

DESIGN
CONFER
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NEWS
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COMPETITION
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NEWS
DESIGN



MDES
MASTER OF DESIGN
SCHOOL OF INDUSTRIAL DESIGN

**Student Thesis/
Research Areas**

Maryam Attef

Healthcare; Human Factors in Design; Task Analysis; Virtual Care; Workflow

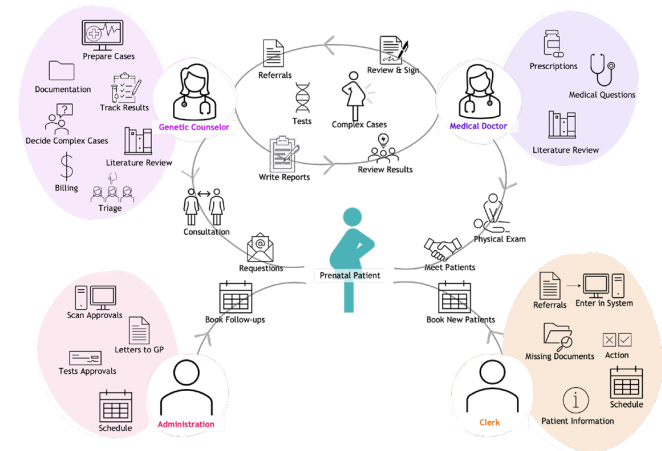


Improving the Efficiency and Capacity of Virtual Genetics Clinics using Human Factors Design Methods

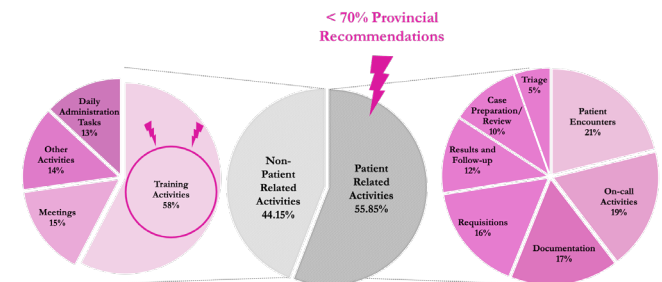
Balancing patient quality of care and efficiency is a rising issue in healthcare, where clinic workflow continues to be problematic for a variety of reasons, including factors such as limited or inefficient space design or unsustainable workload conditions - factors that may negatively impact patient wait times and lead to healthcare worker burnout. This quality improvement study focused on developing an understanding of factors influencing the ability of prenatal genetics counsellors to efficiently see patients during the COVID-19 pandemic and strategies to improve their workflow using techniques from human factors and design. This study provides rigorous documentation of the subtasks to process patients, and a documentation of the time on tasks at the Prenatal Genetics Clinic, which the Clinic can compare with the Ministry's recommendations. In addition, this project provides a Lean Improvement toolkit to be used by any other division within the Genetics Clinic at CHEO to assist the clinic improve the design of their services.

Why I am passionate about my research?

What interests me in the field of Ergonomics/Human Factors is that it focuses on matching workplace factors to employee's safety and increasing their productivity. As I learned about human factors in design, I was interested in how it is used to address problems in healthcare using multiple methods from science and design to understand the design of healthcare systems by studying systems holistically and how the design of the system affects how people interact and perform.



Stakeholders at the Prenatal Genetics Clinic



Overall average time spent per task

Maya Chopra

Gendered Design; Social Design; Intersectional Feminism



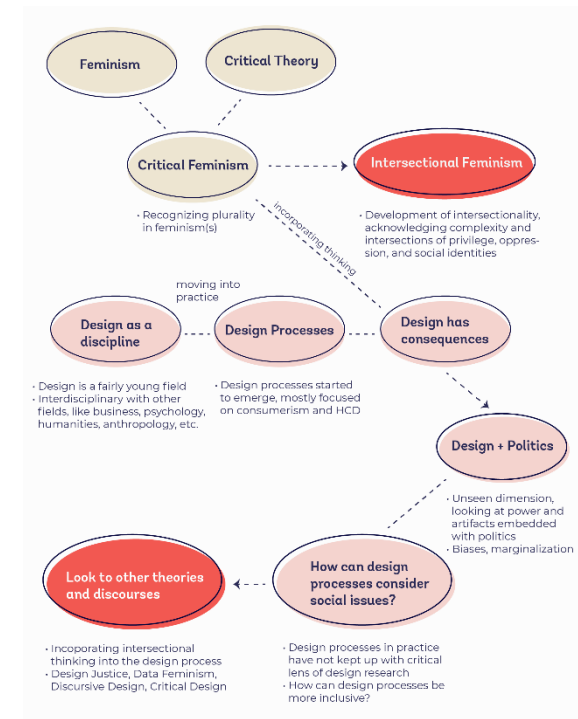
Exploring an intersectional design process

Over the past decade, the term *intersectionality* has gained popularity across academia and conversations concerning social justice. The concept has stimulated discourse around a new way of thinking about privilege, oppression, and how social identities such as race, ability, gender, class, ethnicity, interact together.

