

MAKEATHON REPORT



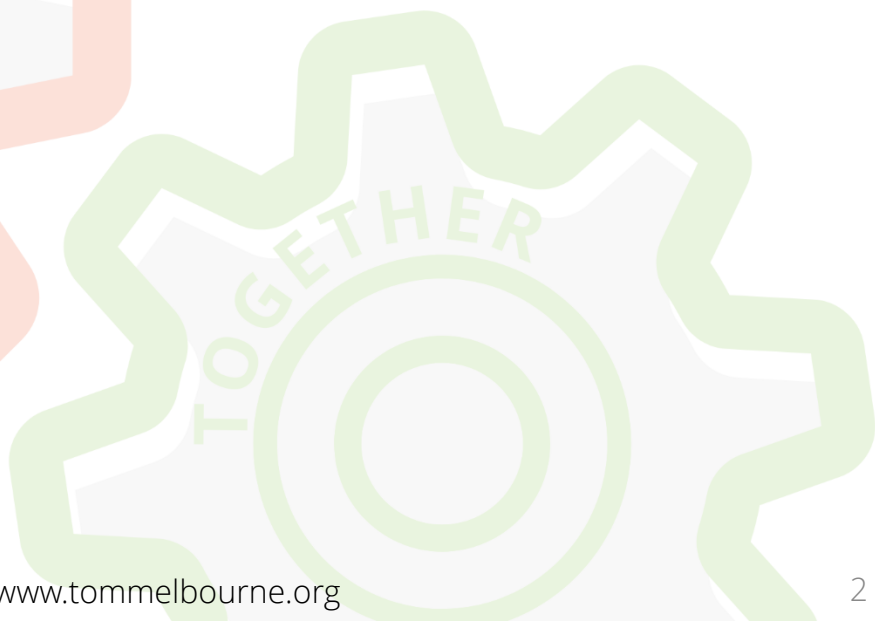
September 2022

Hosted at Monash University, Clayton

:Melbourne
Tikkun Olam Makers



"I'll definitely be back"
~ Saskia (2022 Maker)



About the 2022 Makeathon

Often described as a “*marathon weekend of making*”, the TOM: Melbourne Makeathon brings together people with disability who have a specific need (‘Need-Knowers’) and connects them with a diverse group of professionals and students with skills in engineering, design, healthcare and trades (‘Makers’). Together, they design and build products that solve a complex problem and improve the everyday life of the Need-Knower.

The 2022 program consisted of a series of online preparatory sessions (PreTOM and Design Night) before the Makeathon weekend itself which was held in-person at the Woodside Building for Technology & Design at Monash University.

Eight teams of Makers and Need Knowers co-designed and built a prototype solution using their diverse skills and common desire for making a difference. These passionate problem solvers were supported by TOM Mentors and Need Knower Ambassadors who shared their expertise and experience with participants throughout the program.

On the final evening of the Makeathon weekend, participants and special guests came together for a Showcase presentation of the teams’ solutions - and to celebrate everyone’s efforts throughout the program. Teams also had the opportunity to continue developing their prototype solution in TOM2.0, an additional making session, hosted back at the Makerspace a few weeks after the Makeathon weekend.

The solutions developed as part of the Makeathon program are continuing to be developed by the TOM Team and our community, with the aim of assessing which solutions might be appropriate to progress to product status.

Video and photo highlights from the 2022 Makeathon can be seen on the TOM: Melbourne website - <https://www.tommelbourne.org/gallery>



PreTOM

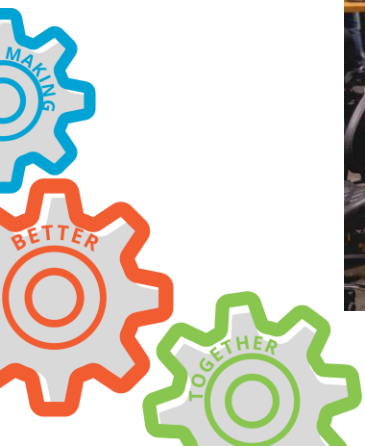
31 August 2022

PreTOM was the first preparatory session as part of the Makeathon program. The session aims to facilitate the beginning of the design thinking process of empathising with the user and defining the problem. This year, PreTOM began with a candid and interactive discussion about Disability Awareness from TOM Need Knower Ambassador, Mary Henley-Collopy, who shared insights from her lived experience as a person with disability and also having participated in multiple Makeathon programs in the past. Leveraging the capabilities of *Zoom*, teams then spent time in virtual breakout rooms getting to know each other and understanding the challenge presented by the Need-Knower.

