

# Support Document 1: PROJECT DESCRIPTION

## MAKEWAY LAB

a mobile makerspace for hospitals



Makeway Lab - mobile hospital makerspace

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## 1. STUDY TITLE

**MAKEWAY LAB**, *a study to evaluate the impact of a mobile makerspace for dialysis patients to improve their hospital experience and self-efficacy.*

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## 2. RESEARCHER

Researcher: Mr John Waldron, Doctoral Candidate  
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2 George St, Brisbane City QLD 4000

Supervisors: Principal Supervisors: Dr. Jennifer Seevinck, QUT Creative Industries Faculty  
Associate Supervisor: Dr. Julie-Anne Carroll, QUT Faculty of Health  
Industry Mentor: Lynne Seear, Manager Arts In Health Program,  
Lady Cilento Children's Hospital

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## 3. RESOURCES

In 2015 the Researcher received funding from the Queensland Government (Arts Queensland) to build the prototype Makeway Lab.

The Makeway Lab was constructed in 2016 and trailed over a 4 month period at Healthcare Facility (Respite Centre).

As a Doctoral Candidate the Researcher will facilitate the study activities, gather and analyse the data.

Funding is being sort for 3-4 iPads to be used by the participants.

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## 4. BACKGROUND

The Makeway Lab is a creative health initiative that provides people access to innovative technology and interactive activities with the goal to improve their hospital experience and self-efficacy.

The Makeway Lab is a mobile 'makerspace' developed by John Waldron (JW), equipped with 3D printers, design software, tablets and tools.

This research will examine the use of the Makeway Lab in a hospital setting and deliver a series of digital maker activities with a group of adult dialysis patients.

**The research is motivated by the notion that we feel alive and valued when we can make and share things. It will look at the mental health benefit of a purposefully designed makerspace for long-term patients.**

Research significance:

- This research will focus on the patient. It will examine the use of digital lead participatory activities to facilitate an improved hospital experience and self-efficacy for long-term patients.

- Current hospital makerspace programs are designed for healthcare workers and focus on the innovative ‘thing’ rather than the patients. This research will build understanding for the value of makerspaces in hospitals for patient benefit.

In a period of rapid development in the field of creativity in health and digital arts practice, this research examines makerspaces, as spaces for social value and innovation. It will investigate the changing ethos for makerspaces, from places for making, teaching and learning to spaces that are intentionally programmed for social change. From spaces where people “learn best by doing” (Tapscott, 1998) to those that assist people to *live better through doing*.

This research will uniquely examine the use of a mobile makerspace in a hospital, as a facility that can account for the mental and social health of people and provide an improved hospital experience for long-term patients.

In keeping with the social and collaborative ethos of makerspaces, Bandura’s Social **Learning Theory** (SLT) (1977) and specifically his **Self-Efficacy Theory** (1977) will be applied.

In STL human functioning results from a dynamic interplay among personal, behavioural, and environmental influences (Schunk & Pajares, 2009). STL is rooted in a view of human agency in which individuals are proactively engaged in their own development and can largely determine the outcomes of their actions (*ibid*).

Self-efficacy is correlated with achievement, motivation and self regulation (Bandura, 1997).

Efficacy expectations are learned from four major sources. The first, termed performance accomplishments, refers to learning through personal experience where a person accomplishes a new or difficult task and as a result enjoys an increase in self-efficacy. Performance accomplishments attained through personal experience are the most potent source of efficacy expectations (Bandura, 1977).

For this research the participants will be challenged by the use and engagement of the Makeway Lab. They will need to become familiar with new design and fabrication software and equipment to be able to realise their designs and projects.

The research will contribute to new knowledge surrounding makerspaces, which to date has focused on the emergence of the maker movement and the potential makerspaces offer to transform learning (Keengwe, 2015). The benefit however of makerspace programs, for hospitals and patient wellbeing has seen little research.

The research seeks to answer the following overall question:

*Given the social benefit the maker movement is having on communities, how can the Makeway Lab, a mobile makerspace, improve the hospital experience for dialysis patients?*

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## 5. AIMS OF STUDY

This research aims to:

- To gain evidence and understanding of the mental and social impact for the participants (dialysis patients) as a result of interacting with the Makeway Lab (mobile makerspace);
- To evaluate the benefit of the Makeway Lab for patient mental and social benefit; and
- Improve our understanding for the potential of makerspace activities in hospitals.

