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579. Developing Future Capacity: Exposing Healthcare Organizations to Design through a University-Based Health Design Lab

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ABSTRACT The Health Design Lab (HDL) is a research and design centre based out of Emily Carr University of Art + Design in Vancouver, Canada. The lab seeks to connect undergraduate and graduate design students and faculty with industry and community partners to collaboratively apply human-centred design approaches to the improvement of health products, services and systems.

The use of design methods and design thinking within healthcare organizations within Vancouver, Canada is limited. Further, when organizations do begin to gain awareness of approaches such as 'design thinking' and 'co-design' they often do not realize the value of designers in the application of these approaches and methods. Therefore, HDL seeks to introduce healthcare organizations to the role of designers and design approaches within their context, in order to build the capacity of healthcare organizations, as well as future designers emerging out of undergraduate and graduate design programs.

HDL collaborates with healthcare organizations through two key models: course-based projects & funded team-based projects. This paper describes and discusses these two models for collaboration and highlights some of the ways in which we are seeing this strategy benefit healthcare organizations and design students.

Projects referenced in this paper include: a co-design project between residents in a long-term care facility and a class of undergraduate students, a hand hygiene campaign, the design of a new lighting system for a long-term care facility, community-engagement work to support the design of a new hospital and the design of an app in collaboration with a clinical team. These projects act as case studies to explore ways in which a design institution may foster a greater shared understanding of the role of design in healthcare, in an attempt to ultimately establish greater opportunities for designers within this context to improve patient care.

Keywords: human centred design, healthcare, design students, design lab, design approaches

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Introduction

> '…it is true to say that whilst design and health have always been connected we are entering a new era, new territory, where many elements have yet to be fully resolved, where understanding needs to be built and critical perspectives offered.' (Chamberlain and Craig 2017)

There is growing support for, and increasing recognition of, the role of design to improve health and healthcare products and services. An increasing aging population, the rise of chronic diseases, changing roles of patients and new technological advances are creating vast opportunities for healthcare advancement (Cottam and Leadbeater 2004). In innovative healthcare systems we are seeing an expanding role for designers in creating enabling ecosystems for change (Manzini 2015), however, while the relationship between health and design is growing or rather, coming together, there still remains a large gap in the understanding and application of design within healthcare contexts. As Chamberlain and Craig (2017), 'building an understanding of our different but complimentary approaches in design and health is vital'. But how do we do that?

While a variety of approaches and strategies are necessary to further advance collaboration between health and design, this paper proposes that university-based health design labs are one way in which design can be effectively introduced to healthcare organizations, and in turn, healthcare challenges and contexts can be introduced to emerging designers.

The use of design methods and design thinking within healthcare organizations within Vancouver, Canada is limited. Further, when organizations do begin to gain awareness of approaches such as 'design thinking' and 'co-design' they often do not realize the value of designers in the application of these approaches and methods. With these challenges in mind, the Health Design Lab (HDL) at Emily Carr University of Art + Design in Vancouver, Canada aims to bridge this gap in understanding. HDL is a research and design centre based out of a public art and design university that connects undergraduate and graduate design students and faculty with industry and community partners to collaboratively apply human-centred design approaches to the improvement of health products, services and systems. One of the goals of the lab is to build the capacity of healthcare organizations to better understand and utilize design, as well as to build the capacity of students to emerge as designers with the skillset necessary to work in health and healthcare contexts.

Health & Design Labs

Many design labs focused on health and well-being currently exist, and continue to emerge, including several in the US, Europe, and New Zealand. The growth of these types of labs demonstrates a growing understanding of the role designers can play in addressing some of our most complex and rapidly shifting challenges in health (Chamberlain and Craig 2017; Bowen et al. 2013).

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Many of these labs are connected to single hospitals or health organizations and most are run by groups of researchers and/or professional designers. The Health Design Lab at Emily Carr University, rather than being situated within a specific health organization, is based in a University context and collaborates with a wide range of partners including several different health authorities and hospitals, non-profits organizations and local start-ups and industry partners. As such, HDL tackles a range of health challenges in a range of contexts. One of the unique aspects of HDL is its relationship to the undergraduate and graduate design programs at Emily Carr University. Health design is not a specific stream, but rather, community-based health design projects are placed within a range of courses as part of curriculum, and students across various streams of undergraduate and graduate design are hired as Research Assistants to work in the lab. The lab is in essence, 'student-powered'.