Design researchers are recognizing the **complex roles design plays in contributing to power structures** that reinforce privilege and oppression. However, the field of design has not yet fully embraced or explored the potential opportunities of bringing an intersectional perspective into the design process. Design has the potential to bridge the gap between theory and practice and bring intersectionality into critical praxis. By **incorporating intersectional thinking into design processes**, there is opportunity to support and advance approaches toward more inclusive design.

Why I am passionate about my research

Design is a unique field of research given its transdisciplinary nature. It serves as a both a lens to challenge existing situations and provides opportunities for intervention and change. I am interested in **how design can** support this and be used to **enact positive social change**.



Insights from literature so far

Fernanda Fontes

Creativity; Design Thinking; Iteration; Playful;
Children; Education through design;



Design iterations and Play: improving methods to support children's creativity

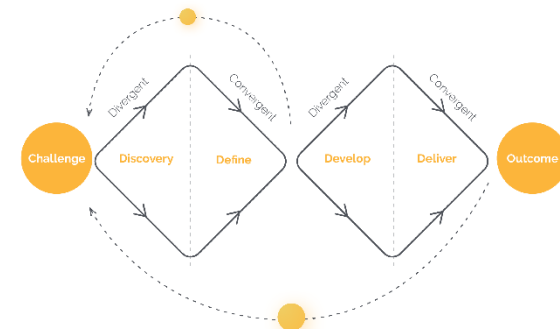
Over the last few years, international organizations have defined creativity and critical thinking as essential skills for the twenty-first century. In an attempt to foster those skills, pedagogical methods have been developed, and some are based on design processes (OECD, 2019). These processes combine thinking and planning to produce useful and innovative outcomes that improve people's life (Friedman, 2000). Iteration is an essential characteristic of the design process, as it allows designers to reflect and re-think their solutions to improve outcomes (Hocking et al., 2016; Luka, 2014). However, in the literature, it is unclear how iteration has been applied to the education context. Because of that, this study aims to understand *“how iterative processes can support children (7-11 years old) in developing creative and practical ideas in the education settings”*. Therefore, we plan to use a generative and qualitative approach, that incorporates semi-structured interviews and participatory methods.

Why I am passionate about my research

My interest in education through design started during my undergraduate degree, where I developed a playful booklet for children to learn about design. This project provided me with insights into the importance of design to support learning. Besides, I strongly believe in the power of education to improve society.



Phases of the design thinking process



Double Diamond Diagram, created by British Design Council

Ruzbeh Irani

Human Computer Interaction (HCI); Interaction Design; Virtual Reality (VR); Somatic Tacit Knowledge



Tacit Knowledge Transfer In Virtual Reality

This study involves the exploration of **tactile feedback** and its **effects on cognitive load** in virtual reality, specifically **within the domain of motorcycle training**. As virtual reality technologies further develop, its uses for training become more apparent and as a result the technology's requirements for learning need to be researched. The study identifies, using both qualitative and quantitative methods (mixed methods), how one's experience and performance differs from the use of supplementary peripherals in existing VR systems.

Testing procedure for data collection

1. Pre-Test Survey – Qualitative – Ethnographic data of prior experience
2. VR Testing – Quantitative – Performance data of 3 groups (Within Subjects)
3. Post- Test Survey – Qualitative – Honeycomb Framework – 9 Point Likert Scale

Why I am passionate about my research

After getting into an accident, I was fearful of riding. I wanted to find a way to help train individuals without having them face the consequences of the real world. Virtual reality seemed to be a reputable tool for training within many industries; it's potential within the domain of motorcycle riding required research, hence my interest in the study.