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## 6. OBJECTIVES

## Research Objectives:

- To test if dialysis patients who participate with the Makeway Lab and hospital maker program have improved mental health and self-efficacy.
- To evaluate the benefit of the Makeway Lab for dialysis patients in improving their hospital experience.
- To assess a mobile makerspace model for the hospital setting.
- To facilitate a maker program in two dialysis wards and undertake a series of data collection activities including a questionnaire, face-to-face interviews, documentation and a literature review.
- Analyse the data address the primary and secondary research questions.

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## 7. HYPOTHESIS

### Primary Research Question:

RQ1. Given the social benefit the maker movement is having on communities, how can the Makeway Lab, a mobile makerspace, improve the hospital experience for dialysis patients?

### Secondary Research Questions:

RQ2. What is the nature of the participant experience of making during dialysis treatment?

RQ3. How are makerspaces being used in hospitals and healthcare settings?

RQ4. What is the makerspace model best suited to interactive maker activities for long-term patients and a hospital setting?

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## 8. STUDY DESIGN

### Research approach and methods:

- Ethnographic methodology will be used whereby JW will observe the patient's experience using the Makeway Lab, during their treatment, in the hospital setting.
- For this qualitative research JW will use pre and post activity questionnaires; observe the participant/s' interacting with the Makeway Lab, in their typical hospital setting; Online research of the group's wiki-group posts and discussions:
- The research will be conducted according to the guidelines, National Statement on Ethical Conduct in Human Research (2015).
- Data collected:
  - pre and post activity questionnaires and recorded interviews
  - written notes from the observations;
  - photographic documentation of the participants activity and interaction with the Makeway Lab; and
  - written notes, approved images and screen grabs from online (wiki-group) discussions and posts.

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## 9. STUDY SETTING / LOCATION

It is proposed that the study be delivered across two SCHHS Renal Dialysis Units at, Sunshine Coast University Hospital (SCUH) and Nambour General Hospital.

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## 10. STUDY PARTICIPANTS

The research will involve a group of 10-15 adult (aged 18 years and older) Sunshine Coast residents who are receiving dialysis treatment.

To recruit participants a flyer will be distributed to patients across the renal dialysis units SCUH and Nambour General Hospital.

The flyer will be posted on the wall in the Renal Ward and other (physical and online locations) recommended by QH employees.

The flyer will be distributed by the Renal Team members or other associated QH employees.

To assist the recruitment process QH employees may introduce the PI to the potential participant to address any questions.

If there are more than 15 people expressed interest, those who are not selected will be offered a Makeway Lab demonstration/workshop opportunity.

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## 11. INCLUSION / EXCLUSION CRITERIA

The participants must:

- be aged 18 years or older.
- be a renal dialysis patients.
- have a good understanding of computer technology.
- be willing to participate in the activity for a 6-8 week period.
- be prepared to connect with other participants.

Participants would not be selected if they were not available for the full period; or who have little experience with computer technology.

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## 12. STUDY OUTCOMES

The study outcomes include:

- To refine the design and construction of the Makeway Lab and address .
- The design and delivery of the 6-8 week maker activity for dialysis patients.
- The establishment of a group (*Collective*) of 10-15 adult dialysis participants.
- The documentation and data collection.
- The display (exhibition) of the objects made.
- The promotion (conference and papers) of the research project.

