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Human-Centered Design as a Qualitative Research Methodology in the Area of Public Health

Pierre Yohanes Lubis, University of Canterbury, New Zealand
Bahareh Shahri, University of Canterbury, New Zealand

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Abstract

This paper builds a deeper understanding of human-centered design (HCD) as a qualitative research approach in the pursuit of generating proper solutions in the area of public health. This study draws similarities and discrepancies between human-centered design methodology and the qualitative research approach. HCD largely emphasizes ethnography, which is inherently qualitative. HCD relies on the effort to perceive the problem from the point of view of the target user just as the qualitative approach frames an issue as they are understood by the people themselves. Both HCD and qualitative approaches are fundamentally ‘bottom-up’ by framing a problem as it is phenomenologically situated. However, qualitative research does present several discrepancies with the HCD approach when applied in the field of public health, especially regarding the methods of implementation of their respective solutions. Whereas solutions in the area of public health are typically enforced by ‘hard power’, in the field of design, solutions are commonly implemented by the use of ‘soft power’. This is because public health is commonly perceived to be a ‘public good’ and therefore not commonly considered an area wherein the market can have a role. In the design discipline, however, solutions are normally crafted to compete freely in the market. By examining how several past solutions provided by the design discipline as well as observing how well received our solution was, it goes on to prove that HCD can truly be a boon when addressing public health issues.

Keywords: Human-Centered Design, Qualitative Research Methodology, Public Health

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Introduction

The human-centered design (HCD) approach makes use of participatory research methods and is eloquent in embracing ambiguity (IDEO.org, 2015; LUMA Institute, 2012). HCD as culminated by IDEO is geared towards the creation of market-based solutions and encourages the generation of social innovations. IDEO (2015) remarks how the international development community has designed solutions to the challenges of poverty without truly empathizing with and understanding the people it is looking to serve. Therefore, HCD is meant to tackle the issues of empathizing and lack of understanding. It is a process and the reason it is labelled as 'human-centered' is that it starts with the people it is designing for. Characteristics of HCD affirm the value of human dignity because it seeks to support and strengthen the dignity of human beings as they act out their lives in varied social-economic, political, and cultural circumstances (Buchanan, 2001).

Theoretical Framework

This paper aims to build a deeper understanding of HCD as a qualitative research methodology applied in the field of public health. We began by first establishing the proper positioning of the HCD approach within the constellation of the qualitative research methodology and common methods used in the HCD methodology before comparing HCD with other qualitative approaches often applied in the field of public health. Subsequently, the scope and the method of implementation between public health in general and the design field were compared. Finally, the HCD approach was utilized to craft a solution for the clean water issue in the slum community in Jakarta, Indonesia.

Human-Centered Design as a Qualitative Research Methodology

HCD as one of the contemporary design methodologies helps foster the transformation of the mainstream design discipline towards a participatory mindset and a co-creation activity with the target user. Changing the term 'user' to 'stakeholder' was employed to support this transformation since it elevates the status of the target demographics as they get increasingly involved in the design process out of their own volition (Krippendorff, 1998). Creative industries serve as a suitable habitat for this transformation because it is considered more open to the philosophy of co-creation than the more conservative manufacturing industries (Dorrington et al., 2016). HCD highlights the importance of synergy between all stakeholders and design experts in a design activity. The inclusion of the community or all stakeholders should generate the best solution that works for everyone in the community.

Having the element of applied ethnography, HCD is led by research rather than by design. HCD allows more user participation as it treats them more than just subjects of design. Ethnography can be defined as a kind of study that involves an in-depth, systematic study about groups of people by observing or participating in the lives of the people who are being studied (Madden, 2010). Its main aim is to provide rich, holistic insight into various cultures and sub-cultures: people's views and actions, and the environments that surround them: sounds, sights, spaces, locations, etc. Researching in an ethnographic context constitutes the immersion of the researcher to the target community even though objectivity and impartiality have to be maintained throughout the research (Muratovski, 2016). Ethnographers typically use a wide range of tools including notes, interviews, cultural probes, and other types of visual research (Muratovski, 2016; Reeves et al., 2008; Rose, 2012).

