StreetHeart: Empowering Homeless Through Art and Technology

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Abstract
Homeless people lack stable housing conditions and often feel marginalised and excluded from broader society. Some charity organizations seek to improve the confidence and self worth of homeless individuals by providing artistic activities, in which impressive artworks are produced. However, much of the artwork remain unseen, due to lack of the resources and technology available to these charity organisations. This is why we designed StreetHeart, a multichannel service. StreetHeart gives the underprivileged the power to upload artworks independently, by using a portable camera device. Their artwork is shared through LED screens placed around the city, reaching larger audiences. By pressing a heart button embedded in the display, passersby can instantaneously send their appreciation and further contribute to the artists via an online store. StreetHeart has the potential to not only increase the self-worth of those affected by homelessness, but also bring them closer to the society.

Author Keywords
Homeless; art therapy; interactive display; social inclusion; citizen engagement; service design

ACM Classification Keywords
H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

First field visit

"The arts table is our most popular activity and people travel from far away to just for that" **-Social worker I**

"Drawing is an intellectual and spiritual joy for me that keeps challenging me" **- Member I**

"They got works sold in our annual exhibition or published in the Big Issue magazine, which was a big thing for us" **-Social worker II**

Figure 1: Art table at 240 Project.

Figure 2: Affinity diagram

Introduction

The definition of a homeless person includes those who do not have a stable, secure, permanent or supportive house. They may live in shelters, missions, abandoned buildings, and in the worst case, on the streets. According to CRISIS[3], homelessness has increased for three consecutive years, with around 185.000 people a year affected in England. The same report identified that 80% of homeless people have mental health problems, they are 13 times more likely to be a victim of violence and 3-4 times more likely to be drug dependent.

Many of those who face or have faced homelessness have a lot of artistic talent and experience. There are some charities and nonprofit organizations offering programmes that promote art activities as a way to improve the wellbeing of homeless people. Some examples are The Manchester Booth Centre (UK) and the Royal Academy Community Art Club (UK), renowned centers that help homeless people to rebuild their life and self-esteem. Previous studies have indicated that art activities encourage people to express themselves, communicate with others and feel more productive [6].

We collaborated with the 240 Project [1] an activity center aimed at improving wellbeing and encouraging underprivileged people to take part in meaningful activities. After interviews, we found that the members of the centre see the art-related activities (painting, drawing and sculpting) as a comforting way of self-expression but also as a way to gain public recognition, particularly through annually organized exhibitions. These findings were consistent with the current research findings [5] [7].

There are other projects that focus on displaying art made by homeless people, such as the Cafe Art (UK) and Art Everywhere (UK). There are magazines featuring their pieces, like The Big Issue (UK), and websites specialized in selling, like ArtLifting (US) and Art from the Streets (US). Although these channels have proven that there is a demand for such solutions, they have failed to integrate the displaying and selling of artwork into a single service. They do not promote independence, as artists are unable to document and upload their work themselves. Besides, getting the art on display through these channels is a cumbersome process. Based on these findings, we identified the need for a more efficient and engaging solution, which we present in the next sections.

Initial User Research

Throughout the project, we collaborated closely with the 240 Project (see Figure 1), an Arts and Health Activity Center in London, which offers a range of creative activities. Before our first visit, we created a mind map based on brainstorming and secondary research. We focused on "factors of exclusions", such as lack of connectivity, education and social support and sought to reflect on our own preconceptions. We used the insights from this session to elaborate a set of interview questions.

During this first field visit, we conducted two semi-structured interviews with social workers, six contextual interviews with the members, and contextual observations. Our focus during this initial inquiry was broad, and included our selected population's use of technology and activities in the centre.

After the visit, the data was summarized and organized in an affinity diagram (see Figure 2). We identified ten categories, four of them being related to the art (Activities in the centre, The meaning of art, Promoting artworks, and Lack of storage). Based on these findings we limited our design scope to supporting creative activities and solving the following insights.

