

Improving knowledge of Street Harassment through Empowering UX Design

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Abstract

Street harassment is prevalent amongst Irish society and globally with almost 82% of women having experienced it before the age of 17 and globally that figure is almost 82% [28]. Street harassment is often classed as gender-based violence. According to Bourke et al (2015), there is a need to educate and improve people's knowledge of street harassment, including defining it [2]. Specifically there is a need to empower victims, most commonly women about the issue in order to combat the problem. This account illustrates the design journey to produce the SH Eire interactive handbook that aims to improve people's knowledge of street harassment through empowering UX design. Lastly, the results are discussed and investigated to highlight any implications and possible future works.

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Keywords

Street harassment, empowerment, education, gamification, user experience.

Introduction

Street harassment is unfortunately a part of the journey of growing up for many with 88% of Irish women had experienced street harassment before the age of 17 [28]. Street harassment, harassment and sexual violence are forever appearing in the media. Research has shown that globally almost 100% of women have experienced street harassment by the age of 30 [28]. The most common forms of street harassment women face are inappropriate touching (23%), being followed (20%) and being forced to do something sexual (9%) (Stop Street Harassment, 2014). The Hollaback! Study carried out by Livingston in 2015 found that 71% of women globally had reported following as the main form. In Ireland 64% of women reported having been groped or fondled in 2014 [28]. There is an issue with reporting and defining street harassment in Ireland [2]. This is further evident as the SAVI (Sexual Abuse and Violence in Ireland) reported that many people do not report harassment out of shame, confusion about what is worthy to report [30]. In 2014, the Stop Street Harassment (SSH) organisation commissioned a 2000-person survey targeting both men and women. It was found that 43% of men had experienced sexual harassment and or assault and was more prevalent among those who identified as LGBTQIA+ [45]. The most common form of harassment they faced was homophobic and transphobic slurs. Street harassment impacts all genders with women more likely to be the victim [2,28,30].

Bourke et al conclude in their findings that there is a need to empower and inform women regarding street harassment [2]. Therefore, this study will investigate how to improve a person's knowledge of street harassment in Ireland through empowering UX design.

Background & Other work

The Hollaback! street harassment application aimed to empower its users through empathy [1]. It is a crowd-mapping based app which allows its users to pinpoint places they experienced or witness street harassment. There has been problem with this application such as not having "friendly UI" according to known user on the AppStore, 2018. According to Weiss the application fails to empower its users [49]. The basic definition of empowerment is to give someone power over a certain situation [26]. Empowerment is the process of gaining power over decisions and resources. Wang and Burris explain that empowerment includes at least four kinds of access: access to knowledge, access to decisions, access to networks, and access to resources [48]. According to Ladner, empowering design ensures that the users of a technology are empowered to solve their own accessibility problems [26]. This research study aims to increase people's knowledge of street harassment through empowering user experience design.

Design Process






				
Empathise	Define	Ideate	Prototype	Test
<ul style="list-style-type: none">• 4 competitors• 88 person survey• Desk research• Campaigns• Media articles	<ul style="list-style-type: none">• Persona• Empathy Map• Scenario• Problem statement	<ul style="list-style-type: none">• Sketching• Paper prototype• Low-fi prototype	<ul style="list-style-type: none">• Digital prototype• Guerilla test• Design iterations	<ul style="list-style-type: none">• Pilot test• Final test• Evaluate results• Measures, SUS, knowledge and empowerment

Figure 1. Design process adapted from NNGroup Design Thinking 101

The design process followed that of the design thinking model by the NNGroup as well as combining user empowering design (UED) processes [14]. The first phase is to understand through empathising with the users to help define where the problem exists [14]. This included doing a competitor analysis to highlight pain points within the current market. Further empathising was carried out through online surveys, looking as media articles and campaigns in relation to street harassment.

Empathise

During the exploratory phases, four street harassment based apps were discovered. However, both applications have ceased operation in Ireland with Shapp been taken off all app stores. The Hollaback app is a crowd-mapping based app where users can pinpoint areas that they have experienced or witnessed street harassment . Its aim is to increase mobility of those who experience harassment according to their website Hollaback!.com but, there’s no evidence of that according to [49]. Shapp is a video recording app which is to be used to film when you are in an uncomfortable situation. This highlights that there is gap of informative harassment based apps in Ireland. There were several pain points discovered when doing a heuristic evaluation of the applications which can be seen in the diagram below.



	Function	Available in Ireland	Defines Street Harassment	App Type	Main attribute	Design	Match between system and the real world	Aesthetic and minimalist design	Help users recognize, diagnose, and recover from errors	Help and documentation
 Shnapp	Video Recording app to be used when you feel you are in an inappropriate situation that may be considered harassment.	✓	✗	Operates as a street harassment diary for people to record incidents.	When you're recording the screen appears black as if your phone is off. Doesn't work!	Outdated, Poor	App does not communicate to the user. Hardly any language to be seen throughout app.	Lacks information and design.	Cannot undo errors such as delete videos or notes.	Lack of onboarding and app does not function the way it should.
 hollaback!	Crowd mapping app, users pinpoint areas they have experienced any kind of street harassment.	✓	✗	Crowd mapping app, users pinpoint areas they have experienced any kind of street harassment.	Data pool to highlight that street harassment is a serious problem. People can submit a story or support peoples comments	Outdated but mediocre	Again app does not communicate to user but when a user goes to submit a story a list of possible SH acts appear quite digestible.	Design is outdated and could benefit with more info for users.	Contains error messages but hard for users to undo actions (find)	Lack of onboarding or general instructions makes it hard for users to complete task.
SafeStreet	A crowd mapping app for SH	✗								
Protibadi	A crowd mapping app for SH	✗								

Figure 2. Competitor analysis conducted of the 4 mobile applications discovered during exploration of the market.

Empowering design principles by Riddles 2020

Riddles 2020, Aspects of Empowering UX Design

Make the user's life easier	Goal- focused	Invisible UI	Forgiving	Consistent	Smooth Onboarding	Meaningful delight
Heart of empowering design. The achieve this know your users and their problems and preferences.	The design should be centred around the user accomplishing their tasks. Strip away any unnecessary features.	Functions and controls should be intuitive without having to draw attention to themselves. Ensure a clear path for the user to reach their goal.	Ensure there are warnings before critical actions or potential errors. Use friendly communication throughout.	Consistent UI is essential as it cultivates security and trust.	This is where first impressions are made. Use it to highlight key features in a timely manner.	A happy user is a productive user. Ensure the delight does not take away from usability. Polished aesthetics, human tone and small discoverables.

Figure 3. Table displaying the empowering design principles by Riddles 2020 [40].