Design ethnography; ethnography in the field of design, can be distinguished from ethnography as it is practised by professional ethnographers and anthropologists. True ethnographers are most likely to immerse themselves into a different population for months if not years, while designers normally only collect information from time-sampled observation of behaviours. For instance, when leading immersive ethnographic research, designers can empathize with and taste the real experience of the participants through cultural probes (Martin & Hanington, 2019). The integration of ethnography in the design process helps reveal unaddressed needs that call for a design activity (Reese, 2004). The central mission of designers is to identify and meet the needs of the user, even the needs that the user themselves did not consciously know they had (Wasson, 2000). Ethnographic methods investigate not just what the user says they do, but what they do in actuality. For this reason, ethnography has been such an intuitive appeal to designers since it offers a new whole dimension to the “user”. Looking at a particular problem from the lens of economics, ethnography is often applied by businesses when trying to identify what customers need without having to spend too much expenditure (Leonard & Rayport, 1997), given that ethnography possesses the capability to actively cultivate the creation of products and services that is in tune with the desires and needs of the user (Murphy, 2016). The use of ethnographic methods in the design methodology typically does not use a relatively large sample (Almon et al., 2014; Catalani et al., 2014; Hoof et al., 2015; McCreary, 2010; Reese, 2004; Simonsen & Kensing, 1997; Thoring et al., 2015; Wasson, 2000). Studies conducted with participatory methods do not use large samples (Amiri et al., 2012; Cheney, 2016; Moody, 2015; Morrison et al., 2015; Ramos et al., 2016; Robinson et al., 2009; Vechakul et al., 2015) which further solidifies the argument that the HCD approach is, by nature, qualitative.

Positioning Human-Centered Design in the Area of Public Health

The implementation of a typical design approach to offer solutions in the field of public health has been well-documented and the application of HCD has been proven to be quite beneficial to the field of health (Bazzano et al., 2017). Therefore, it is important to discuss the characteristics of the HCD methodology and its proper positioning as compared to other methodologies, especially in the area of public health. Qualitative health researchers typically put people first and focus on their feelings, emotions, and behaviours, a posteriori in health and sickness (Morse, 2012). Similarly, HCD’s main angle is seeing the world from the eyes of the target user (Abrams et al., 2004; Hanington, 2017). Rouse (1991) laid out the three primary objectives within the HCD approach: enhancing human abilities, overcoming human limitations, and fostering user acceptance. How a qualitative health approach explores health issues as they are understood by the people themselves perfectly aligns with the HCD approach which relies on the effort to perceive the problem from the point of view of the target user. Both approaches are bottom-up rather than top-down by focusing on the people first before trying to comprehend the whole system. Moreover, both HCD and qualitative health research perceive a problem as it is phenomenologically situated and utilize correlating approaches and procedures such as ethnography and narrative research to arrive at their solution (Creswell, 2007; Harrison et al., 2007; Holloway & Galvin, 2017).

Nevertheless, HCD and qualitative research, especially when applied in the field of public health, do present some discrepancies, most notably in the methods of implementation of their respective solutions. One can observe the different properties of the field of public health and the field of product design (including HCD) and their methods of implementation, as illustrated in Figure 1.