Figure 3: Card sorting method

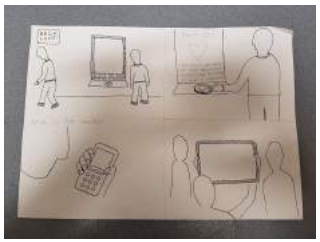

Figure 4: Sketched scenario

Second field visit

"Art is my life, it's very therapeutic. Posting my works online got me a painting job once. It's always good to get exposure because it can bring other possibilities"
-Member II

"During the year we produce more art than what we can exhibit, because it requires a lot of planning. I try to update the works on our website, but I have very limited time"
-Social worker II

We identified that there were many skilled artist visiting the centre and art-related activities were a very important part of their lives. Also, we came to know about the annual exhibition held in the center to display the artwork produced throughout the year. Social workers described the annual exhibition as a stressful task for them and stated that the artwork piles up in storage in the meantime.

Generating Ideas

Based on the insights we started to generate ideas. Our group used the brainstorming method "me, we, us"[4], a facilitation technique that consists of three steps: everyone writes their ideas individually using sticky notes, then by discussing with the others the ideas are refined, and finally ideas are combined together. We came up with 62 solutions and by voting we narrowed it down to four.

Then, we sketched high level scenarios and storyboards not to impose our preconceptions of design details to the users.

The scenarios were:

- Enabling members to document their artworks using a simple device
- Visualizing the life in the centre through a physical display
- Coordinating exhibitions with other centers through a shared calendar system
- Allowing the public to donate and print the artwork directly on site

Moreover, inspired by IDEO's 51 methods [2],we built a set of cards to trigger discussions with the members of the center (see Figure 3). The cards had two sets: one about type of art produced (drawing, photography, hand crafts, music, sculpting and drama) and another about the motivations behind their creative process: self-expression, learning new techniques, selling art, getting exposure, being in the community, going to exhibitions, displaying in the center, getting art supplies.

Refining User Needs

We went for a second field visit at the 240 Project and brought the cards and scenarios with us. The focus of this second contextual study was to gain a deeper understanding of what art means to the members and to collect feedback on the scenarios. We conducted two semi-structured interviews with social workers and five with members.

One problem we identified during the second visit was that scanning the art pieces was very time consuming for the social workers. Another problem was that members did not feel valued for their artwork. They stated that they would love to show their work to a larger audience. According to the social workers, it had a significant and lasting impact when a member had an art piece sold or published.

Based on these insights, we combined the needs and limitations of social workers and members in one single solution. The creation of the final solution started with a list of nine open questions we needed to refine. We brainstormed around each of these questions, created personas, sketched ideas (see Figure 4), and prioritized features using the Evaluation Matrix. The solution is described in the next section.

Final product

Our final idea, StreetHeart, is a multi-channel service that empowers artists who have struggled with homelessness to have their art seen, supported, and purchased by a wider audience. The concept bridges three different user groups

Figure 5: Members use a tablet to document their art

Figure 6: Moderator reviews pending requests

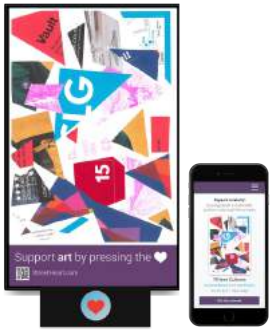

Figure 7: Public interacts with digital screen and online store

through four interconnected channels:

1. The members of the centre use a portable device with a camera, like a tablet, to document their artwork and upload it for verification (see Figure 5). The interface is very simple and straightforward, with very few steps to facilitate interaction.
2. A moderator, possibly a social worker in the centre, verifies the request on their computer and sets a price for the artwork. (see Figure 6), Once approved, the piece is displayed in LED digital screens distributed around the city for the passersby to see.
3. The public passing by the displays can interact by pressing the heart button embedded in the screen (see Figure 7). This action serves to demonstrate their appreciation for the art and feedback is later on sent to the artist.
4. The public can access an online store(see Figure 7) to see the full gallery of artworks and to purchase them in different formats (mobile screensaver, original, digital print). Depending on the chosen format, that they can download it or receive at their address.
5. The member of the center receives a text message containing a daily summary of how many people sent appreciation for their art and how many pieces were sold.