Design Night

8 September 2022

Design Night occurred a week after PreTOM and was the second of the Makeathon preparatory session where teams continued the design thinking process by ideating and brainstorming different design solutions. A special guest speaker from *Vision Australia*, Ben Gilmore, shared some important Inclusive Design tips for the teams to consider in the design process throughout the Makeathon program. In virtual breakout rooms, teams then shared and discussed design ideas, and planned their approach to the upcoming in-person Makeathon weekend of making and prototyping.



Makeathon weekend

17 & 18 September 2022

The excitement of the Makeathon weekend was finally here and teams arrived bright and early Saturday morning to meet each other in-person and put their designs to the test in an intense weekend of making. Across two full days of hands-on prototyping, testing and iterating their design, participants developed physical prototypes that represented the solution they co-designed with the Need Knower to address the Challenge.

Showcase

18 September 2022

To celebrate the mammoth efforts of the Makeathon participants over the weekend, a Showcase was held on the Sunday night and teams presented their solutions. The Showcase was hosted by Mandy McCracken, TOM Need Knower Ambassador and previous Makeathon participant over many years. In addition to presenting the solution, Mandy encouraged each team to reflect on the personal impact that this experience had on the Need Knowers and the Makers. It was an inspiring way to wrap up the Makeathon weekend and commemorate every participants' dedication and spirit throughout the program alongside TOM: Melbourne's Sponsors, Supporters and Community Partners.

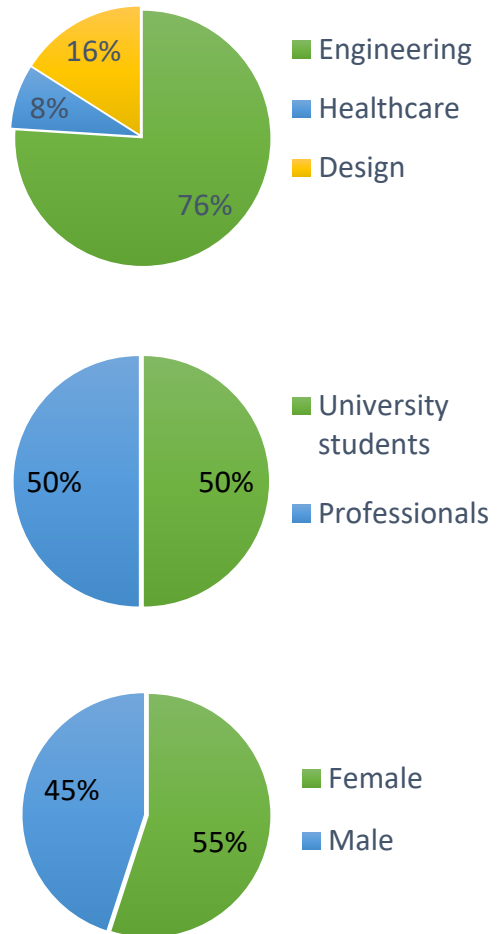
TOM2.0

8 October 2022

Many of the Makeathon teams attended the additional "making" session available at the Makerspace to further develop their solutions created during the Makeathon weekend. TOM2.0, although not as structured an event as the Makeathon, offered the teams a chance to reconnect and continue the co-design process in a more relaxed setting. At the conclusion of TOM2.0, the TOM Team collected the final prototypes to assess them against relevant safety and risk factors. Some modifications and iterations and review of the designs of many of the solutions are required before progressing them to product classification, however, the initial designs and concepts to address the challenge have been recorded in digital product files to be shared, open-source through the TOM website.

