Dr Belinda Paulovich
Charles Sturt University

Removing Silos: A designer's reflective account of working collaboratively within the healthcare sector

Keywords: Design and health, Graphic design, Higher education, Interdisciplinary collaboration, Participatory design

Introduction

Design and health are two distinct industries with individual languages, traditions and cultures, that, when brought together, can create meaningful innovation[1]. Currently, in Australia, design innovation in healthcare is present[2], but the systematic implementation of design solutions and the degree to which designers are permanently embedded in the health landscape is lacking. Through post-graduate study and working as an in-house graphic designer in a hospital environment I have observed a lack of direct contact between designers and health professionals. Some hospitals have graphic design departments that are assigned health promotion tasks, but from my experience, these tasks are filtered through so many different channels that the link between the designer and end-user is lost[3]. In this rather typical scenario, design and health remain individual disciplines that come together indirectly, but are not effectively integrated.

Higher education is in a position to bring design and health closer together. I experienced this first hand as a doctoral student at the University of South Australia. At this institution I undertook a Doctor of Philosophy where I worked with three health professionals under a participatory design framework (Manzini & Rizzo, 2011) to develop educational materials for children and adolescents with various health conditions. The focus was on tailoring the materials to the health professional's education practice and the patient's information needs. Lasting professional relationships emerged from this project and led to my employment at the hospital,

---

[1] Epistemologically disparate disciplines are more likely to achieve new insight into complex problems (Pak & Choi, 2008). A group consisting of designers and health professionals contains disciplinary diversity, which encourages cross-pollination and the development of new ideas (Wylant, 2008; IDEO, 2015).

[2] The Australian Centre for Health Innovation (CHI) works with a range of industries to generate solutions to healthcare problems and places a strong emphasis on evidence-based practice (Australian Centre for Health Innovation, 2015).

[3] From my personal experience as a hospital in-house graphic designer, tasks were filtered through an organisational hierarchy where the designer had very little direct interaction with end-users. While resourcing is a significant barrier to conducting this kind of work, there are missed opportunities here.

networking opportunities, further research and specialisation in my design practice, demonstrating the benefits of student engagement with the health industry.

The unfortunate aspect of design education and health industry collaboration from my perspective is that the collaborative, immersive aspect of the engagement is often short-lived. Once the project is complete, the health professionals and student designers return to their disciplinary silos. The design students begin to forge their design careers and may never work with a health professional again. The health professionals return to the familiar territory of their day-to-day routines and may never actively seek the services of a designer again.

So how do we grow opportunities that extend beyond a single project or experience? Restructuring health to include designers as a permanent part of the landscape is a radical proposal and, based on healthcare tradition, is not one that will be immediately accepted, adopted or employed. Reimagining workforce possibilities for designers is also a process of gradual change. Designers tend to interact with clients from a variety of industries, so while interdisciplinary collaboration is not a foreign concept in this field, sole-specialisation where a designer has an exclusive affiliation with a single industry is uncommon. There is potential to formalise specialisation by permanently embedding designers in specific industries (this paper focuses on health, though there are many possibilities). Health-oriented projects, placements, internships and residencies facilitated through design education providers are a logical step toward achieving more permanent involvement of designers in the health industry.

An ethnographic approach to conducting design practice in the health industry

After completing a Bachelor of Visual Communication in 2008, I embarked on a Graduate Diploma that became a Masters by Coursework when a design and health project presented itself to me. Believing that design is about much more than simply ‘making things look pretty’, I began working on a project with a medical scientist and his team that involved communicating complex medical research to non-specialist audiences including administrative stakeholders, staff from different disciplines, students and the general public. From here, the seed for a doctoral project was planted - I was interested in collaborating with the health industry, I was interested in using visuals to solve communication problems, and there was a gap in the health sector with regard to collaboratively designed health education visuals.