The image above displays the set of principles Riddles 2020 states is necessary for a user experience design to comprise of to ensure user empowerment [40]. However, these principles seek a seamless experience, Frank & Gallula emphasise that empowerment is a process that is ever lasting [11,40]. To ensure empowering design, those seeking empowerment in relation to the product should be part of the design process [11, 26, 48]. According to Ladner, empowering technology ensures the users are empowered to solve their own accessibility problems regarding the issue [26]. The design process was comprised of principles from the researchers mentioned in this section, in a way that ensured the design incorporated variations of empowering design.

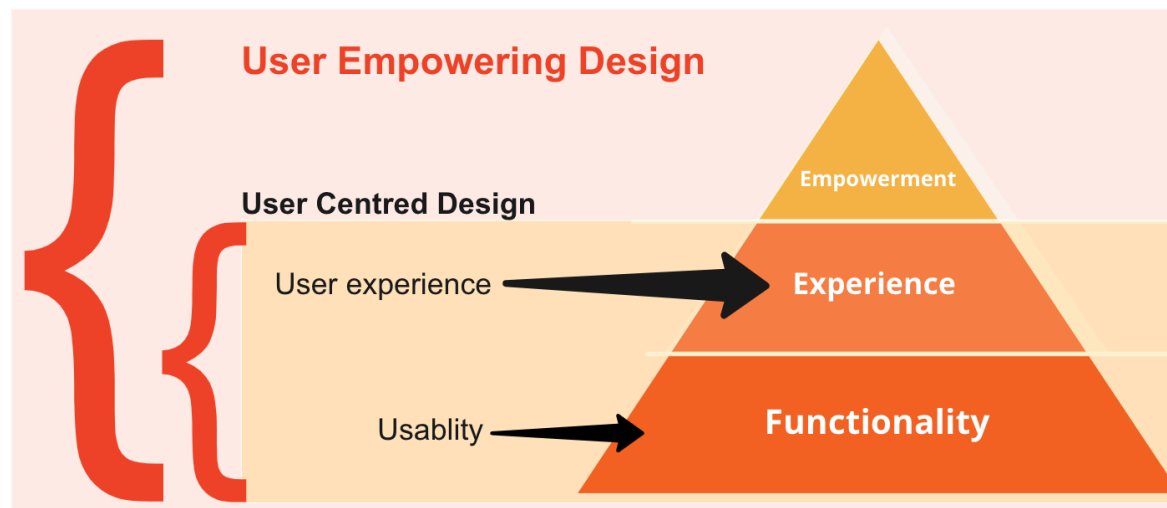


Figure 4. Displays Frank & Gallula empowering design model

User Empowering design (UED)

This User Empowering design (UED) was created by Frank and Gallula in 2018. It was created by building upon a collection of design principles and rules that aim to create Human-Centred interaction (HCI) that are set to empower [11]. The prototype was created using the online collaborative prototyping tool, Figma. In order to carry out this experiment, an interactive handbook was created about street harassment in Ireland named SH Eire. The aim of this prototype was to improve a user's knowledge of street harassment using empowering user experience design principles.

Defining the problem



Figure 5. Persona created named Shauna to represent the target user group



Figure 6. Shauna's problem statments illustrating her frustrations

Persona, Empathy Map & Problem Statements

Personas are created to present a realistic and reliable representation of the target users. The persona was created from the collection of both qualitative and quantitative data found during user research [37]. Personas allow for deeper empathy and understanding of the user group. In the case, due to the sensitive nature of the research topic, personas are a good measurement tool as access to end users was limited.

An empathy map was created from the qualitative data gathered from the desk research and the online survey. It was made to gain further insight and empathize with the target user (college students).

Problem statements were made to conceptualise the Shauna's problems further in relation to the research question. This also adds further depth to humanising the persona.