High Tactile Feedback Simulator



Mid Tactile Feedback Simulator



Low Tactile Feedback Simulator (Control)

Cath Malcolm Edwards

built environment, coping, mental health, mental wellness, student wellbeing



Coping strategies on campus: Exploring coping through student use and context of spaces

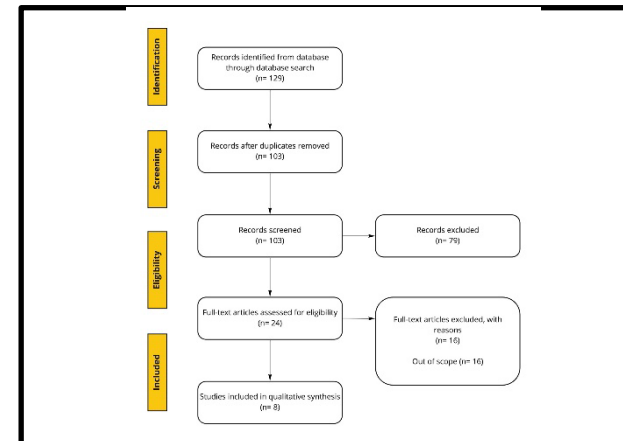
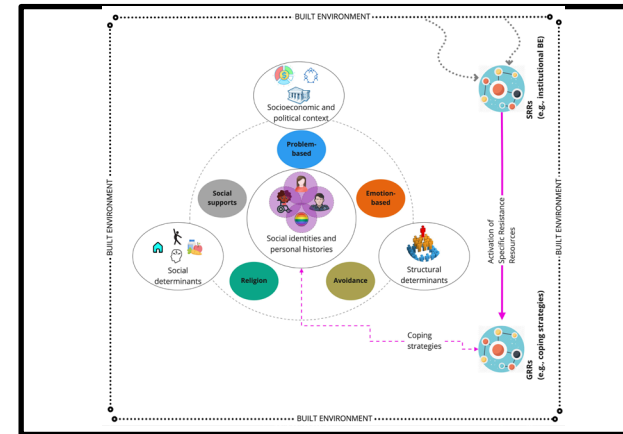
Although the role of the built environment has been studied in relation to mental health and wellness, there is little research about it in the context of post-secondary institutions. This gap is significant given the prevalence of mental health and wellness issues experienced by students. Embracing a more inclusive research practice may help yield better outputs and outcomes, including increased student wellness outcomes and organizational benefits.

What they learnt during the MDes

The MDes program creates opportunity to look at design as a discipline. It trains students to understand that designers are true facilitators, often holding the space between differing viewpoints. Over the course of the program, we explore different methods and approaches that build our designer toolkits as we embark on our careers. Overall, the program thoughtfully builds the skillsets required to launch our research thesis.

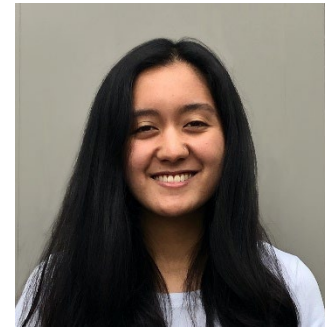
What they are passionate about their research

Imagine if the world could support dignity and compassion by being more accessible? Designers help make the implicit more explicit and by doing so, we can facilitate both spaces and places that support dignity, compassion, and wellness.



Sophie Nakashima

Accessibility and Design; Co-design

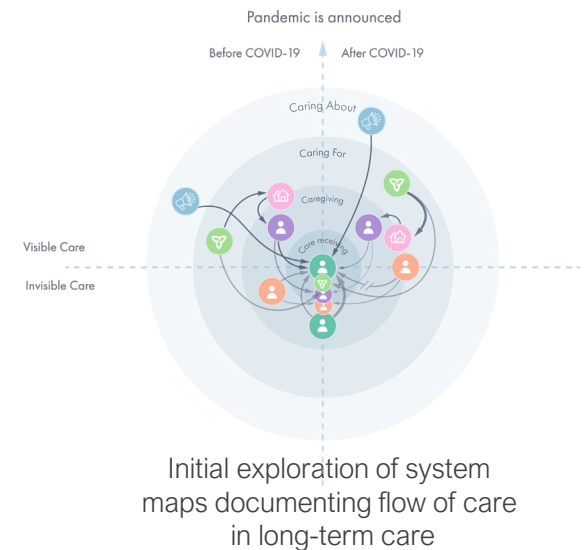


Spirituality and Service Design: Supporting spiritual care in Ontario long-term care homes

This thesis research will investigate the role of service design for the delivery of spiritual care in long-term care homes in Ontario. While spirituality is an important aspect of health and wellbeing, there is limited guidance and documentation of how spiritual care is provided within long-term care homes in Ontario. Using a multi-phase research approach, this study will explore the role of service design in the context of spiritual care through engaging directly with long-term care homes. Through hearing from and co-designing with administrators and care providers, this study aims to gain a greater understanding of the landscape of spiritual care in Ontario, as well as apply a service design lens to understand how to support organizational needs and delivery of a complex service.