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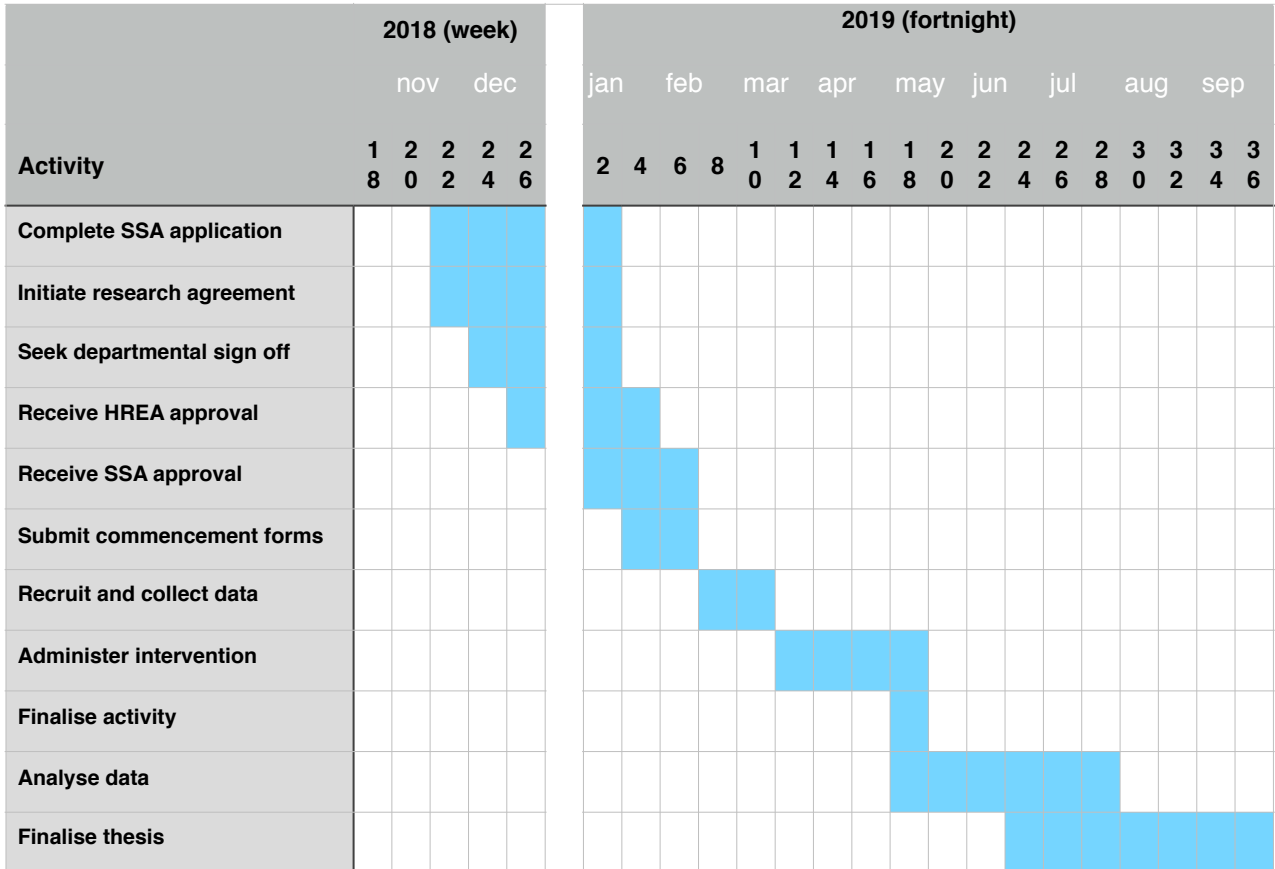
## 13. STUDY PROCEDURES

All aspects of the study will be facilitated by the Researcher. The 'Maker Sessions' will be delivered at the Participant's hospital to coincide with their scheduled visits. It is anticipated that each Participant will undertake at least 6 and up to 10 Maker Sessions.

The study will involve the following activities:



**Gantt Chart of research tasks and timeline**



**15. DATA ANALYSIS**

Ethnographic methodology will be used whereby the qualitative data will be analysed to identify trends in patient/group experiences and impacts.

The pre and post activity questionnaires will be coded to develop theme categories across mental health; wellbeing; and self efficacy.

Categories will be reduced to major themes through ongoing conversations with participants; RST; supervisors; and industry mentors and the re-reading of the participants responses; and online closed Facebook Group posts and discussions.



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## 16. ETHICAL CONSIDERATIONS

This study is considered low risk research. The identified potential risks include:

- 1) Some anxiety. The Participants may experience some anxiety when discussing or detailing their circumstances, their illness and treatment.
- 2) Discomfort or embarrassment. This is from being observed from camera recording or other people from the hospital community being present.
- 3) Inconvenience from contribution of time to undertake the Study Procedures as identified in Section 13.