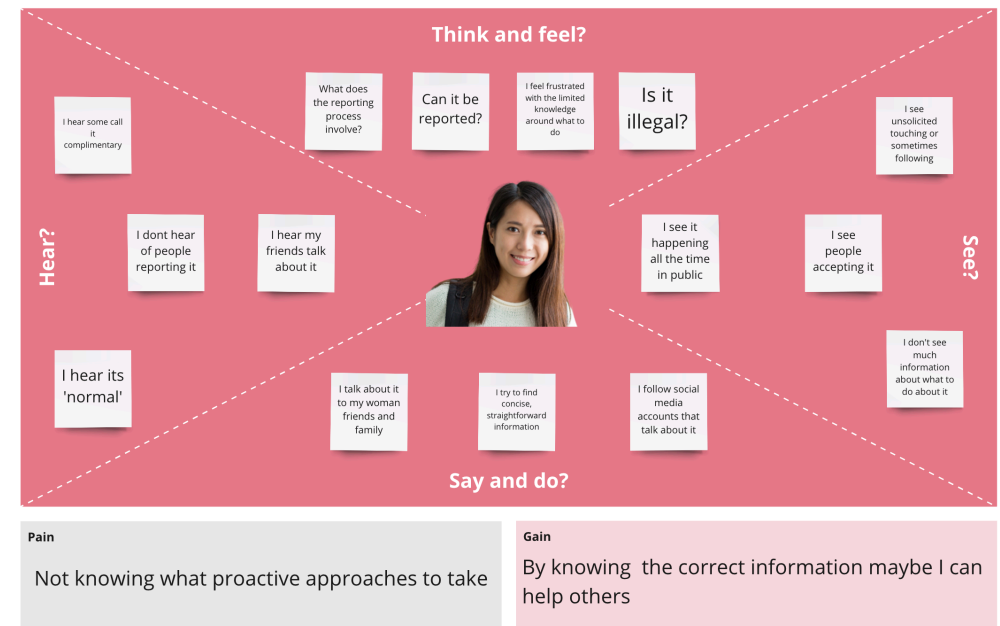


Figure 7. Shauna's empathy map

Ideate, building the information architecture

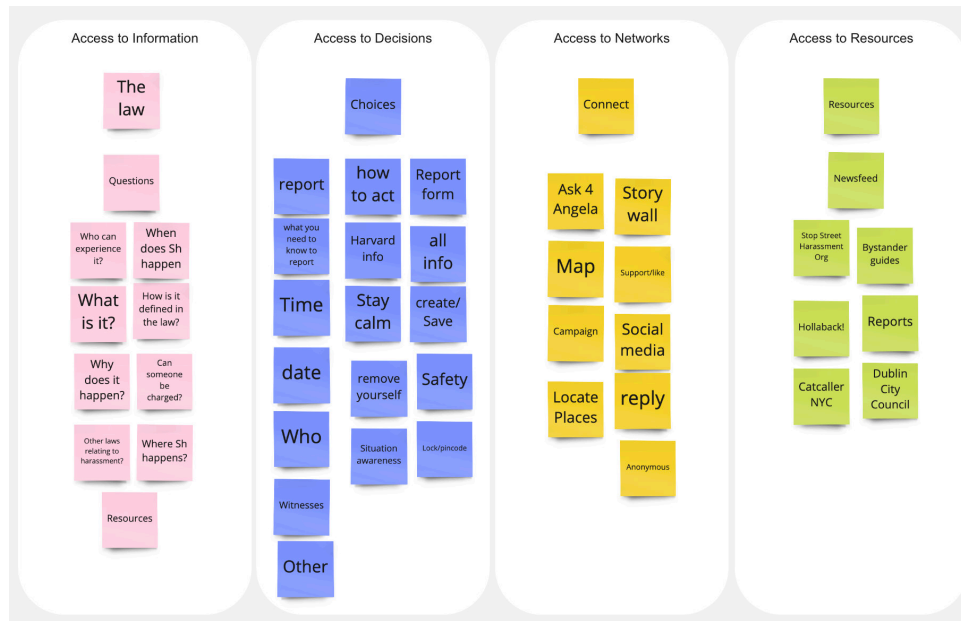


Figure 8. Closed Card Sort

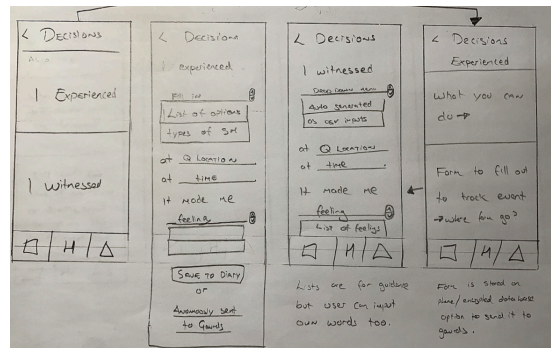


Figure 10. Rough sketching of prototype as part of ideation phase

First a card sort was conducted. Card sort is part of the user experience research methods where words or labels are grouped together according to criteria that makes sense to the individual [34]. According to the NNGroup card sorting can help understand knowledge structure which, can help create the information architecture [34].

Two rounds of card sorting were done. The first round was an open card sort. Words for the card sort were gathered from the competitor analysis, empowerment principles from Wang and Burris as well as any themes and ideas found within media articles and campaigns. The second card sort was a closed card sort. The Wang and Burris empowerment principles served as the foundation of the prototype with each principles acting as a section or group. This was done to ensure empowerment is a central part of the design. The other words and features were then sorted into these four groups, access to 1. Resources, 2. Networks, 3. Decisions, 4 information.

As stated above, the card sort helped to illustrate the information architecture. The information architecture was then outlined on Miro the collaborative whiteboard software. This served as a skeleton for the SH Eire prototype.

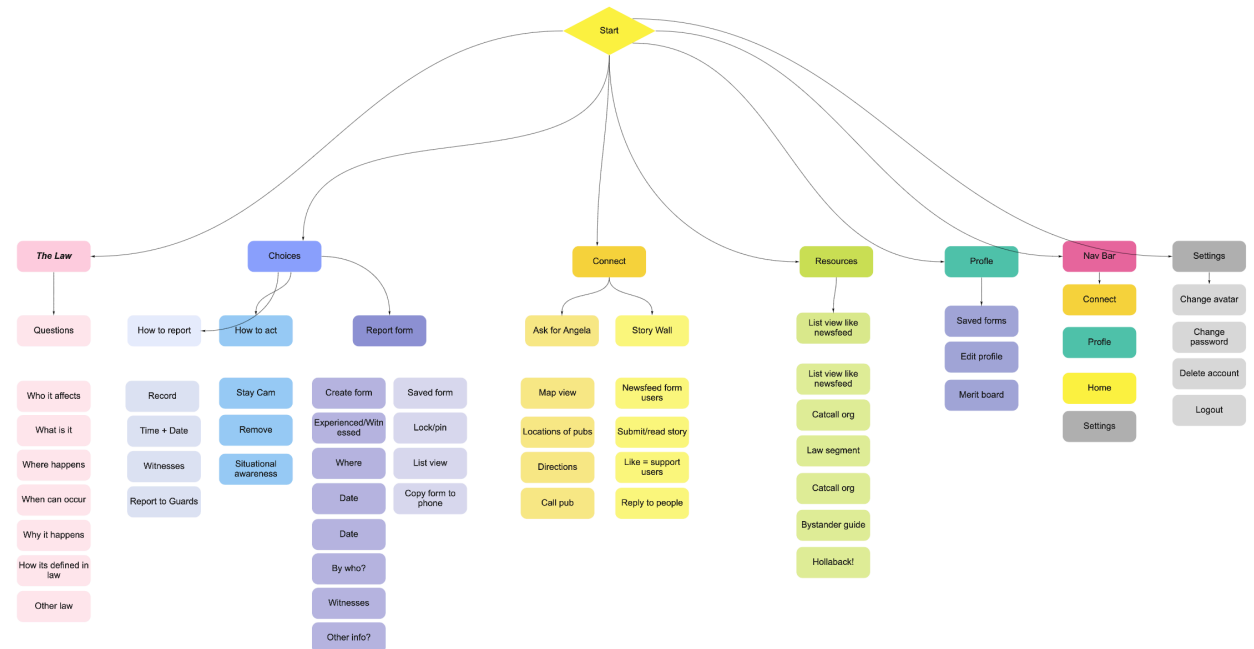


Figure 9. Information architecture created on Miro

Ideate, low fidelity prototyping

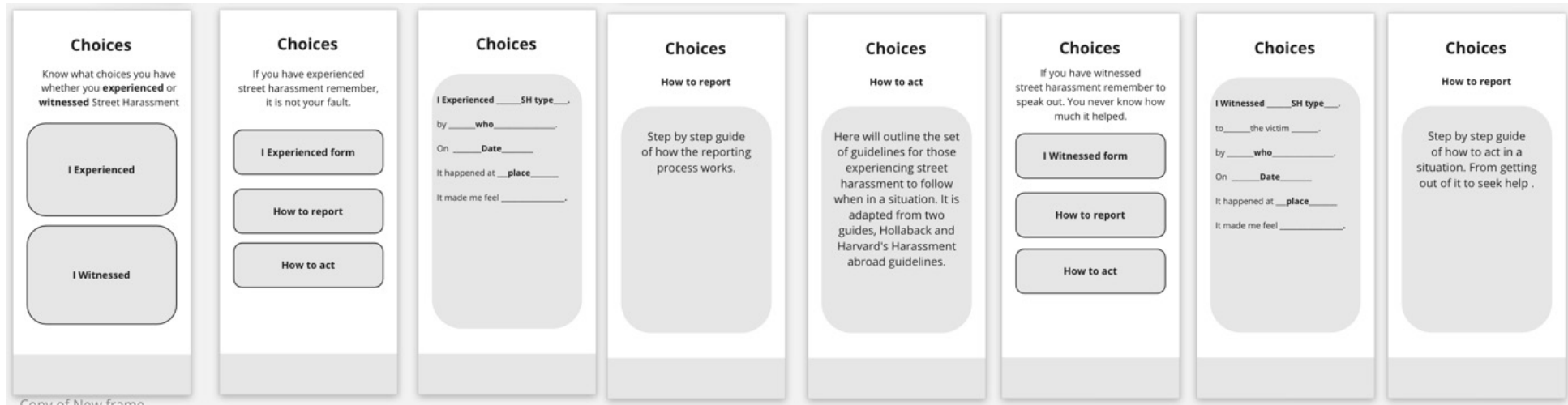


Figure 11. Low fidelity prototyping created to visualise the information architecture of the Choices section

