had planned on creating a swipe left (not interested) or swipe right (interested) system similar to Tinder because it is something users will intuitively understand. However, this idea abstractly promotes binaries, and everyone has varying degrees of interest in a topic. So, the user can slide an entertaining emoji slider that can better define their interests and be fun to use. And because users still do care about knowing what their match looks like, they will still be able to see a preview of who they may possibly match

with if they like the specific interest presented to them. This provides a compromise by allowing them to see who they could match with but not let a photo be the determining factor in the match. Later they can go to their matches profile and see how much they have in common through the mutual interests section.

This strategy of combining an "old school" traditionally offline approach to dating (matching interests), combined with a fun, easy-to-use digital interface is meant to subtly sway users to escape implicit bias and surprise them with some matches they may not normally choose while still respecting their defined settings they selected in the app and the fact that most dating app users will expect to be able to see the faces of people they match with and their profiles.
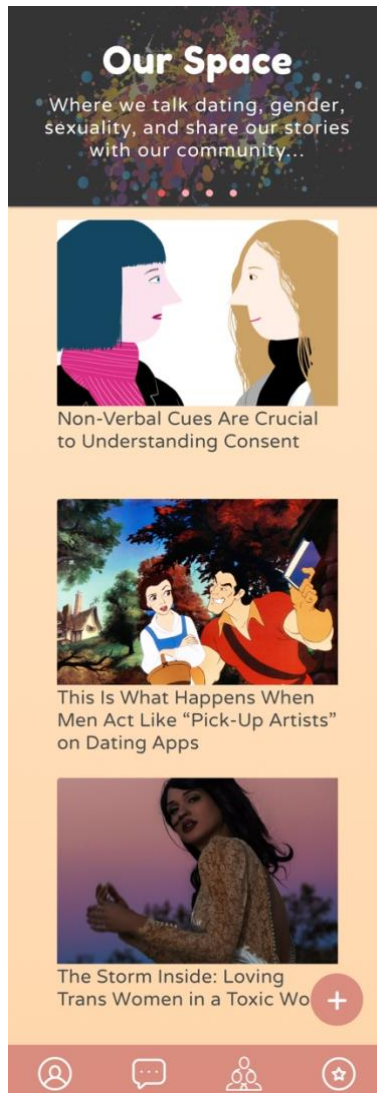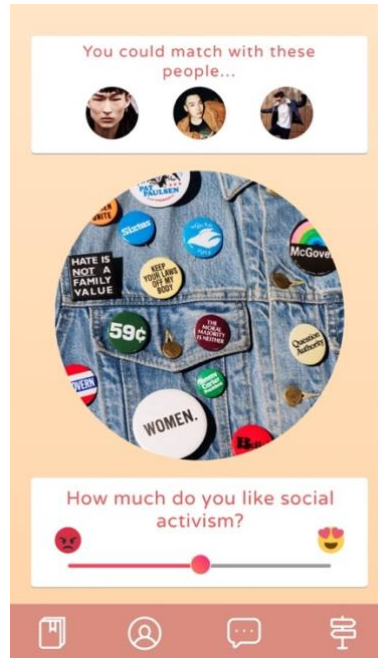
Figure 9 - Community Hub

Figure 10 - Matching by Interests

3. Communication
How can we improve communication between two matches?

Issues of communication between matches came up several times in this study.

Participants reported experiencing harassment in the form of racism, microaggressions,

and other users not respecting their gender identity. A few participants also reported

using dating apps because they have social anxiety or don't like going out in social

settings and get nervous talking to new people in real life social settings.

The community hub mentioned in the previous section, will help ease some of

this harassment or poor communication by educating users but what can be done to

promote conversation for people experiencing nervousness or social anxiety? In this

app, since every user is matched by mutual interests; it is possible to use their existing

interest data and provide users with a way to start a conversation. So, for every new

match a user has, in their chat there will be an ice breaker topic provided to the user to give them somewhere to start the conversation (*see figure 11*) which is tailored to those two people based on their mutual interests.

Additionally, many participants mentioned the wish that dating apps had a feature that let you rate other users and ban users who harass others on the platform. Although the benefits of rating people so other users could know if someone is polite and respectful would be helpful to some users, many would be scared, and it could be criticized for forcing users to behave a certain way in order to achieve good ratings on the app, which would not solve any behaviour-related issues and would only act as a band-aid solution, not to mention promote inauthenticity from users and as such, I decided not to use a rating system and instead created the community hub, a safe space to learn and grow.