Technical and Design Specifications

The process for the member to document the artwork consists of taking a picture with an easy-to-use portable device (a tablet) and inserting details (title, author, description, measures and material). The device is placed in the centre, where technical guidance can be provided by the social workers and only one device is needed. The interface is as simple as possible, to support those who have limited technical knowledge. In this way, the artists have a channel to publish their works without the need of owning the technology or becoming dependent on people scanning it for them.

The moderator can login to a webpage and access pending requests, the gallery of artworks, and archive of pieces not in display. Before approving a pending request, the moderator is responsible to set the final price for selling. Our field research showed that the social workers are the most appropriate for this task, because they are aware of what happens in the center. With this process, we aim to reduce their current workload, since they only need to review requests. Also, it allows an extra layer of control on the artwork to be displayed for the public.

The LED digital screens spread around the city are similar to outdoor screens for advertisement and should not be affected by the rain. They are equipped with WiFi, and display the artwork selected by the moderator, rotating the displayed image every 30 seconds. There is a link to the online store below the image. The heart button is embedded in the screen, at reach of the pedestriansâĂŹ hands and has the message "Support the art by pressing the heart". Once pressed, it gives visual and audio feedback. The screen then shows a thank you message, and introduction of the artist and a brief explanation about the project. Our goal is to get people interested in the content before knowing its origins. These digital screens can be placed in creative districts or tourist attractions.

The online store functions like a mobile gallery that people can access at any time. This way members of the public can browse through artworks and buy them if they are interested. We allow the purchase of different formats, to be chosen depending on the budget. By notifying the artist when people appreciated their artwork in the streets or when a piece was sold, we can give direct recognition, increasing their motivation. We decided to give this feedback

Figure 8: Low fi prototype

User evaluation (third visit)

"It can empower our members and give them a chance to feel valued without technical savviness." **-Social worker I**

"It creates exposure for my work, which is most important. I don't even mind if the feedback I receive is good or bad." **-Member III**

"It is so discouraging to not have your art showed, but if someone goes there and gives you a heart... it doesn't force a business, it is just simple, immediate." **-Social worker II**

as a text message, because our field research showed not many members had access to mobile data.

User evaluations

Given the multiple channels of our solution, we built low fidelity paper prototypes: three for the interfaces and one for the display. For the interfaces, we sketched wireframes on paper and later used Balsamiq prototyping software. The group members who were not involved in the wireframe creation, evaluated the prototype using the 10 usability heuristics by Nielsen. Then, for the physical prototype, we used cardboard, printouts and a squeeze ball as a button (see Figure 8).

We ran end-user tests in two different settings: at the 240 Project and at a public space (we chose the main hall of University College London). For testing the physical display, we observed the interactions of people passing by during one hour, In addition, we conducted in-situ interviews with 6 people that spontaneously interacted with it. After the interview, we also asked them to think aloud whilst interacting with paper printouts of the mobile interface.

People passing by were very curious when they saw the prototype. When we interviewed them, they felt very positive about the concept, they said they would be glad to help the artists by sending their appreciation and if the artwork was good, they would surely buy it. They suggested to highlight more the purpose of the project and to include the possibility of micro-donations through the online store.

For the evaluation in the activity centre, we created a demo video of ourselves interacting with physical prototype. We showed this video to two social workers, we conducted semi-structured interviews and we asked one of them to think aloud through the moderator interface. The social workers liked the idea of giving the responsibility of documenting their work to the members themselves, as this would decrease their workload. They were positive about exhibiting the artwork in the street, because currently the center only has resources to host one exhibition per year, which is not enough for the amount of artwork produced.