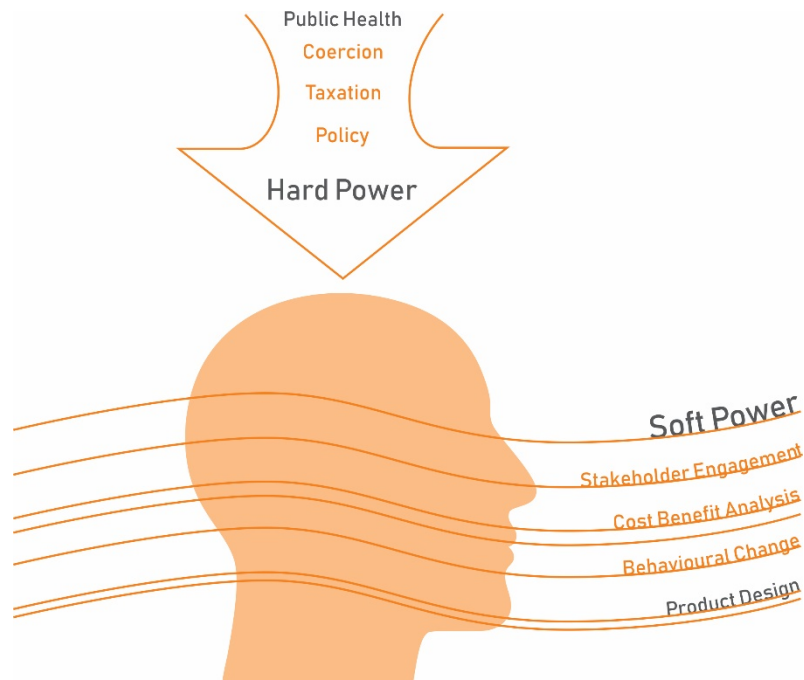


Figure 1: Methods of implementation in product design and public health

The level of implementation of solutions or interventions offered by the qualitative health research approach serves a larger scope and area when compared to HCD. According to Morse (2012), qualitative health researchers typically start by identifying interventions and examining those interventions, then move their findings back into professional care, into the political agenda, the educational realm, and back to the people themselves. There is certainly an authoritarian bent when it comes to the field of public health. Solutions are typically enforced through means of hard power that involve coercion, taxation, and policy-making. Hard power can be defined as a legitimized force that the state possesses to arrange and maintain a society that must be obeyed by all of its citizens. The dynamics of hard power leave people with little to no choice but to abide to avoid consequences that can be enforced by the state. However, this use of force can invalidate the individual's ability to think and choose which ultimately abolishes the capability of the individual to recognize the good (Peikoff, 1991; Rand, 1967). The main argument for the use of hard power is that public health is generally perceived as a 'public good' in terms of economics. Therefore, it is not something that is philosophically considered to be a role that the free market can fill.

In the field of product design, on the other hand, solutions are typically implemented by the use of soft power, a type of power that involves no force in its implementation. In the dynamics of soft power, the individual retains the ability to choose and there are no consequences at all for not choosing. There is no coercion in this dynamic because users or stakeholders are persuaded through the means of reason instead of through force. For instance, one may choose one brand of an automobile over the others due to its economical feature and other competing automobile manufacturers do not have the authority to force that person to buy their product. Instead, the implementation of soft power is typically supported by a series of persuasions such as stakeholder engagement, cost behavioural analysis, and behavioural change. A particular automobile manufacturer can increase customer engagement to produce a car that the users truly desire and thus sell more cars. The soft power dynamic can be traced back to Aristotle (1926), who developed the Three Means of Persuasion: *Ethos*, *Pathos*, and *Logos* (Figure 2). *Ethos* means an appeal to credibility and

trust, *pathos* to emotion and values, and *logos* to logic, reason, and proof. All three are applicable in the field of design.

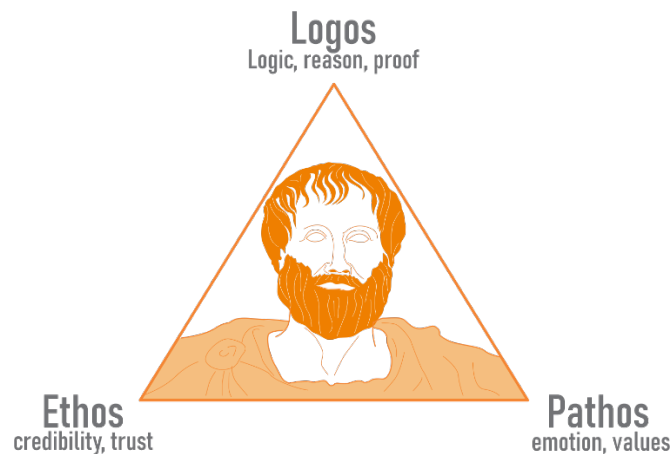


Figure 2: Aristotle’s three means of persuasion

Stakeholder engagement is one of the hallmarks of the HCD approach where stakeholders are eased into the solutions by engaging, reasoning, and rationalizing together with them. The stakeholders are won by a discussion at the bottom end and not through top-down force.