Why I am passionate about my research

I am interested in exploring intersections of health and culture in my research. Service design is a unique and evolving field of design and I would like to investigate its applications in new contexts. I strongly believe in the value of co-designing and engaging community in order to drive design outcomes.



Outline of study phases

Yasmine Butlin

Service Design, Strategic Design, Agonistic Participatory Design,
Co-design



Strategic and Service Design to Align: Creating Space for Meaningful Dialogue Across Power Asymmetries

The last few years have witnessed the rise of employees voicing their opposition to organizational policies relating to hot-button social issues, from race to climate change, and mobilizing for change within their organizations. While companies have responded to this rise in employee activism in different ways, most often there is a disconnect (and related tension) between the socially-aware, values-driven cohort of the workforce, and senior management actions (Reitz & Higgins, 2021). Against this backdrop, my research examines what kind of strategic and service design techniques can be applied in a company context to transcend institutional power dynamics and create space for agonistic encounters in which employees and management can have meaningful dialogue on the significance of pressing social and environmental issues within and for the company.

Why I am passionate about my research

We are at a new moment when it comes to public expectations of corporate entities: the perceived lack of government action to address social and environmental issues places pressure on corporations to act, and the nature of the (now predominantly Millennial) workforce has never been so values-driven. It is an exciting time to examine the impact Design can have in this evolving corporate landscape.

Hooman Gheshlaghi

Co-design, Co-collaboration, Collective Creativity



Supporting Students Aged 8 to 12 Regarding Cyberbullying Through Design

The introduction of the internet has changed the quality of how we interact and communicate with each other drastically. But aside from all these advancements, it has also brought forth new and complex challenges in our daily lives. For my thesis project, I am taking a deeper look into one of these challenges, cyberbullying. Although various prevention tools and education programs have been implemented to tackle traditional bullying, cyberbullying has not yet been under the spotlight as it is a relatively new concept. For my project, I have decided to take a deeper look into how children see and define cyberbullying as it has mostly been defined and analyzed by adults. Through discussion sessions with students aged 8 to 12, I will aim to discover cyberbullying as described by them. Through these discussion sessions, I will gain first-hand knowledge from the children on solutions to tackle cyberbullying. With these insights, I will design a solution that will be validated by the same children at the end of my thesis project.

Why I am passionate about my research

In a world where designers are mostly adults with their own perspectives, what roles do children play? How much of their voice is heard in the design process? Through my thesis project, I am passionate about exploring children's perspectives on cyberbullying. I am also very interested to explore the factors that play a role in how cyberbullying affects children.

Medea Rasheed

[Public Art, Rapid Probe, Prototype, Well-Being, Interactivity]

Intersectional Relationships Between Public Art and Well-Being

This explorative design study proposes a two-phase temporary art installation process, the first being a rapid probe and the second being its successor prototype. The temporary installation will be built and situated on campus at Carleton University. The design will align with the aims of their Outdoor Space Master Plan's Big Moves. With an emphasis on human factors engineering, the study's probe and prototype will explore the experimental development of public art that can improve socio-psychological well-being. Public art is part of the fabric of many cities, often described as "art for the people" (Blackman, 2014). It brings cultural, aesthetic, and economic benefits to urban sites (Cheung et al., 2021). Although there is a lack of sufficiently defensible empirical evidence to suggest that public art is definitively beneficial to the lives of urban inhabitants (Tanguy & Kumar, 2019), it is claimed that public art can contribute to quality of life improvements (Blackman, 2014). This study will contextualize and scope this literature gap. Gathered data will be analyzed, its findings and insights organized in thematic fashion representing intersectional relationships between public art and its influence on the well-being of staff, faculty, visitors, and the student body. This study will inform future designs, serving as strategic guidance when considering new public art that will better serve the community at-large. Emotionally intelligent installations may have the potential to catalyze new approaches to existing public art policy.

Why I am passionate about my research

I'm passionate about my research due to my professional backgrounds in urban planning and as a practicing professional artist. Installing my first public art installation with the City of Waterloo and experiencing the public art process fueled my curiosity to initiate this explorative design-centric research study. This study will not only serve the design community but will also inform future designs, with the intent to serve as a strategic guidance when considering new public art that will better serve the communities. And potentially be a catalyst to new approaches to existing public art policy.