Capacity Building

Over the past six years as HDL has grown, we have explored a variety of partnerships and methods for collaborations, realizing that one of the key functions of the lab may be its ability to expose health organizations to the possibilities and benefits of collaboration with designers. The lab currently collaborates with healthcare organizations through two key models: funded team-based projects & course-based projects. This paper describes these two models for collaboration and highlights some of the ways in which we are seeing this strategy benefit healthcare organizations and design students.

While the lab collaborates with a range of partners including local start-ups and industry partners, this paper focuses on highlighting our collaborations with local public hospitals and health authorities.

Team-Based Projects

One of the key ways in which HDL collaborates with local hospitals and health authorities is through funded team-based projects. In these projects, a team of students from undergraduate or graduate design programs are hired as Research Assistants to work on a project under the guidance of the HDL Director or an associated faculty member. In this case, the projects act as valuable work experience for students in a real-world context that balances innovation with practical limitations of our health system. These projects range from the design of products or communication tools to the facilitation of co-design workshops and service design projects.

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Example 1: IlluminAid

In 2015-2016, a team of students were hired as Research Assistants to collaborate with a local residential care facility to explore ways in which the clinical environment could be more home-like. Emerging from this six-month project was a series of co-designed ideas and early stage prototypes. One key observation was the need for improved lighting in the resident rooms at night to reduce sleep disturbances and falls risks. Through a human-centred design approach, overnight ethnographic observations and onsite user testing, HDL conceptualized a motion-sensor lighting solution for existing facilities to meet the needs of residents and staff. To address the challenges of implementation and barriers that come with custom manufacturing and safety requirements for new products in a clinical context, the team was able to identify an existing market solution that could be adapted to meet all of the necessary design requirements. In this case, the lab played a key role in expanding the capacity and capability of the health organization to solve a challenge, while exposing them to the role of designers and design methods. The organization has since continued to hire one of our research assistants, now an alumnus, to complete several other design projects within their facility.

Example 2: Sleep-Wake Behaviours App

While some HDL projects begin with an exploratory, problem-finding phase, others are clearly defined by a healthcare professional who is looking for design support on a project in progress. For example, in 2015 we were approached by a physician and sleep specialist who was looking for help to design an app to help parents better track their childrens' sleep and wake behaviours, to ultimately allow physicians to better treat sleep disorders for children with neurodevelopmental challenges. In this case, a small team of three students and two faculty worked collaboratively with the physician and his clinical team, to design a family-centred app. In this project we observed that although the physician was interested in creating an app, his understanding of design was quite limited, thus a major aspect of this project was the education of the clinical team to design methods and processes, as well as a focus on shifting the design of the app from the clinician's original vision, to one that more closely aligned with parent needs through a participatory design approach. As evidence of capacity building, two years later this clinician has continued to hire Emily Carr University design students to support his research, and one of the students who worked on the original app design now works for a local digital health company.

Figure 1: HDL team reviews data collected in a participatory design workshop to inform the design of an app

Example 3: Front Entrance Experience

Some of the projects in HDL focus on the design of tangible product-based outcomes, while others focus on the use of designers in leading community-engagement initiatives, utilizing co-design methods. As health authorities try to become more patient-centred, there is a growing focus on patient involvement. This however, often ends up looking like the professionalization of patients as patient advisors and members of committees. HDL seeks to advocate for the use of co-design and participatory design methods as a strategy for patient and community engagement. We recently completed a project with a local hospital that is in the process of designing a new replacement hospital. In order to support their community-engagement work, HDL was hired to lead a series of co-design workshops to generate a series of insights and recommendations for the design of their new front entrance experience. In this case, the lab played a key role in expanding the capacity of the relatively small redevelopment team, enabling a deep dive into a critical space within the new facility. This project resulted in a rich collection of community and patient insights which will be passed on to the future architects. As a first foray into the role of healthcare redevelopment for the lab, this is an area with great potential for design students to contribute new perspectives and ideas and act as facilitators for co-design and community engagement.

Figure 2: HDL team facilitating a participatory design workshop to inform the front entrance experience of a new hospital

Funded team-based projects allow HDL to create professional work opportunities and immersive learning experiences for students, while expanding the capacity of healthcare professionals and organizations to address challenges with limited resources. These projects do however require funding to support the design team, in an effort to ensure that we are accurately valuing design and establishing a framework of fee-for-service work that will benefit future designers entering this industry.