Human-Centered Design for Public Health

Informed by the HCD methodology, we set out to conduct a comprehensive design process in pursuit of a solution for the clean water issue in a slum community in Jakarta, Indonesia during the span of six months. Figure 3 shows the progression of the design process, from start to finish. It is marginally divided into three stages of data collection: *Interview*, *Co-create* and *Bouncing Ideas Back*, and *Live Prototyping* and *Focus Group Discussion* as well as *Product Usability Interview*, with several occasions of iteration by the design/research team. While Session 1, 2A, 2B, 3A, and 3B were conducted together with the participants (i.e. slum inhabitants), topic groupings and theme identification, field observation, refinement and concept generation, and refinement and final design were conducted without any involvement from the participants.

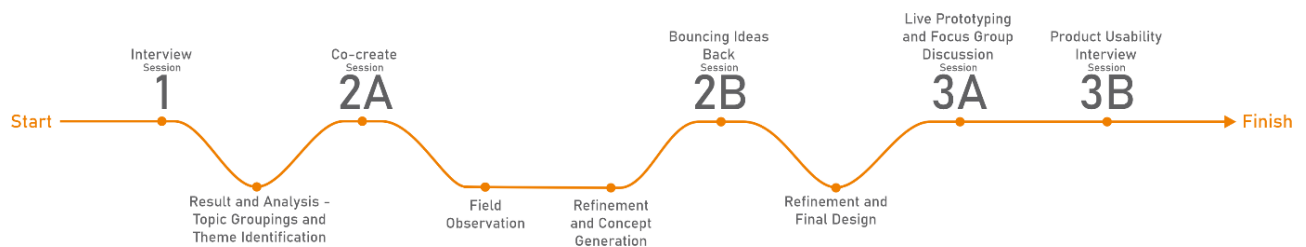


Figure 3: Stages of data collection

Session 1 involved interviews with slum inhabitants to investigate issues related to the topic WASH (water, sanitation, and hygiene) which are present in the community. Various HCD methods used in this session were fruitful in identifying those issues as well as revealing actual values held by the participants (Lubis et al., 2021). Obtained data from the interviews were then identified and grouped according to their relevant topic and theme before they were presented back to the participants in Session 2A, where participants were involved in a co-creation session together with the researchers in the pursuit of finding solutions to the

issues in the slum communities. After field observation and refinement and concept generation, ideas and possible solutions were then presented back to the participants in Session 2B. The ideas were visualized more tangibly so the participants could give feedback or iterate and improve upon them. In this session, a few ideas that had much support from the participants in the first session did not fare well while others gained more support with the help of visualization of those ideas. For instance, an idea for an electronic public toilet was deemed to be too complex for the community while an idea for a clean water delivery service that helps the community obtain clean water in the morning gained more support in Session 2B. Based on the feedback and iterations from participants, the design was then finalized, a prototype built and then tested directly in the slum community. The last two sessions (3A and 3B) were where the participants discussed the prototype of the solution as well as suggested improvements for it.

Ultimately, the solution was highly welcomed by the participants and encouraged the slum community to be more active in finding solutions to their problems. Through constant feedback and iterations from the participants, the solution has been proven to be beneficial to the improvement of the community and also highly desirable for the slum inhabitants.

Conclusion

This study has demonstrated how the human-centered design (HCD) methodology could be properly positioned within the larger nexus of qualitative research methods. Applied in the field of public health, we discovered how HCD and qualitative research present several discrepancies, especially in their different methods of implementation. Its participatory aspect imbued with co-creation activities distinguishes HCD from other qualitative methods. By examining how a solution that arose from engaging, reasoning, and rationalizing with stakeholders at the bottom end had been well received in the real-world setting as well as its high user acceptance, the HCD approach can truly be a beneficial and well-rounded methodology to tackle public health issues.

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Contact email: pierre.lubis@pg.canterbury.ac.nz