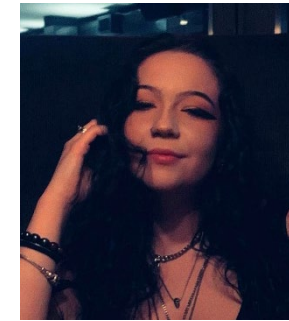
Vision of Calligraphic Art Installation
in the Public Realm

Cheung, M., Smith, N., & Craven, O. (2021). The impacts of public art on cities, places and people's lives. *The Journal of Arts Management, Law, and Society*, 52(1), 37–50. <https://doi.org/10.1080/10632921.2021.1942361>

Blackman, F. (2014). *The Angel of the North: Public Art and Wellbeing*, Durham theses, Durham University. Durham E-Theses Online: <http://etheses.dur.ac.uk/10927/>

Leah Ross

Immersion, Embodiment, Heritage, Exploratory Learning, Affect

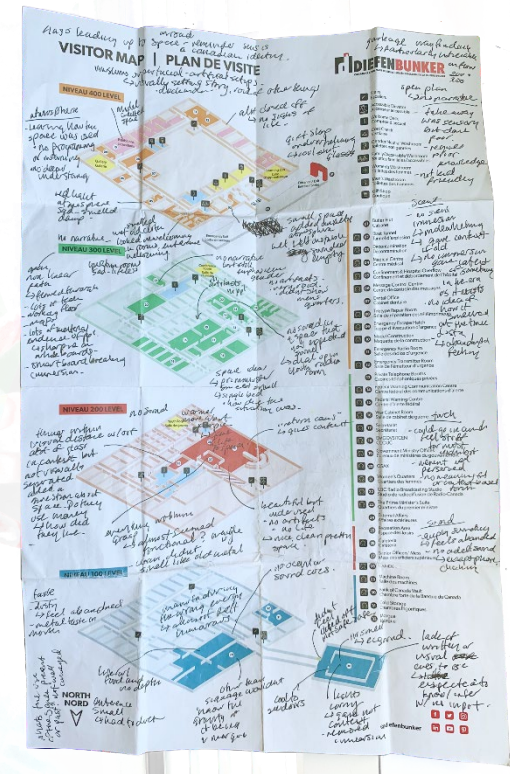


Immersive Heritage: Listening to the Histories of the Diefenbunker

My thesis investigates the connection between immersive heritage and exploratory learning. Since heritage is a mediator between the past and present - represented as narrative - the narratives that are available to visitors can shape how they conceptualize the past. With a narrowing scope of research into the affects of embodied experiences, I am curious to see if combining exploration and immersion tools will be effective in highlighting a diverse set of histories.

Why I am passionate about my research

With my background in Architectural History, I have always been interested in the power of material culture. Combining that with my interest in how people experience space through the senses has allowed me to uncover an important aspect of Exhibition Design I am enjoying discovering.



Sensory Map of the Diefenbunker, 2022

Niyousha Saeidi

Women Centred Design, Application Development, Technological Infrastructure, Mozambique, Female Sanitation and Hygiene



How can design support female adolescents in Mozambique on better personal/community sanitation and hygiene practices. A project in collaboration with Waterlution.

I would like to explore the challenges with sanitation, hygiene, health, empowerment and education for females in Mozambique and design a tool to support female adolescents in Mozambique to acquire better personal/community sanitation and hygiene daily life practices regarding menstrual health, toiletry, pregnancy, etc. My methods consist of two parts, the research method and the participation/input method which both have the three sub-parts of the project ideation, the prototyping phase (which are distinct to that particular method and relate to one another), and the full scale project (which they both have in common). The process, in short, consists of research and analysis, ethics clearance, initial prototyping, data gathering/fieldwork, further semi final/final prototyping and designing the ideal tool at the very end.

Why I am passionate about my research

I am passionate about this subject because I want to make a tool that would make a positive impact, both in the short and long term and help empower the female population in developing nations. This tool could have multiple functionalities to make it easier for women in developing nations to maintain their female sanitation and hygiene and keep empowering them via education and support when needed.