As a graphic designer and doctoral candidate, the aim of my doctoral research was to address the problem regarding effective communication between health professionals and patients, which is frequently cited in the health and medical

literature[4]. I partnered with health professionals across three individual case studies to create visually appealing, functional, accurate, user-centred visual communication materials for children and adolescents around asthma management, chronic functional constipation and paediatric rehabilitation, guided by the notion that humans have a preference for picture-based information (Dowse 2004; Katz, Kripalani & Weiss 2006; Lidwell, Holden & Butler 2003). There was no precedent for how this project should be conducted within a busy public hospital environment and this had significant implications in terms of the success of the initial research design and ethics protocol. My lack of knowledge around the inner workings of the public healthcare environment led me to an ethnographic approach where I learned how to conduct health-specific design research by immersing myself in the hospital environment, trialling research methods, self-reflecting on the process, and making adjustments to my research plan in response. The uncontrollable and unpredictable nature of the health field meant that these adjustments were frequent and numerous, but by being exposed to the intricacies of the health field I was able to make decisions that were informed by the reality of day-to-day healthcare practice.

A traditional picture of ethnography is based on its 19th century origins in anthropology where an ethnography was 'a descriptive account of a community or culture, usually one located outside the West' (Hammersley & Atkinson 2007, p. 1). This anthropological ethnography was characterised by deep immersion of the researcher in a tribe or culture, usually for a period of months or years. Ethnography as a methodology has moved beyond these early characteristics and is now widely accepted in design and health studies. According to Hammersley and Atkinson (2007, p. 3), an ethnographic study has most of the following features:

1. People's actions and accounts are studied in everyday contexts, rather than under experimental conditions
2. Data are gathered from a range of sources
3. Data collection is mostly unstructured
4. The focus is usually on a few small-scale cases
5. Data analysis involves interpretation of human behaviour in a social context.

My doctoral research adopted these elements (some more than others), as well as other characteristics that are common to ethnography such as reflexivity of the

[4] Clinical authors including Hall (2012), Mikesell (2013), and Warnecke (2014) emphasise the benefits of developing good communication practices, but also state that the *Australian Medical Council Code of Conduct* which outlines core communication practices is all too often overlooked. This indicates that while the health industry values good communication, the way that this is practiced is not always based on the recommended code of conduct resulting in inconsistent quality of communication across the board.

researcher, direct contact with participants and using gatekeepers and key informants to gain access to a group. Furthermore, it contained some aspects of auto-ethnography where the implicit argument is 'I know this because I experienced it myself' (O'Reilly 2009, p. 171).

Ethical and situational limitations and their impact on methodology

My initial plan was to spend four months conducting each case study (interviewing health professionals, involving them in the design process, producing a design prototype, and trialling the prototype with 10 patients). I felt it best to conduct each case study independently – complete the first case study before progressing to the next, and so on, which would allow for structured reflection and the capacity to alter my approach after each case if required (Yin 2009, p. 92).

After commencing the first case study, I discovered that this plan would simply not be possible given the time constraints of a doctoral study. My estimate of four months per case was based purely on design knowledge – my perception of the amount of time it takes to complete an educational design project and trial it with an audience. This estimate did not take into account discipline-specific health knowledge and the intricacies of the clinical environment. Restricted access to patients, unpredictable scheduling of patient appointments, difficulties gaining informed consent from children and adolescents, delays with the ethics approval process and an unforeseeable lack of patients presenting to the hospital with the health conditions I was targeting had a significant impact on the timely completion of each case study. As a result, I conducted the case studies concurrently. While some case studies were dormant due to lack of patients or informed consent delays, others were active, allowing me to maximise my time spent in the health environment.

In health settings there is often a sense of urgency in terms of time. Health professionals must balance their duty to patients with administrative tasks, staff meetings and other scheduled events. This is a high-risk environment where complex medical events need to be responded to quickly and accurately. The time sensitive nature of the health environment did impact the collaborative design process throughout my doctoral research in that interviews held with the health professionals were frequently interrupted by phone calls and queries from other staff members, and depending on what else was happening that day, the interviews were sometimes rushed. On a few occasions the health professionals were running up to 45 minutes late for our scheduled interview due to patient appointments running over time, or having to resolve serious patient problems. Sometimes this affected the quality of the interviews as the health professionals were hurrying through the conversation so that

they could get to their next task on time. Whilst I see this as a limitation for designers working in the health environment, my experience in the field has allowed me to develop a more accurate understanding of what a job in the health profession looks like on a day-to-day basis and I can conduct future design and health projects with these realities in mind.

Further delays that were out of my control included ethics approval timeframes, waiting for appropriate patients to present at the hospital, and long printing turnaround times. These delays meant that it took a long time to commence the design process with the health professionals, and that there were often very long breaks between my visits to the hospital while ethics protocol amendments were being reviewed. This was not ideal in terms of the design process, which worked much better when I was able to see the health professionals on a regular basis.