Event Statistics

There was a lot of interest to be part of the September Makeathon, with over 90 applications and 15 unique accessibility challenges considered for the program. A selection process was undertaken to ensure the teams comprised of participants with a range of skills and experience. Diversity across and within the teams was important for the success and impact of the solutions developed and overall participant experience. Forty nine participants across eight teams spent at least 31 hours across the entire Makeathon program (from PreTOM through to TOM2.0) to co-design and build their solution. Many participants contributed additional hours to the program choosing to work on their team's solution in their own time beyond the sessions organised by TOM – a further testament to the passion and dedication of those involved in the program.



Online Engagement

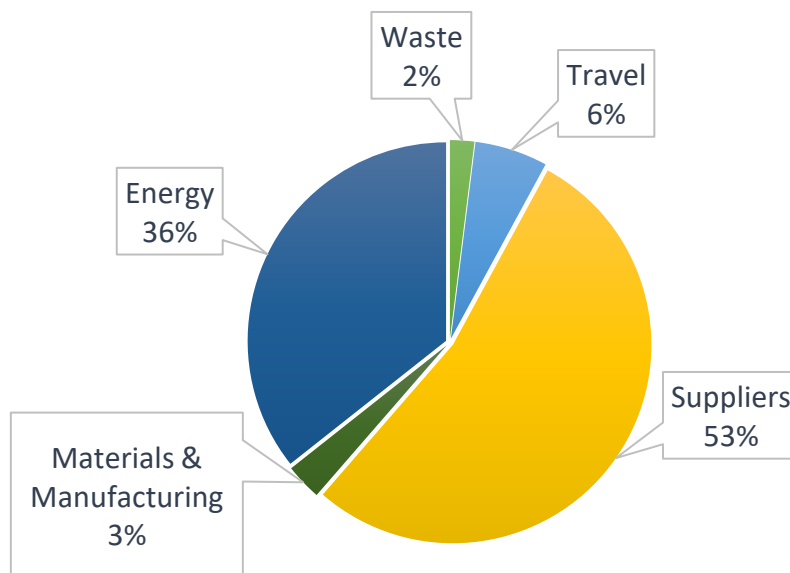
Connecting with the wider community online was achieved through targeted social media campaigns and published content which saw significant increases in reach across the TOM: Melbourne social media platforms. Content from the TOM: Melbourne Facebook page was seen by nearly 90,000 people across the program timeline (July to mid-Sept), and by over 3,400 people on Instagram for the same time period. There was also increased traffic to the Makeathon website during the lead up to the event, with over 2,700 visits to the page. The site was used extensively throughout the program timeline as it contained key event information and direct links to prospective participants to apply for the Makeathon program.

A Carbon Positive Impact

In line with TOM: Melbourne's core values, environmental sustainability was considered for the Makeathon program by offsetting the carbon footprint of the event. The TOM Team worked with *trace* to identify and calculate key event and participant data to determine the Makeathon's carbon footprint.

The CO₂ footprint of the Makeathon was calculated to be 13.9 tonnes which has been offset by funding certified climate projects and planting trees around the world. The TOM Team are proud to declare the September 2022 Makeathon as a carbon positive event, with 21 tonnes of CO₂ being offset to compensate for 151% of the event's footprint.

Breakdown of the emission sources for the Sept 2022 Makeathon



21t CO₂ offset as well as 120 trees planted which is equivalent to 2.7t CO₂



Team Access Inc.

KITCHEN UTENSIL

Access Inc. runs programs to help participants develop skills for their future employment and for the next step towards living independently.



Challenge

Team Access Inc. would like more accessible kitchen utensils for their program participants. Specifically a device that allows their participants to independently use a bowl with minimal hand use while mixing.

Solution

Team Access Inc. created a magnetic base plate that secures a metal bowl in place while being used. Allowing participants the freedom to mix holding only the utensil.



"[We] enjoyed meeting so many incredible people, and being inspired by the makers, mentors, staff and ambassadors as well as being humbled by the Need Knowers."