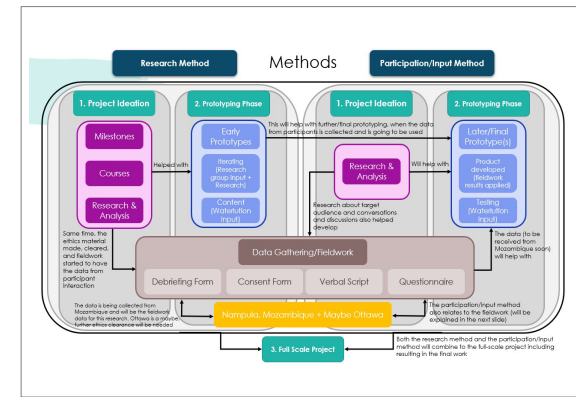


Figure 1. Thesis method mapping

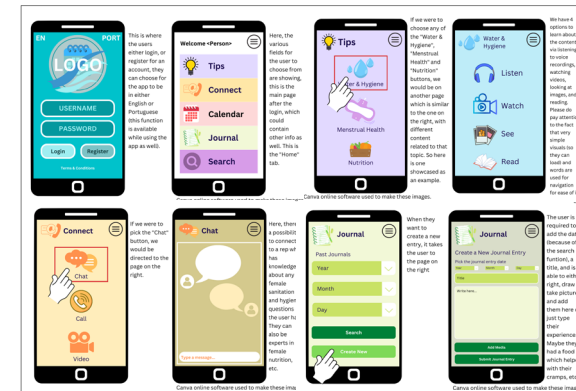


Figure 2. A few graphics of prototype 2

Jingyuan Wang

[User Experience(UX) and Interaction Design, Prototyping Methods]



The Tactility of Augmented Reality in Online Retail Shopping

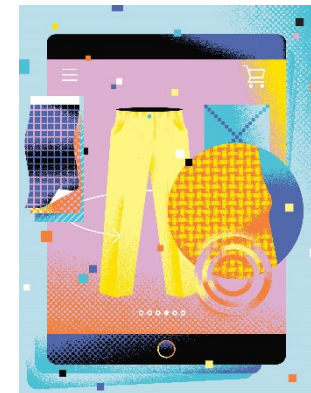
The risk of online retail/apparel shopping is that consumers will make returns and exchanges, which will increase the labor and capital costs of the company, also for consumers. Previous studies have shown that AR and virtual try-on can be an effective tool to help improve the user experience in online shopping and help reduce and return rates. My research will focus on the tactile with AR in online retail shopping. The research can help future AR applications evaluate more effective design solution, so that users can reap a better user experience when shopping online for apparel. To address the research questions for this thesis, an experimental research design will be employed using an AR prototype, each participant will be asked to use the AR virtual try-on technology for an online shopping experience, do the physical try-on afterwards, and rate the fit, size, feelings, and the experience with the purchased item.

Why I am passionate about my research

I am passionate about new trend, new things in design. I am interested in user experience design because I believe that a better user experience can help more people to make many things easier and can enhance the comfort of life.



[AR try-on]



[haptic technology]

Farah El-Sawy

Healthcare design, Co-design, accessibility and inclusion, human factors and design, Aging in place



Exploring orientation techniques to support the experiences of people with dementia in respite homes

Research focusing on the design of wayfinding and orientation cues to enhance the quality of life for individuals with dementia residing in respite houses, which serve as temporary living, remains unexplored (Fleming et al., 2016; Marquardt & Dr-Ing, 2011). As residents with dementia in a respite house may experience spatial disorientation, which is a significant challenge for people in the early stages of dementia in unfamiliar environments, their ability and independence in performing daily tasks may be limited negatively affecting their quality of life (Marquardt & Dr-Ing, 2011; Wiener & Pazzaglia, 2021). This research aims to explore wayfinding and orientation cues to help individuals with dementia in a respite house find their way to their destination, recognize their destination, find the best route, and find their way back.

Why I am passionate about my research

I am passionate about my research on exploring orientation techniques for individuals with dementia in respite homes because it addresses a critical need for improving their quality of life. Witnessing the transformative impact these techniques can have on their well-being and the opportunity to make a difference fuels my dedication.

EMAN MOHEB

Biomimicry, Bio-inspired design, Design education, Industrial design, Sustainability.