To provide additional support, users will have to read and accept 'community guidelines' that layout terms for respectful communication. If users break these guidelines and are reported by another user, moderators can ban them for breaking the terms of their agreement with these guidelines.
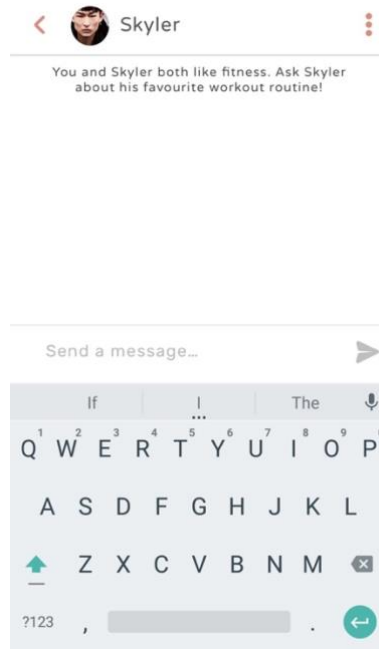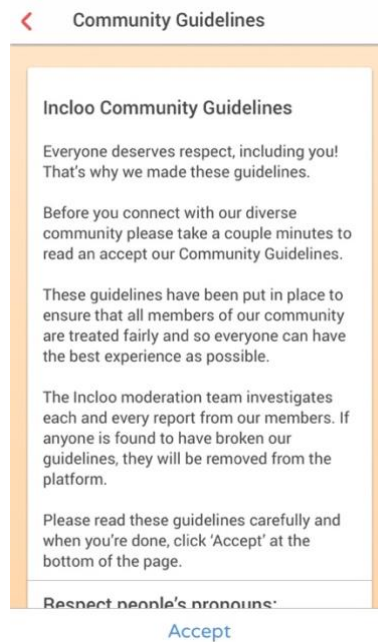
Figure 11 - Chat

Figure 12 – An Example of Community Guidelines

4. Visual Design, Usability & Accessibility

Inspired by inclusion, this app will use pastel, nude tone colours as its main theme for the colour palette. The colours are inspired by different skin tones (*see figure 13*), these colours are also selected because they are warm and inviting and are meant to represent the diverse community of people that use the app. To increase contrast, which is an element of accessibility used to ensure the user can clearly see buttons or important text, some accent colours were chosen (*see figure 14*) to stand out against the softer colour pallet. These colours are used for text, important buttons, links, slider bars, and toggles. This design follows as closely as possible (without having coding the platform) to Jakob Nielsen's '*10 Usability Heuristics for User Interface Design'*.
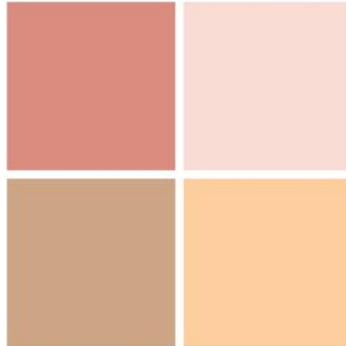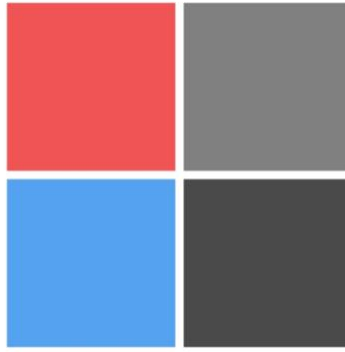
Figure 13 - Main Theme Colour Palette

Figure 14 - Accent Colours

Usability Test Results

After building a prototype based on feedback from the participants in the study. The participants were asked to come and test the prototype to ensure the buttons, settings, and features were easy to understand and use, as well as to give feedback on the direction and concept of the app. Participants were told to log in, view the quick onboarding process, and complete four different tasks that would bring them to every part of the app.

     i.   **Menu Bar and Icons**

Almost every participant had issues finding the interest section and the community blog in the menu bar. Despite having created an onboarding process to help give users and idea of what the icons in the menu bar mean (*see figure 15*), recognition failed. This means there is a need to use more universally recognizable icons. If there were another usability test and these icons failed, I would create titles underneath the icons to ensure usability for the user and avoid confusion. During these tests, I realized I had also chosen a binary symbol for the interests page. To rectify this, I changed the community hub to an icon that represents a group of people, this choice was made off of

recommendations from two of the participants. For interests, I changed the icon to a
star, often used as a favourite or bookmark icon. I avoided using hearts based on the
context, since a heart could be confused for matches in a dating app.

Figure 15 – Before: Menu Bar (Community Blog icon far left, Interest icon far right)

Figure 16 - After: Menu bar

ii.   Interests

Most users enjoyed the interest system I created to respond to the issue of unconscious
bias in dating apps as well as to contribute to better communication with a match as well
as responding to participants wish to know more about who they are matching with
ahead of time. Participants also responded positively to the emoji slider which defines
the level of interest and being able to preview potential matches who also like that
interest.