Course-Based Projects

In addition to the team-based project model, HDL also leverages the capacity of the University by providing opportunities for course-based projects. These are projects in collaboration with community partners that are embedded as assignments into existing courses in one of three undergraduate design programs: communication, interaction or industrial design. From a University and student perspective, this model allows us to link faculty research and community initiatives directly to curriculum and expand our pedagogical model to provide immersive, experiential learning environments for students. For health organizations these projects allow them to gain an entry point into collaboration with designers and this context is often well-suited to early-stage idea generation.

Example 1: Hand Hygiene Campaign

In 2016, one of our local health authorities was interested in producing a new hand hygiene campaign for their facilities, directed at patients and visitors. We embedded an 8-week assignment into a communication design course, in which students were asked to generate and pitch a series

of hand-hygiene campaign concepts to a team from the health authority's Patient Safety and Quality Department. This project included on-site tours, observations, and a co-design workshop led by students with various healthcare professionals. This gave students an opportunity to explore and test various design research methods with real users and to practice pitching design concepts. Following the end of this 8-week assignment, the health authority project team selected one design team's concept for implementation. These students were then hired as Research Assistants to refine the concept and create production files for the client. This provided strong professional experience for the students and extended the capacity of the health authority's communication department. The health authority project leader provided the following feedback: 'working with the students allows us to see our challenges and solutions in new, creative, insightful, and often unexpected ways'. Within the three months, the campaign was rolled-out in healthcare facilities across British Columbia.

Figure 3: Final hand hygiene campaign installed in hospital elevator

Example 2: Zeitgeist

In many HDL projects, we are responsive to the requests of partners in relation to needs and potential solutions which they have identified. One of the goals of the lab however, is to not only respond to requests, but also to push out ideas which have emerged from our own insights into design opportunities within the health system. The course-based context creates a space where we can pilot new ideas in order to bring external partners on board.

Through several past projects within residential care facilities, HDL became aware of the importance of storytelling for seniors with dementia. With this need in mind, and inspired by the

work of designer Carolyn Kerchof (2015), we identified an opportunity to integrate a storytelling co-design project into a communication design course which would pair students with residents in teams to create mini-publications of resident stories. Initiated by the HDL Director and an Assistant Professor in communication design, we searched for a care home that would be interested in collaborating with us on this pilot project. Through a partnership with a local residential care facility and an enthusiastic Recreation Therapist, we were able to pilot an 8-week project, which involved 6 visits at the care facility for students and residents to collaboratively co-write and co-design a set of publications. This mutually beneficial project created a unique learning context for our students to apply and practice their design research, storytelling and communication design skills through direct interaction with seniors. Simultaneously, this project extended the capacity of the care home to provide therapeutic recreation and social activities to its residents, a critically under-served need. The successful collaboration sparked the interest of staff within the facility as well as the health authority in which it is located, and we are now looking to further expand this project.

Figure 4: Students and residents collaborate to co-design publications

Figure 5: Resident reading the final publication featuring her story

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Conclusion

While several successful collaborations have been highlighted here, there are certainly still struggles and challenges with these types of projects and engagements. The biggest hurdle in many cases remains around the communication and understanding of what design is, and how design methods can align and enhance current healthcare initiatives. With each project however we get a little bit better at introducing design, and we provide opportunities for students to develop these communication skills as well. We have come to realize that there is a critical opportunity for the lab to advocate for the role of designers.

From a student perspective, we have observed that the lab helps to expose student to healthcare contexts as opportunities for design, and many choose to seek work in these areas post-graduation. Further, the lab provides experiential learning opportunities for how to navigate complex social challenges as a designer, and how to advocate for one's role and involvement in these types of systems where the adoption and integration of design is emergent.

From a health system perspective, we have observed that through collaborations with the lab we have started to expose the healthcare system, practitioners, and health researchers to the role that design can play in improving health systems and products. For many of our partners, our projects are their first interaction and exposure to design. As a University, we have the benefit of creating this introduction through our students, in such a way that reduces barriers, and provides a lower-cost way to introduce design at a small scale, in order to educate, and extend the capacity of healthcare organizations and their existing staff teams.

The project examples presented here are offered as case studies, to explore ways in which design institutions may foster a greater shared understanding of the role of design in healthcare, in an attempt to ultimately establish greater opportunities for designers within this context, to improve the health and well-being of our communities.

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