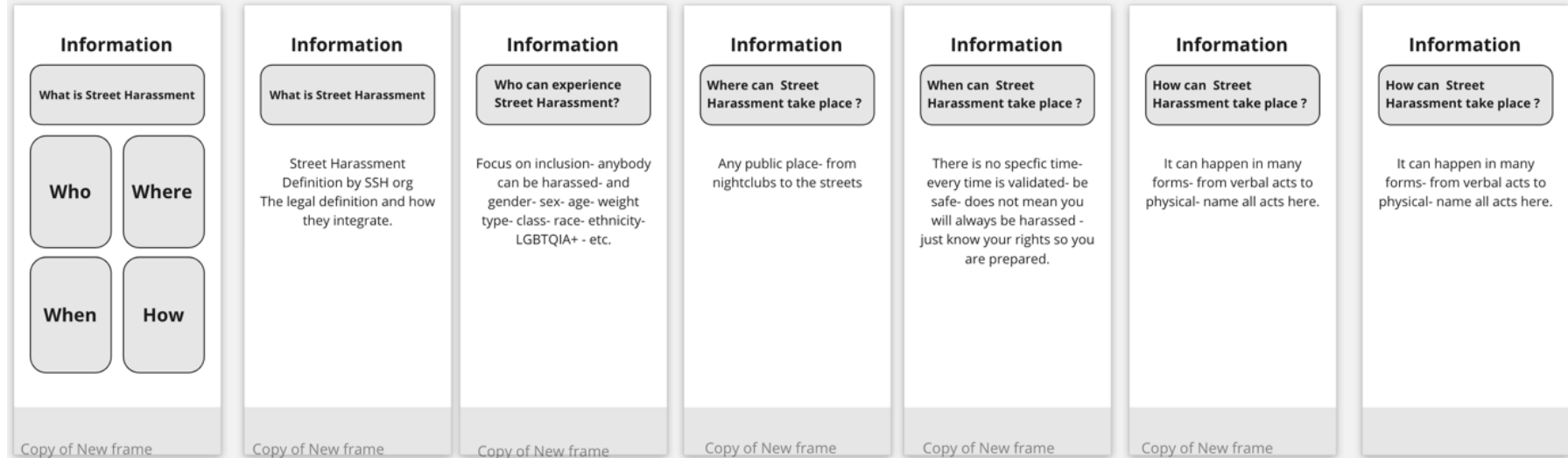


Figure 12. Low fidelity prototyping created to visualise the information architecture of the Information section

Introducing design styles, illustrations and colours

Roboto Thin
Roboto Light
Roboto Regular
Roboto Medium
Roboto Bold
Roboto Black

Figure 13. Roboto font

Roboto Font

Roboto is a Google font and is a sans-serif font. Google states it is the most popular font as of March 2021. Roboto was the chosen font for this design because it allows letters to take up as much space as necessary. This allows easy readability for users.

Pink as the main colour component

Pink was chosen as the primary colour because pink is a colour that represents connections according to Adobe [57]. Pink is a powerful colour and can be seen to represent “passion, youth and love” whereas dusty or toned down pink comes across as “calming and neutral” [57]. According to Adobe, using the colour pink can symbolise change as the colour pink was once associated with boys but is now associated with girls. Therefore, this colour is very suiting for the topic of the SH Eire product.



Figure 14. Illustrations created to bring a sense of friendliness and community

Illustrations

The illustrations were designed with the target user in mind. It was important to be inclusive (give users a sense of belonging) and friendliness in the design to help ease users into the application. The designs were created keeping in mind the lasting impact empowerment principle by Frank and Gallula as well as creating a meaningful delight [11,40].