The mitigation strategy for the potential risks identified above includes:

- 1) Should the Participant experience anxiety when discussing or detailing their circumstances, their illness and treatment, a contact for QUT's Counselling Service will be provided as well recommending that the Participant talk to their treating Dr or GP.
- 2) Discomfort or embarrassment is reasonably likely.
  - 2)a. It is of low severity since participants can elect (via the Consent Form) not to have their face recorded.
  - 2)b. The interviews will be conducted in a private space provided by the hospital
- 3) Inconvenience from contribution of time will be minimised by:
  - 3)a. As often as possible the Study activities will coincide with the participants treatment schedule.
  - 3)b. Participants will be advised that they can rest at any stage of the Study Procedure.

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## 17. CONSENT

Participants for the study will be fully informed of activities, data collection and data use. This information will be supplied in writing and via Information Sessions.

Each participant will complete a Consent Form which details that the participant's image, recorded interviews, photographs and online screen grabs showing images of work and comments, will be used by the Researcher for his Thesis.

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## 18. PRIVACY AND CONFIDENTIALITY

All comments and responses will be treated confidentially.

As the research project involves an audio recording:

- The participant will have the opportunity to verify their comments and responses prior to final inclusion.
- The recording will be destroyed 5 years after the last publication.
- The recording will not be used for any other purpose.
- Only the Researcher will have access to the recording.

Any data collected as part of this research project will be stored securely as per QUT's Management of research data policy.

Non-identifiable data from this research may be used as comparative data in future research projects or stored on an open access database for secondary analysis.

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## 19. FUNDING DETAIL

SCHHS will not be required to contribute financial support for this research.

In 2013 JW was awarded \$25,000 (Arts Queensland) to fabricate the Makeway Lab. JW's company Blue Sky View ([www.blueskyview.com.au](http://www.blueskyview.com.au)) matched this funding to complete the fabrication and to deliver, in 2016, a proof-of-concept trial.

It is anticipated that a budget of \$3,000 - \$5,000 will be required to undertake this research project to cover for the materials for the group of 10-15 participants. The research will take place over a 6-8 week period with a further 4 weeks to completion.

The estimated cost to facilitate the research is \$24,000. The researcher will cover this cost and supply and transport the Makeway Lab: and facilitate the study activities as it is conducted as part of JW's studies

The researcher will seek funding support from QUT and other sources to cover the costs of participant equipment and materials as this is towards JW's studies.

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## 20. STUDY TERM

The study will be contained to a 6-8 week period.

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## 21. SUPERVISORS

Principal Supervisor: Dr. Jennifer Seevinck, Creative Industries Faculty. Jen Seevinck is a senior lecturer, an electronic artist, researcher and lecturer in Interactive and Visual Design, and has worked as an artist, freelance designer, researcher and educator since 1993. Her practical and research interests include interaction design and visualisation; specifically interactive art, emergence, information visualisation and medical simulation. She is most interested in interactions with digital systems and is currently exploring data as a concept driver in creative work and explorations, including a visiting scientist position at CSIRO.

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Associate Supervisor: Dr. Julie-Anne Carroll, Faculty of Health. Julie-Anne Carroll, PhD, is a Lecturer in the School of Public Health & Social Work (SPHSW), Queensland University of Technology (QUT). She lectures in the areas of Women's Health, International Health, the Social Determinants of Health, and Sociology and Health. Her PhD looked at how place of residence acts as a social determinant of health, and how aspects of people and places interact over time to produce inequalities in health. She is interested in how the social, cultural, and geographic spaces that people inhabit influence their lifestyles and consequently their health and well-being.

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Industry Mentor: Lynne Seear, Manager Arts In Health Program, Lady Cilento Children's Hospital. For the past five years Lynne has been developing a multifaceted Arts Program and Collection for inclusion within the new Lady Cilento Children's Hospital and she has a specialist research interest in the importance of arts and culture within healthcare settings (Queensland, 2016).

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## 22. SCHHS INVOLVEMENT

The research will not require a financial contribution.

Consultation with the nursing, treatment and facilities staff will be required to ensure that the activity is located within the Units with little impact on the environment and treatment schedule.

Nursing staff interest in the study and participant involvement will benefit the participants who will be undertaking new and mentally challenging activities.

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## 23. REFERENCES

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