~ Team Access Inc.
(2022 Need Knowers)

This report contains descriptions of the solutions as they were at the end of the Makeathon program timeline and some solutions may still be in review by the TOM Team.

Team Arnie

INDEPENDENT LEG BAG



Challenge

Arnie is a 65 year old male with quadriplegia due to a spinal cord injury. He would like to independently empty his catheter bag which would allow him more freedom to go out without a carer. This is especially important due to Arnie's goal to attend more AFL matches in support of his favourite team, Collingwood.



"I enjoyed working together to help someone. As well as the time pressure adrenaline, and seeing all the solutions."

~ Irene (2022 Maker)

Solution

Team Arnie extended the tubing of the bag to allow Arnie to press a button that automatically releases the clamp, which allows the bag to empty and then close again.



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Team Beatrice

HAND PROTECTOR



Challenge

Beatrice is a child who lives with a rare neurological disorder that causes her to bite her hands. She is looking for a solution that will protect her hand from biting and saliva. Part of the design incorporates Beatrice still needing to use her hand productively whilst decreasing skin deterioration from her biting and be easy to clean.

Solution

Team Beatrice created a custom elbow brace that provides Beatrice movement to play while controlling her ability to put her hand in her mouth. The team also created mittens that are custom adjusted gloves to protect Beatrice's hands. Both solutions are being reviewed and assessed for safety.



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Team Jacob

TRIKE RACK



Challenge

Jacob is a young adult with a love of bike riding. He uses a special tricycle that is difficult to transport to the local park. Jacob is looking for a custom bike rack for his support workers to easily assist transporting the trike to and from the park.

Solution

Team Jacob designed a rack to fit Jacob's unique trike and that can be fitted on a car towbar. The concept involves the trike being placed on the rack and fastened with heavy duty straps limiting the movement of the bike during the drive. The prototype is undergoing an assessment process.



"Fantastic weekend, loved connecting with all of the TOM members."

~ Jacob and Zoe

(2022 Need Knowers)



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Team Joan

POSTURE SUPPORT



Challenge

Joan has advanced Parkinson's disease, which causes her to bend to the right when seated. Team Joan were tasked with developing a solution that will aid her in comfortably and safely sitting upright in her wheelchair.

Solution

Team Joan created a solution to help support and facilitate an upright body posture. By separating the challenge into sub components the team created four elements that worked together to help Joan stay upright while sitting. These included a head support, trunk support, pommel with a seat cushion and a tilted wedge. The solution is undergoing review.



"I enjoyed seeing the ideas rapidly come to life, and to see the impact that our solution was able to have."

~ Samuel (2022 Maker)

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Team Matt

SHOWER SUPPORT



Challenge

Matt usually wears an external device that stabilises his walking and standing, however he cannot wear them in the shower. He is looking for a solution to independently shower safely and comfortably.

Solution

Team Matt explored a few different solutions and explored an idea that includes a lean-to support element with an additional velcro waist band for extra support. The solution is being reviewed to determine next steps.



"If I chose one [aspect that I enjoyed] it would be the community that formed, founded upon united values."

~ Matt (2022 Need-Knower)



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Team Stella

DISH WASHING



Challenge

Stella has multiple sclerosis and uses a powered wheelchair for mobility. She would like to wash her own dishes as it empowers her independence, however her current sink is inaccessible and modifications to her kitchen are too costly.

Solution

Team Stella designed a device that can be attached and detached from the sink that extends off the existing bench in Stella's kitchen. This enables Stella easier access to be able to clean her dishes independently. The prototype is undergoing modifications and assessment.



"My ideas were valued and could be or were used by my team in the making of my assistive technology."

~ Stella (2022 Need Knower)

Team Vinny

REVERSING CAMERA



Challenge

Vinny has been wheelchair bound for over 32 years and found that he cannot safely reverse in his powered wheelchair. He couldn't find a market solution so enlisted the help of TOM to develop a solution.

Solution

Team Vinny developed a concept for a wheelchair reversing camera using off-the-shelf products. The camera allows Vinny a wide view of the area behind him and is designed to integrate with his current mobile device.