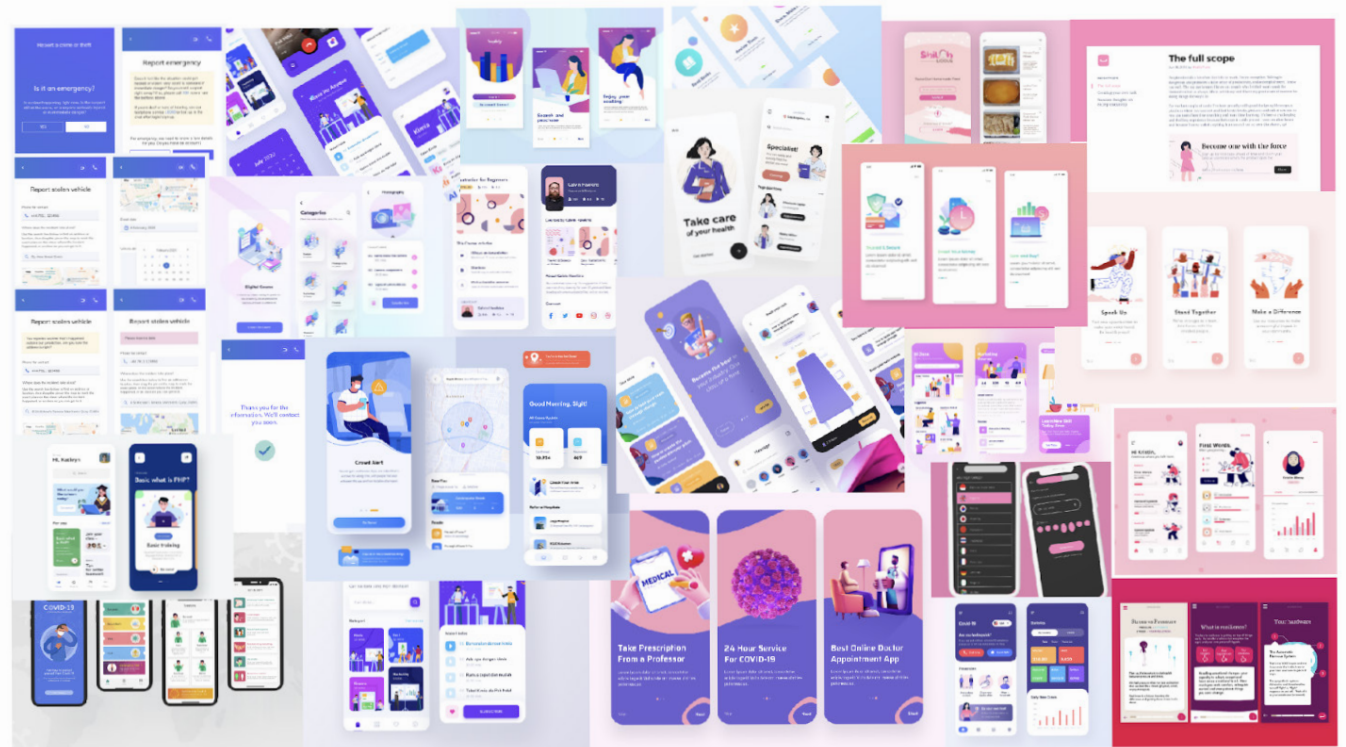


Figure 15. Moodboard of designs and colours

Gamification

Gamification can be used as an educational tool to increase user engagement and motivation [23]. By definition gamification is using game-based aesthetics, mechanics and game thinking to capture people's attention, motivate user's actions, enhance learning to solve problems [21]. Gamification was used to shape the user's experience by sectioning the information into digestible parts. It was important to ensure that the gamification only served as an asset for digesting the content and to promote learning, given the topic of the product.

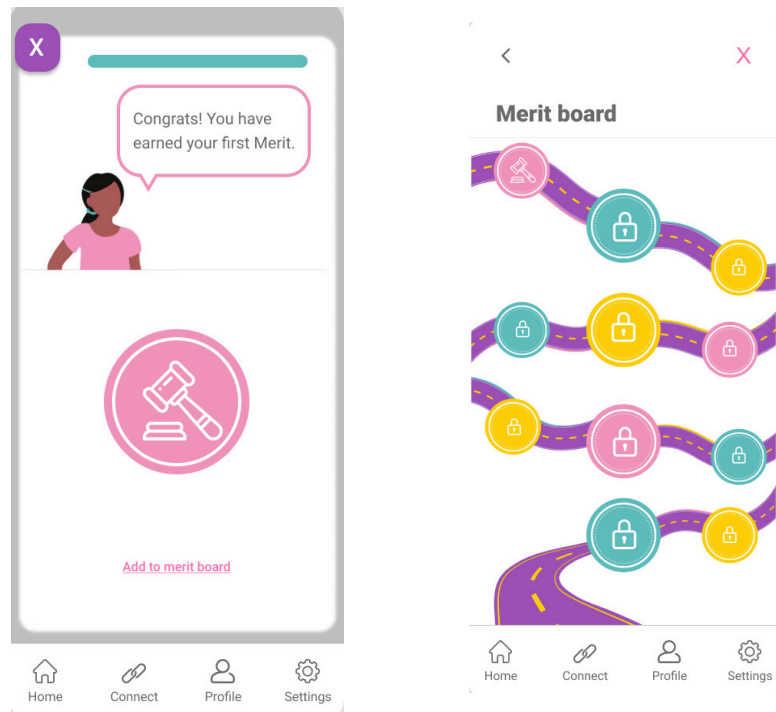


Figure 18. Merit Board where users can collect awards throughout app

Merit Board

As part of the gamification of the prototype, a merit board where users can unlock merits as they complete certain tasks was created. The merits are displayed on a road to represent the journey the user is taking, either that be a journey of empowerment, enlightenment or educating themselves about street harassment.