Aside from situational factors, ethical concerns also changed the course of the project. I encountered serious difficulties sourcing and conducting patient interviews, which led to a major ethics protocol amendment. My original intention was to interview 10 patients per case study to assess their responses to the design prototypes. After conducting one patient interview I discovered that the compulsory informed consent process required a level of coordination on the part of the health professional that I felt was unethical as it infringed on their work time. Additionally, the patient responses lacked insight and honesty, likely due to the unfamiliar presence of the researcher (Allen, 2010), and I felt that this would be the case for subsequent interviews. Furthermore, the lack of patients presenting to the hospital at the time meant that conducting 10 interviews would require a time commitment from the health professional above and beyond what I deemed reasonable.

These problems led me to make a major change to the ethics protocol, removing myself as researcher from the patient interview process, and instead, allowing the health professionals to use the designs with patients on a daily basis while documenting their interactions on a short checklist. Using the health professionals as primary evaluators was a strategically formulated approach that arose in direct response to the limitations of the field, and was highly successful. Aside from overcoming ethical restrictions, having the health professionals evaluate the designs was beneficial in that they developed a sophisticated understanding of the design intent, and could see first hand that designs need to be tested in the real world. In response to the evaluation process, the Gastroenterology clinician I worked with stated:

> Now I'm thinking of it, it does make a bit more sense, but at the time when we were putting it... together [the design phase]… I guess you need to do this [the evaluation phase] to work out what would be useful (Gastroenterology clinician 2013, 30 September).

Clinicians from the other case studies shared similar views. In all cases, the health professionals were able to identify potential improvements to the designs after using them with patients, showing that their understanding of the design process had evolved. In terms of the participatory design process, the health professionals became less like clients and more like co-designers as the case studies progressed.

Where to from here?

Now that I have completed this doctoral study, and am working in the design education field, I want to use my experience to make a contribution that will inform future design and health practice. Drawing from the methodological, ethical and situational limitations of my doctoral research, I put forward an argument that more permanent immersion of designers in the health field is an effective way of not only overcoming the problems I experienced, but in enabling regular interdisciplinary collaboration that can result in exciting innovation.

On-site location of the designer, and/or embedding the designer in the healthcare team enables:

- More regular face-to-face contact with end-users (clinical and administrative staff, patients and families)
- Opportunities to form stronger rapport with end-users
- Building of momentum in projects
- A more thorough ethnographic account of the field to inform design practice
- Concepts and designs to be developed in response to the environment
- A heightened awareness of ethical restrictions and the capacity to deal with these on-site
- Serendipitous encounters with people that can contribute to aspects of the design process
- And more immediate and direct identification of areas where design can make a positive contribution in the health field.

We are already aware that the health industry is no stranger to innovation – cutting-edge medical and scientific innovation is readily adopted and accepted as standard practice. Organisational structure and hierarchy, on the other hand, is deeply anchored in tradition, therefore a proposal as radical as introducing a designer to the

team is likely to be met with resistance. Furthermore, the economic viability of utilising an on-site graphic designer is likely to be questioned. While I am able to see the benefits of immersion from my participation in the field, this is just one person's account. To strengthen this idea and to determine its feasibility, we need to explore the potential of immersing designers in health strategically, and one way we can do this is through projects that are facilitated by design education providers (as shown in Figure 1). Utilising higher education as a vehicle for exploring design and health innovation allows us to investigate the economic and organisational impact that permanent immersion of designers may have on the healthcare landscape.

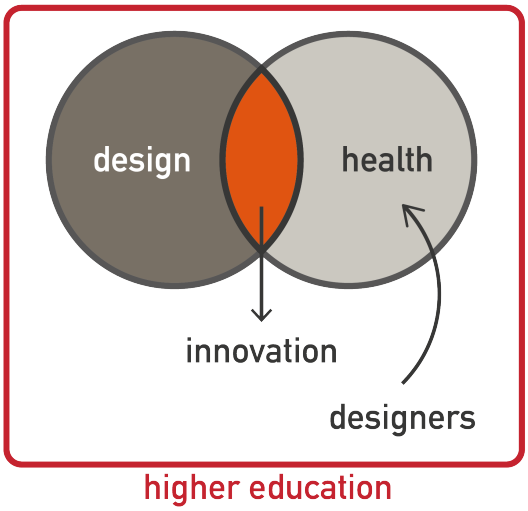

Figure 1: Higher education as vehicle to investigate the innovative and immersive aspects of design and health collaboration.