We also did contextual interviews with the members of the center. We asked them to think aloud through the printouts of the tablet interface and we gave them a tablet for them to try taking a picture of their work. One of the members had never taken a picture with a tablet before, but once he tried, he got enthusiastic about it and wanted to get the pictures sent to him. All the members said they would feel more motivated if more people could see their art. Some of them raised concerns about losing copyrights, however, after we explained that they could get remuneration for selling copies, they felt more positive about it.

Discussions

Our group was strongly inspired by the stories we heard from the members of 240 Project. Throughout our project, we backed up the design solutions with data we received directly from them. The feedback we received from all stakeholders (members of the centre, social workers and general public) was very positive, which signals the significant impact StreetHeart could have.

Regarding the limitations of our process, we only gathered requirements from one activity center, the 240 Project. For further studies, it could be useful to validate our concept in other centers that provide art-related activities for people affected by homelessness.

From the feedback from user evaluation, we improved our prototypes. The interfaces prototypes were made interactive and the physical prototype was changed to be more aesthetically pleasing (see Figure 9). For future work we

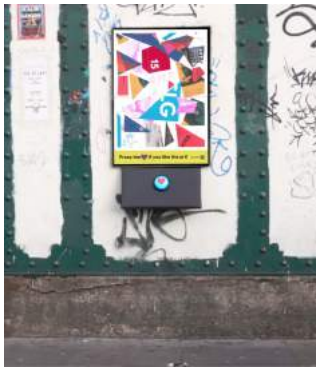

Figure 9: High fidelity prototype of screen display

could study whether our design has a long term impact on the members' lives on the attitudes towards homelessness.

In the future, we would also like to create an information visualization in the center about the status of the displays around the city. Based on the feedback we heard from a social worker, it would be interesting for the members to have access to the gallery of artwork as well as locations where the screens are placed. We thought this could be done in the tablet or in a screen at the center, depending on the acceptance of the users.

Besides, after observing the users taking pictures with the tablet, we noticed that it might not be easy to all of them to take well framed pictures. For future work, the camera could be equipped a computer vision algorithm so that it would frame the piece and remove any objects surrounding it. We also thought about setting up a studio where the members could hang the art pieces and have tablet supported by a tripod. This way they would be comfortable with process of taking pictures of their work.

Conclusion

StreetHeart empowers those with experiences of homelessness by giving them the opportunity to document their artwork independently, share it with a larger audience, and receive direct appreciation for their skills. As a consequence, StreetHeart can improve their self-perception and reduce the levels of prejudice that surround the topic of homelessness. This solution can have a direct and positive impact on individuals, by using art and technology to connect those in the underprivileged position and the broader community.

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References

[1] 240Project. 2016. What we do. (2016). http://www.240project.org.uk/what-we-do/

[2] IDEO (Firm) and London Ideo Product Development. 2003. *IDEO Method Cards*. IDEO. https://books.google.co.uk/books?id=2YZhXwAACAAJ

[3] Suzanne Fitzpatrick, Hal Pawson, Glen Bramley, Steve Wilcox, and Beth Watts. 2015. The homelessness monitor: England 2015. (2015). http://www.crisis.org.uk/

[4] Dave Gray, Sunni Brown, and James Macanufo. 2010. *Gamestorming: A playbook for innovators, rulebreakers, and changemakers*. " O'Reilly Media, Inc.".

[5] Sean A Kidd. 2009. "A Lot of Us Look at Life Differently": Homeless Youths and Art on the Outside. *Cultural Studies Critical Methodologies* 9, 2 (2009), 345–367.

[6] Nadia Perruzza and Elizabeth Anne Kinsella. 2010. Creative arts occupations in therapeutic practice: a review of the literature. *The British Journal of Occupational Therapy* 73, 6 (2010), 261–268.

[7] Yvonne Thomas, Marion Gray, Sue McGinty, and Sally Ebringer. 2011. Homeless adults engagement in art: First steps towards identity, recovery and social inclusion. *Australian occupational therapy journal* 58, 6 (2011), 429–436.