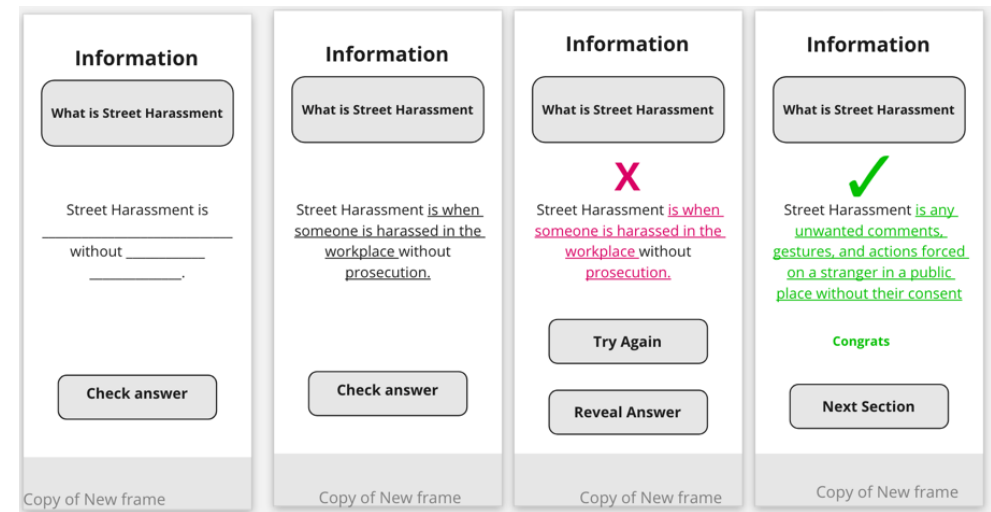


Figure 16. Gamification applied in low fidelity prototype

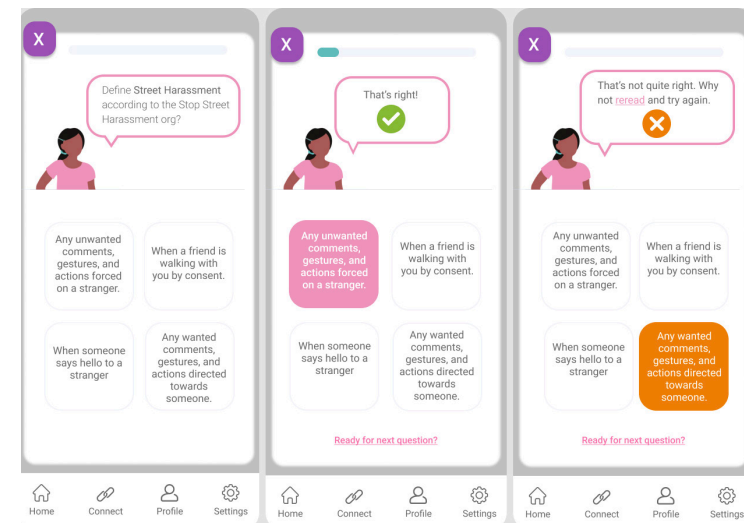


Figure 17. Gamification applied in final prototype

Onboarding

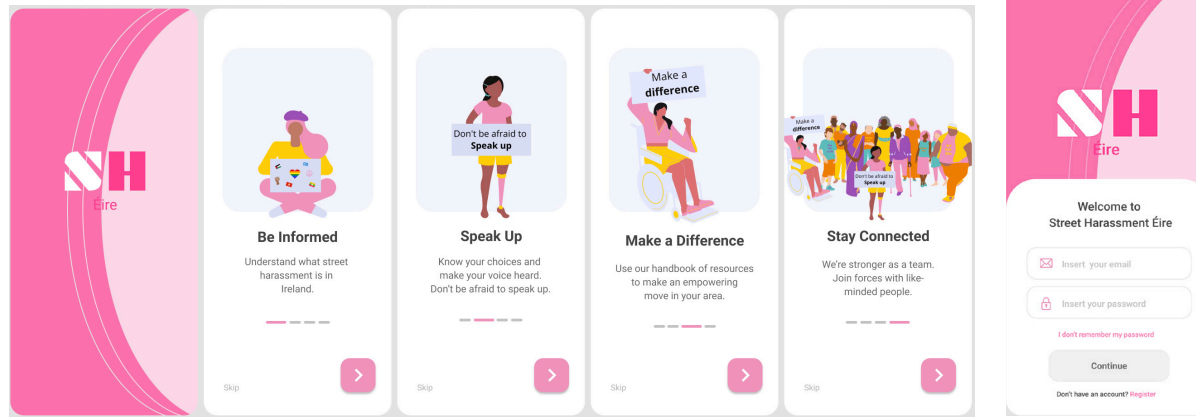


Figure 19. Feature promotion onboarding

As shown above the 'feature promotion', educates the user about what the application will entail [20]. After sign-in the user is presented with the 'instructions' component part of onboarding, [20]. This set of onboarding screens pinpoints key features of the application to help instruct the users to use the application. This set of onboarding screens were added after several rounds of pilot testing.

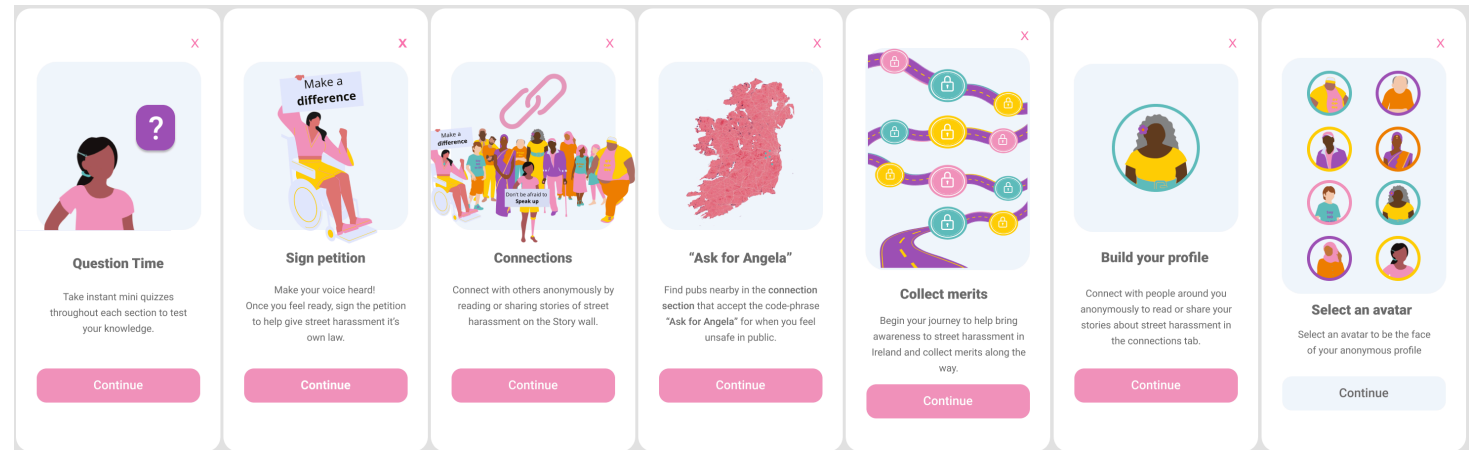


Figure 20. Instructional onboarding

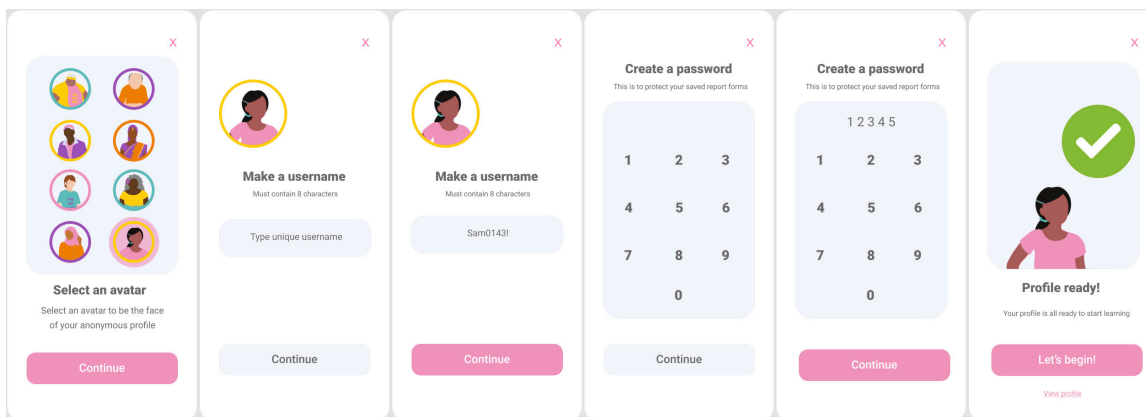


Figure 21. Customisation onboarding

The onboarding is an important part of user experience design, particularly empowering UX design [40]. Onboarding is described as “the process of getting users familiar with a new interface” [20]. It is used to help a user understand the inner workings of the app by highlighting key features as well as complete user setup. The onboarding was split up into three parts according to NNGroups onboarding components, 1. Feature promotion, 2. Instructions, 3. Customisation. The sign in screens after the ‘feature promotion’ onboarding set, to motivate information exchange amongst the users.

The onboarding then eases into customisation of the application. Here, users can select an avatar and username to keep anonymity and create a unique password to help protect any report forms they may create. This can be seen on the following page. The aim of this onboarding design was to ensure a “smooth onboarding” [40]. Smooth onboarding are a vital part of empowering user experience design [40].

SH Eire prototype section by section

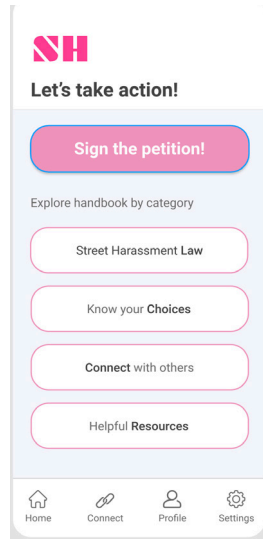


Figure 22. Homepage

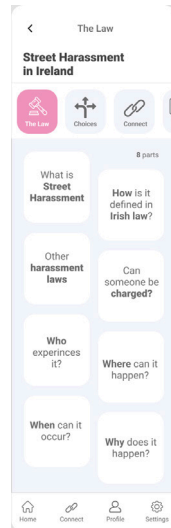


Figure 23. The Law section

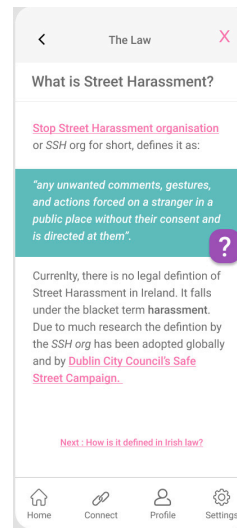


Figure 24. Example of how questions are displayed with colour introduced to highlight key information.