"The whole weekend has been a learning opportunity for me."

~ Minoli (2022 Maker)



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Impact Evaluation & Feedback

The Makeathon program was evaluated for its impact and feedback was collected from various stakeholders. Quantitative and qualitative data was collected and analysed from program participants, the TOM Team and Board, suppliers and other stakeholders of the Makeathon to capture a wholistic view of the program.

The evaluation shows an overwhelmingly positive reflection of the Makeathon, which the TOM Team plan to capitalise on for future events. Where constructive feedback was identified, this has been reflected upon to ensure continuous improvement for future programs.

Average response ratings from participants

NEED KNOWERS

MAKERS

"I am satisfied with the solution my team created"

4.4 / 5

4.4 / 5

"I enjoyed working with my team"

4.8 / 5

4.9 / 5

"I would recommend the Makeathon to others"

5 / 5

4.9 / 5



*"Designing in a team was fun - this is not something I have done a lot of, not for a long time anyway. All of the TOM people were completely amazing - **friendly, knowledgeable, organized**, I found you all quite inspiring... My team was great - **committed, motivated, skilled**, and I think we worked really well together. **The venue was amazing too**, at one stage we had 3 3D printers running concurrently (!)"*

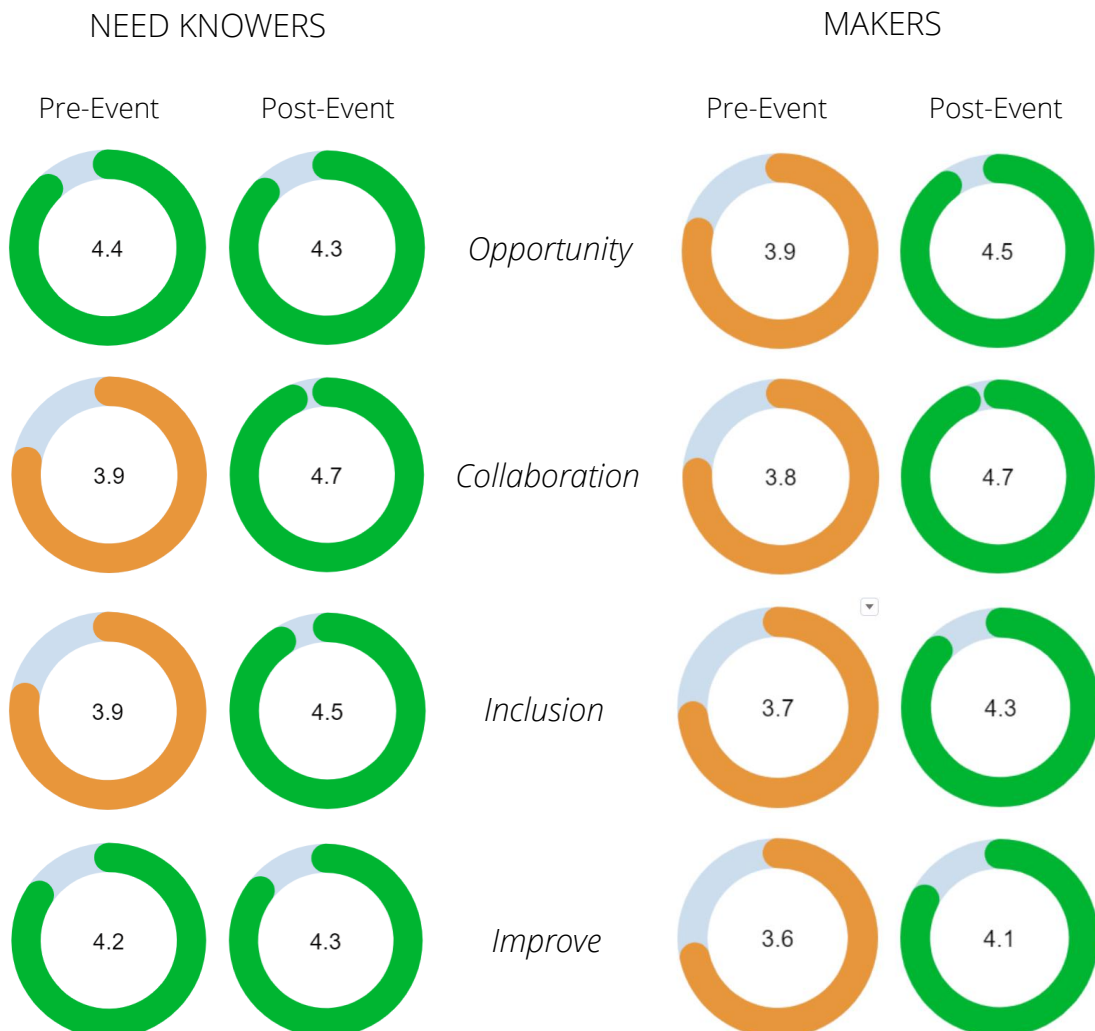
~ David Nelson (2022 Maker)