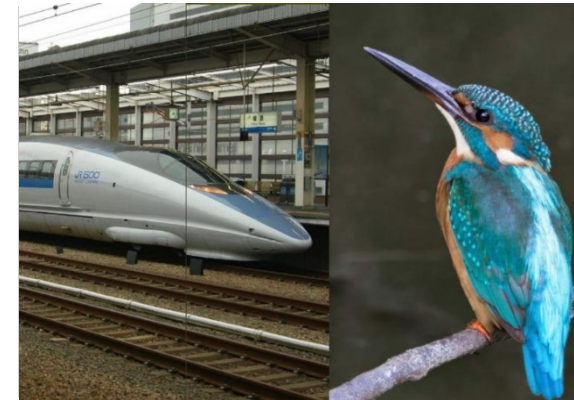


[Exploring Challenges, Limitations, and Opportunities in Integrating Biomimicry Principles into Design Education to Advance Sustainability Objectives]

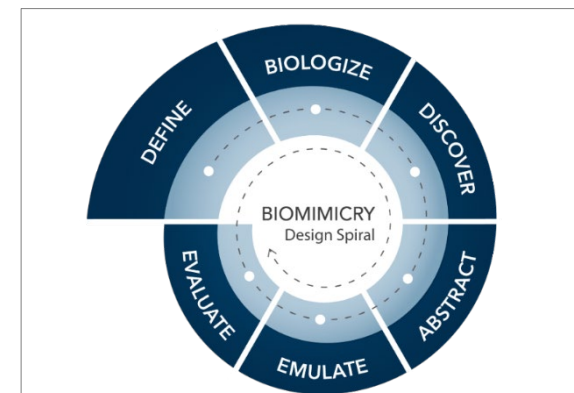
[This thesis aims to assist design educators and students in implementing biomimicry more effectively within the design process. It explores the existing barriers and improvement opportunities by investigating how biomimicry principles have been integrated into the curriculums of global design schools. This study also provides a holistic explanation, clearly defining biomimicry and identifying its levels, approaches, methods, and tools. This research is a very low-risk study that uses a qualitative methodology through three phases, first will be an environmental scan, second, a questionnaire will be sent to 20 local and/or international design professors to specify the accurate participants of the third phase which will be an in-depth questionnaire and/or interviews with (4-6) design professors who have been teaching biomimicry within their curriculums. Finally, analyze and compare findings on common obstacles and improvement chances for more effective implementation of biomimicry to foster innovation of sustainable products and solutions.]

Why I am passionate about my research

[Design education should equip students with more advanced tools to tackle global challenges like sustainability. Incorporating biomimicry in design education helps innovate sustainable products and solutions. However, many design educators teach biomimicry incorrectly. Moreover, students usually mimic the form of nature, without considering the function or the level of sustainability.]



Kingfisher bird whose beak inspired the design of the Shinkansen train in Japan



Biomimicry Design Spiral, a methodology developed by Biomimicry institute

Carly Strathearn

Design Thinking, Collective Creativity, Ideation, Five Factor Model of Personality (Extraversion), Participant Experience

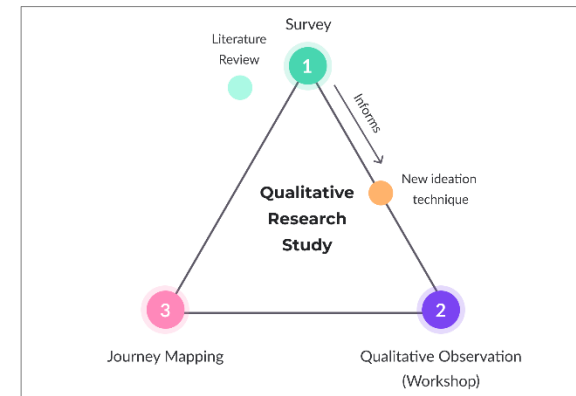


Improving the Ideation Experience in the Extraversion Dimension: Acknowledging Participant Personalities

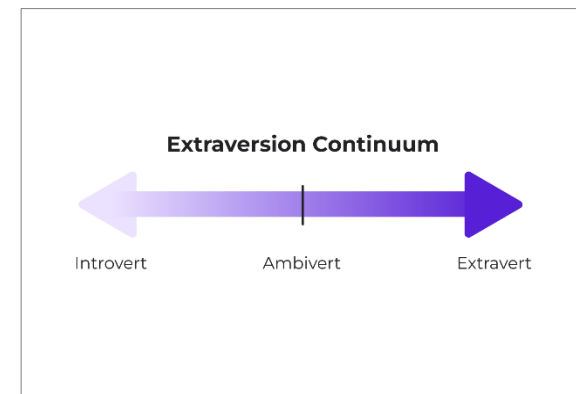
Misconceptions surround those with introverted personalities, and introverts may be considered unsocial due to their personality characteristics. It is believed that during traditional group idea generation, introverts conform to predominately extrovert methods of generating ideas as they are encouraged to vocalize their ideas as they come to mind in a social setting with other participants. It is argued that this is a one-size-fits-all approach, and little thought goes towards determining which brainstorming technique produces the best participant experience and results based on participants' personality in the extraversion dimension. This qualitative research study, structured triangularly, includes a survey, workshop, and participant journey mapping to improve the ideation experience for introverts and extroverts. The research findings will inform the design of a new ideation technique.