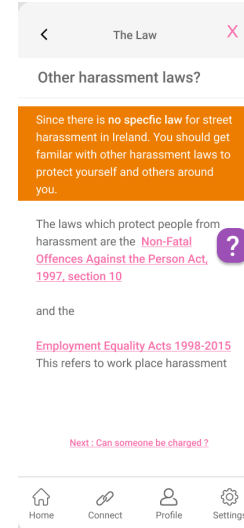


Figure 25. Example of how questions are displayed with the use of an orange band.

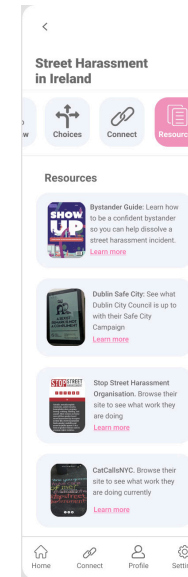


Figure 26. Resources section list view

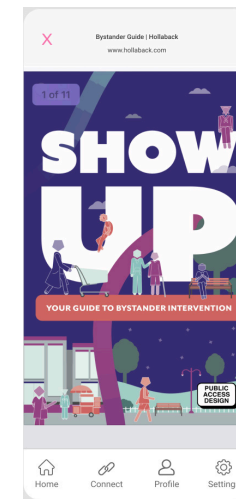


Figure 27. Resources for the bystander guide. Opens up web within app to not disrupt user flow

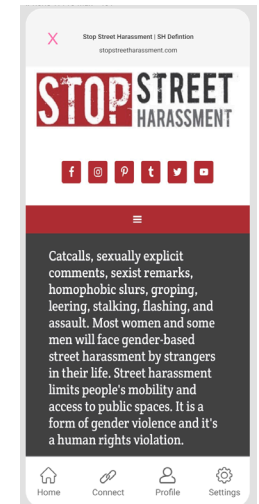


Figure 28. Resources web page showing the Stop Street Harassment website

1. Access to knowledge 'The Law'

Access to knowledge includes giving the user all information or knowledge necessary on a topic such as street harassment. This information included defining what street harassment is according to the most cited definition by the Stop Street Harassment organisation.

2. Access to Decisions 'Choices'

The choices section was influenced by the access to decisions principle. It is important to inform the user enough to help them make "informed decisions" [26]. This can be seen in the below image. From user research it was found knowing how to report an incident can be an issue as well as possible ways of knowing how to deflate the situation.

3. Access to networks 'Connect'

The choices section was influenced by the access to decisions principle. It is important to inform the user enough to help them make "informed decisions" [26]. This can be seen in the below image. From user research it was found knowing how to report an incident can be an issue as well as possible ways of knowing how to deflate the situation.

4. Access to resources 'Resources'

The choices section was influenced by the access to decisions principle. It is important to inform the user enough to help them make "informed decisions" [26]. This can be seen in the below image. From user research it was found knowing how to report an incident can be an issue as well as possible ways of knowing how to deflate the situation.

SH Eire prototype section by section

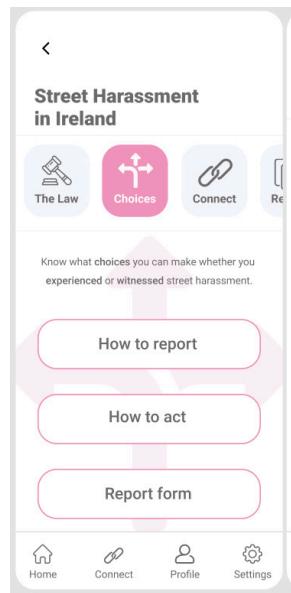


Figure 29. The choices tab where there are 3 options

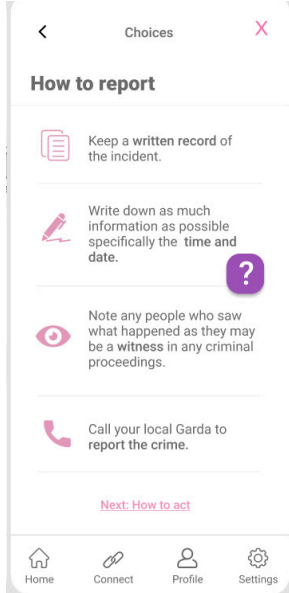


Figure 30. How to report page

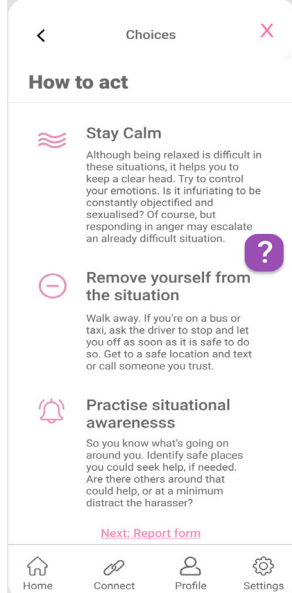


Figure 31. Information gathered from Harvard Abroad Guide[44]

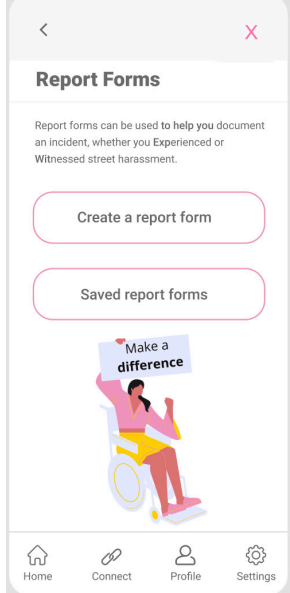


Figure 32. Report forms to get people familiar with reporting information



Figure 33. Saved report forms are password protected for extra security

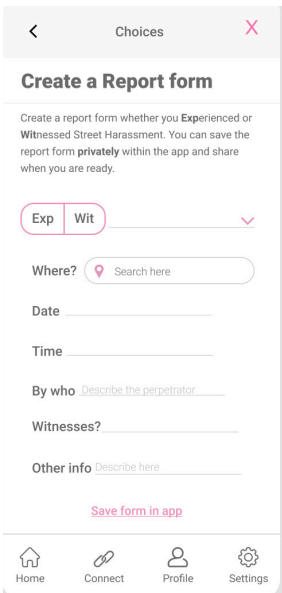


Figure 34. Users can make a form whether they experienced or witnessed street harassment