Participant Surveys

Formal evaluation surveys were issued to Makeathon participants (Need Knowers and Makers) before PreTOM ("Pre-Event Survey") and at the conclusion of the Makeathon weekend ("Post-Event Survey"). The purpose of capturing data before and after the event is to be able to measure changes in the response data and evaluate the impact of the Makeathon event.

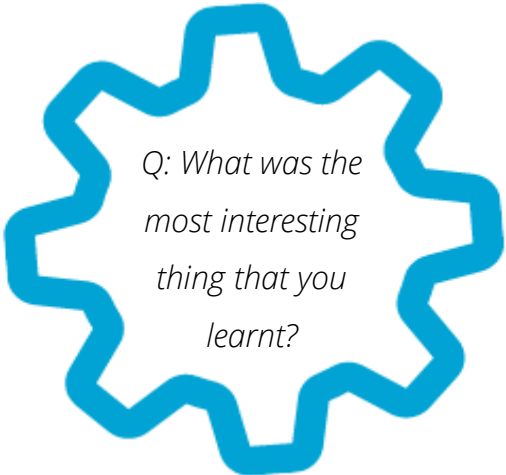
TOM: Melbourne's organisational Outcome Themes of *Opportunity*, *Collaboration*, *Inclusion* and *Improve* were used to develop the survey questions. This enabled targeted evaluation against each theme that collectively contributes to the objectives of the Makeathon program and the mission of TOM: Melbourne.

Average rating (out of 5) per TOM Outcome Theme



Key Themes from Surveys

Key themes from open question responses




Q: What was the most interesting thing that you learnt?

Learning new design, technical or making skills

Learning about disability and assistive technology

Learning about and understanding others' needs




Q: What did you enjoy most about the Makeathon?

Connecting with a diverse group of people

Designing and creating a solution

Helping someone and making an impact on their life

Working with others in a team



Q: Do you have any feedback on the pre-Makeathon events? (PreTOM & Design Night)

Would have liked more time before the weekend

Would have preferred them in-person rather than virtual

Would have liked additional program information

Thank You

to those that contributed their time and energy to ensure the success of
the September 2022 Makeathon program

TOM Team

Kumari Fernando

Monique Lautee

Alison Von Moger

Jaime Hislop

Ellie Moskow

TOM Board

Debbie Dadon

Arechea Hounsell

Genevieve Timmons

TOM Mentors

Andrew Henderson

David Harraway

Joel Kuperholz

Kirsten Ellis

Matthew Butler

Michael O'Connell

Rob Eals

Steve Kelly

Zara Michael

TOM Need Knowers Ambassadors

Mandy McCracken

Mary Henley-Collopy

Monash Makerspace

Scott Wordley

Tobias Orchard and the
Makerspace Team

Event Volunteers

Monash Young MedTech
Innovators (MYMI)



Thank You

to our Sponsors and Supporters

Debbie Dadon AM



Erdi Foundation



Embassy of Israel
CANBERRA



MONASH
University

Thank You

to our Community Partners



Join the TOM community and stay in touch!

<https://www.tommelbourne.org>

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Keep up to date on the socials
@tommelbourne



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