However, most users also suggested that they would enjoy more customization
in this feature; by being able to add interests right away into your profile, choosing
themes of interests, and having the app understand your interest choices and start
personalizing the interests it shows to you. For example, when a user likes coffee a lot,

the app could then show them a latte, then espresso, then cafés, etc. While some of

these features could be created in a database, for the sake of this MVP, I have added

the ability to add interests to your profile, and a search feature on the interest's page to

search for specific interests. Using the interests page, brand partnerships could also be

integrated into the app by adding specific restaurants or businesses and products for
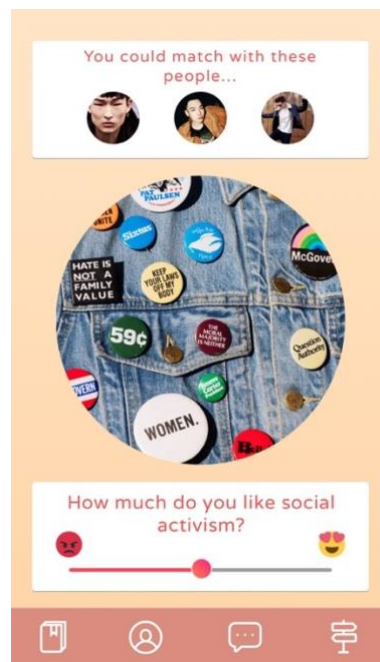
users to show interest in.

Figure 17 - Before: Interest Page Example

Figure 18 - After: Interest Page Example

iii.   Community Hub

All users gave positive feedback on the community blog section and thought the idea of having user generated content was interesting and entertaining. One user pointed out that when tapping the 'Contribute' button a pop-up states to send stories to an e-mail address and that was disappointing. I agree with this and also think that it goes against good usability to bring a user outside of the app when they don't have to. In the new version, when users click the contribute button they will be able to write a post inside the app and send it to be approved by a moderator and then published to the community.
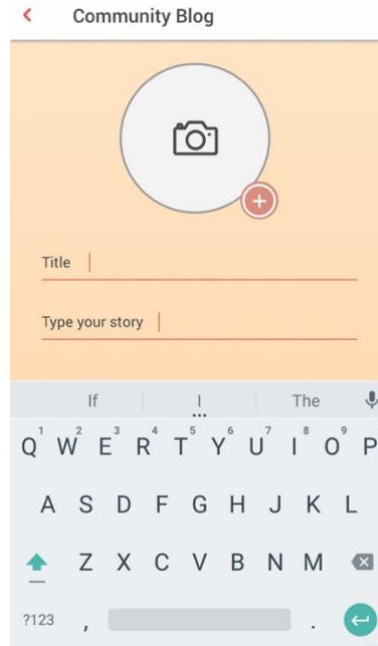
Figure 19 - Contribute Page

iv.   Summary of Usability Tests

Overall, the usability test provided excellent feedback and pointed out issues that would have been challenging to spot as the designer and creator of the app. Validation for the concept and the implementation of better settings representing gender diversity, interest matching with an emoji slider, the community blog, and colour scheme were accepted positively.

Conclusion

Through this research study and its participants, it was possible to clearly define where users experience barriers or negative experiences due to the design of current popular dating apps. With the help of participants from diverse backgrounds, I discovered that some of the main problems residing in current apps revolves around the concept of

communication. Communication between designers and their users, as well as

communication between users within dating apps.

Many people who use dating apps right now are feeling excluded and left behind.

A major part of this is due to the fact that the teams building these products are not

diverse and the methods in which they create products is not realistic because it does

not understand its own audience.

> "It's not that their founders intended to build platforms that cause harm. But every digital product bears the fingerprints of its creators. Their values are embedded in the ways the systems operate: in the basic functions of the software, in the features they prioritize (and the ones they don't), and in the kind of relationship they expect from you." (Wachter-Boettcher, 2018, pp.149-150)

Following inclusive design principles means involving these users in the process so

these kinds of mistakes do not happen in the first place. By listening to our users and

using empathy we can avoid creating products that make people feel excluded.

Going forward with this project, I would conduct further research studies that

would include an even wider audience, with a focus on people with disabilities to

understand how they use dating apps. The next steps for this project would be to secure

funding in order to hire a team of people who could develop the product even further

from important features, accessibility, and marketing. In this step it is absolutely critical

to hire a diverse team of people that represent a diverse world and the people who are

using dating apps, so we can build a product together that represents everyone and

excludes no one.

Inclusive design principles strongly promote the use of open communication, collaboration, and empathy when designing a product. Using these principles, I was able to identify specific barriers that affect not only how people communicate online, but how they will take these relationships offline in to the real world. It is my hope that laying out these guidelines and research methods will demonstrate to businesses and organizations not already following inclusive design practices how simple, effective, and beneficial it is for all parties implement inclusive design strategies into their business and design models in order to build products with empathy and inclusion in mind from the beginning to the end of the design process.

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Prototype Link

https://invis.io/EUMYA5GDVF9