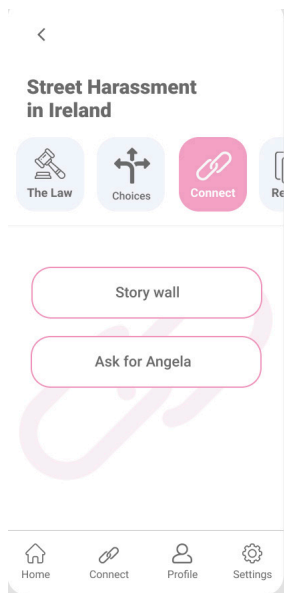


Figure 35. Connect section where users can connect with others

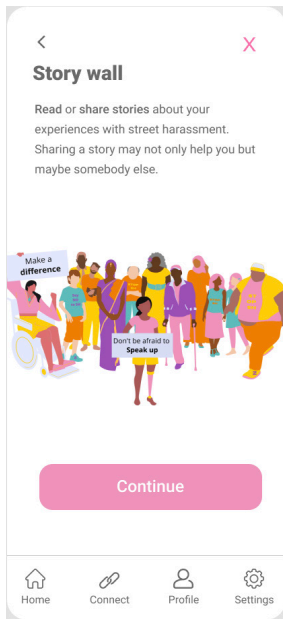


Figure 36. Story wall similar to a Facebook newsfeed

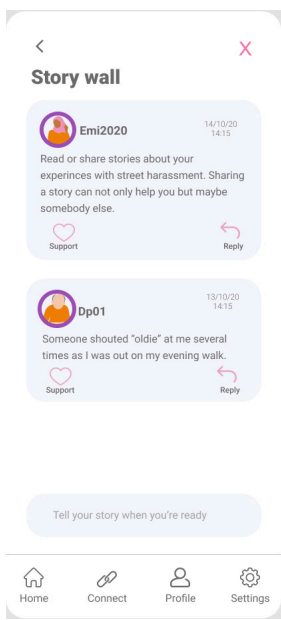


Figure 37. Here users can read or write stories and offer support to others

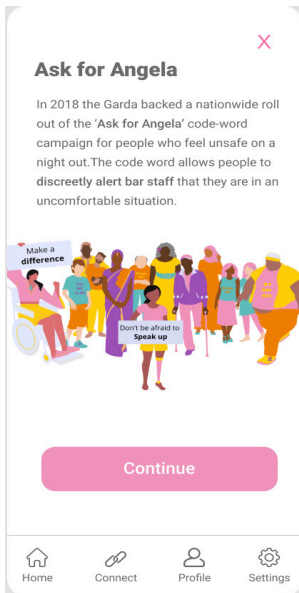


Figure 38. This was inspired from various media articles



Figure 39. Users can navigate through the map for places nearby

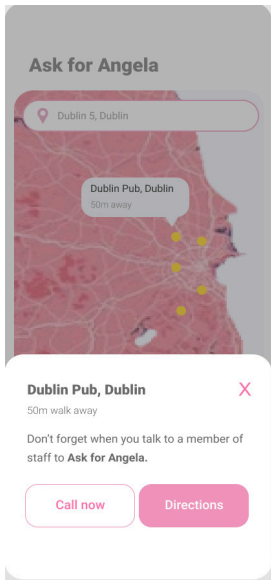


Figure 40. This allows users to get the assistance they may need

Discussion and Conclusion

In terms of the research question ‘Knowledge of street harassment can be improved using empowering user experience design principles’ the answer found is that when empowering user experience principles are applied, knowledge of street harassment is improved. As research has shown this is due to the information’s “findability” and “easy access” as some participants of the study pointed out.

Whilst empowering design principles were explored, the exploration for the empowering process was limited due to time restrictions, ethical approval and the lack of real-life interactions. This limits the findings of how affective empowering design can be on an individual. According to Wang and Burris theory of empowerment, it is key to get those you are focusing on empowering to be part of the design and building process. It is hoped that this research may act as a good foundation for further work on street harassment and empowering design principles, should any researcher choose to replicate any experimental parts in the future.

Further works on this study would include to have focus groups with eight to nine people to help strengthen the empowerment of the design. Focus groups are an informal technique that helps identify user needs and feelings by discussing the issues and concerns of the design of the user interface (Nielson, 1997). If more time was available the design would go through several more iterative rounds with focus groups to best cater the user experience for the target user.

Secondly, the exploration of gamification on a user’s knowledge would be most beneficial to this study. It was discovered when testing the low-fidelity prototype that gamification should be added to help promote user motivation and knowledge. Ideally further A/B testing of two groups with 8-10 people would help to examine this. One group would be presented with the prototype with no aspects of gamification and the other with gamification. Users’ knowledge would be tested, post-test and then again, a week later, to compare the knowledge retained.

Thirdly, the testing was carried out remotely, unmoderated with anonymous participants. This was ideal to ensure participants were most calm and comfortable given the nature of this topic whilst also staying within ethical guidelines. However, some issues with testing such as user’s not able to complete the first task on the IrishStatueBook website could have been resolved sooner if moderated testing took place. It could have possibly helped enrich the qualitative data collected.

Lastly, from the research conducted throughout this study, it was discovered that there is an urgent need for street harassment to have its own place within the law. This could be beneficial for reporting purposes and tackling this issue of street harassment in Ireland. This is only the beginning for the campaign to get street harassment recognised as a definite criminal offence. Further work will include promoting awareness of street harassment in Ireland and hopefully securing enough signatures to make a change. Thus, creating further empowerment.

Riddles 2020, Aspects of Empowering UX Design which were applied to the SH Eire artefact

Make the user's life easier	Goal- focused	Invisible UI	Forgiving	Consistent	Smooth Onboarding	Meaningful delight
As discovered there are problems with people finding information in relation to street harassment in Ireland. The SH Eire prototype focuses on improving peoples knowledge of street harassment.	The SH Eire artefact includes only features necessary that are useful for the user to improve their knowledge about street harassment in Ireland.	The goal of this artefact is to improve users knowledge in relation to street harassment and the whole IA was created with this in mind. This was to ensure a clear path for the user to reach their goal.	The language used is informal to ensure friendly communication throughout. Users are warned before they save a report form and can change their profile in settings.	Consistent UI throughout the artefact. There is consistent use of the illustrations to cultivate security and trust. Each section has a similar display page for consistency as well as buttons.	The onboarding was made with a seamless experience in mind. It highlights highlight key features in a timely manner.	Delight was added to the artefact through the illustrations as well as through the human tone of the language used. Discoverables are a component of creating meaningful delight. So this lead to the addition of the final question in the law section asking "whose fault is street harassment?" and users select the only correct answer box which says "Not mine"
✓	✓	✓	✓	✓	✓	✓

Figure 41. Empowering UX Design principles applied

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