Further to this, the healthcare view of design needs to be investigated. This is something that was lacking in my doctoral research – I ventured into the healthcare environment tentatively, without any knowledge of how my collaborators would respond to me, or if they would even be interested in engaging in a design project. My aim is to find out more about health professionals and their prior experiences and perceptions around design and interdisciplinary collaboration, and from this, develop a tailored design approach that is informed by a more rigorous understanding of the healthcare view of design. Pairing this with an analysis of design and health higher education projects we can start to develop an evidence-base that speaks to the language of health professionals and build on the momentum that has already been established in design education and health collaboration.

Conclusions

Design and health are two separate disciplines, that when brought together, can create meaningful innovation. We are in a position to capitalise on this innovation by connecting designers more closely and permanently to the health industry. Design is something that should be done *with* health in a participatory design framework. The process must involve collaborative learning where designers are educated about the intricacies of the health industry by health professionals, and where health professionals are exposed to design thinking skills that they can use in their day-to-day practice to activate ongoing change. We must share discipline-specific skills and avoid generalisations about scientific versus creative thinking styles if we are to remove the disciplinary isolation and hierarchy that is so often ingrained in institutional culture.

Designers are generally only brought into the health field when there is a specific problem to solve. What if they were hovering in the background, providing solutions to problems as they arise, or foreseeing problems and solving them before they emerge? Would we see improvements in service delivery? Would we see an increase in patient satisfaction? The answer is, we are unsure, but by further investigating design and health interdisciplinary collaboration within the higher education sphere, we can start to develop answers to these questions.

References

ALLEN, D 2010, 'Fieldwork and Participant Observation', in I Bourgeault, R Dingwall, & R de Vries (eds.), *The Sage Handbook of Qulitative Methods in Health Research*, Sage Publications, London.

AUSTRALIAN CENTRE FOR HEALTH INNOVATION 2015, *Innovation*, viewed 30 July 2015, <https://www.healthinnovation.org.au/innovation/>.

DOWSE, R 2004, 'Using visuals to communicate medicine information to patients with low literacy', *Adult Learning,* vol. 15, no. 1-2, pp. 22-25.

HALL, T 2012, 'More than the sum of our parts', *Medical Journal of Australia*, vol. 197, no. 5, pp. 22-23.

HAMMERSLEY, M & ATKINSON, P 2007, *Ethnography: Principles in Practice*, 3rd edn, Routledge, New York.

IDEO, *The ten faces of innovation*, viewed 16 November 2015, < https://www.ideo.com/by-ideo/the-ten-faces-of-innovation>.

KATZ, MG, KRIPALANI, S & WEISS, BD 2006, 'Use of pictorial aids in medication instructions: A review of the literature', *American Journal of Health-System Pharmacy,* vol. 63, no. 23, pp. 2391-2397.

LIDWELL, W, HOLDEN, K & BUTLER, J 2003, *Universal Principles of Design*, Rockport Publishers, Beverly, Massachusetts.

MANZINI, E & RIZZO, F 2011, 'Small projects/large changes: Participatory design as an open participated process', *CoDesign,* vol. 7, no. 3-4, pp. 199-215.

MIKESELL, L 2013, 'Medicinal relationships: Caring conversations', *Medical Education*, vol. 47, no. 4, pp. 43-52.

O'REILLY, K 2009, *Key Concepts in Ethnography*, Sage Publications, London.

PAK, AWP & CHOI, BCK 2008, 'Multidisciplinarity, interdisciplinarity, and transdisciplinarity in health research, services, education and policy: 3. Discipline, inter-discipline distance, and selection of discipline', *Clinical and Investigative Medicine,* vol. 31, no. 1, pp. 41-48.

WARNECKE, E 2014, 'The art of communication', *Australian Family Physician*, vol. 43, no. 3, pp. 156-158.

WYLANT, B 2008, 'Design thinking and the experience of innovation', *Design Issues,* vol. 24, no. 2, pp. 3-14.

YIN, RK 2009, *Case Study Research*, 4th edn, Sage Publications, London.