Why I am passionate about my research

As a designer with introverted personality traits, I can resonate with feelings of pressure, dread, mental drain, and exhaustion associated with brainstorming in group settings. By designing a new ideation technique, I hope participants feel equal during the ideation process and generate ideas in a way they feel comfortable doing so.



Research study methodology



Extraversion continuum

Kimia Tajmirriahi

Design Thinking, Craftsmanship, Ceramics, Integration, Innovation

How can the integration of design thinking principles be strategically employed to address the perceived gap in innovation within the Canadian ceramics craft industry, and what are the quantifiable outcomes, challenges, and opportunities associated with this integration?

This research project delves into the convergence of design thinking and design methods with ceramics craftsmanship in Canada. It investigates how integrating design thinking can address innovation gaps in the Canadian ceramics craft industry, examining related outcomes, challenges, and opportunities. The study recognizes the blurring lines between traditional craft practices and design methodologies, reshaping the concept of craftsmanship. Design thinking, known for its user-centered problem-solving and innovation, provides a fresh perspective on ceramics creation and production.

To provide context, the research explores the cultural and historical background of Canadian design and ceramics, shedding light on the factors influencing the relationship between design thinking and craftsmanship. The ultimate goal is to bridge tradition and innovation, heritage and modernity, and comprehend the dimensions of ceramic craftsmanship in today's Canadian landscape.

The study employs a methodological approach that combines qualitative and quantitative methods to investigate the impact of integrating design thinking and design methods in the Canadian ceramics field. This research yields valuable insights into the transformative potential of these principles in craftsmanship.

I am captivated by this research because it explores the dynamic fusion of design thinking with craftsmanship in the Canadian ceramics industry. The potential to bridge tradition and innovation, along with the transformative impact on craftsmanship, intrigues me and offers unique insights into the evolving creative landscape.

Amelia Zaïane

Design for Behaviour Change, Supportive Design Theory, Co-Design, Community-based Research, Design for Health and Well-being.



Supporting Staff Grief and Bereavement in Long-Term Care through Design for Behaviour Change.

Confronting death, dying, and grief is part of the everyday in long-term care. There are significant gaps in how the system approaches supporting grief for everyone involved, but has been particularly overlooked for staff, contributing to high burnout and turnover rates. My thesis aims to utilize Design for Behaviour Change and the Theory of Supportive Design to investigate how design interventions can support the grief and bereavement of staff in long-term care facilities. There is both an opportunity for more research into specific staff outcomes in these scenarios, as well as potential to further connect the existing research, and through Theory of Supportive Design and Design for Behaviour Change, to transform the approach in which staff grief and bereavement experiences in long-term care are supported.

Why I am passionate about my research

This research is just part of many overlooked pieces in the healthcare system where design can make an impact but has not yet. Healthcare staff are the backbone of the system and caring for them is fundamental to caring for everyone. Many staff, in long-term care especially, prioritize the needs of the residents in their care, and seemingly often those of their fellow staff members, above their own, which makes easily accessible support for staff all the more important.

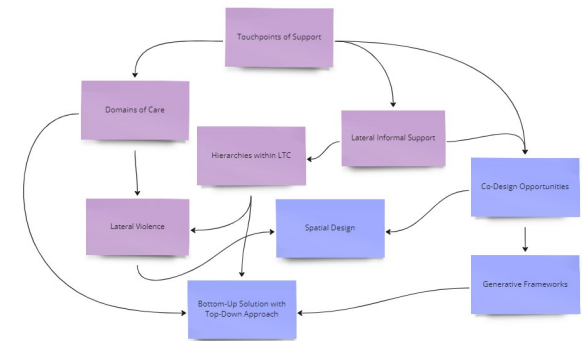


Diagram showing the interconnected nature of gaps in support for staff in long-term care.



A Reflection Room® (an existing grief support) in an unidentified Ontario long-term care facility.