



MakerBay
Foundation

Annual Report
2021 - 2022





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Foreword



Cyron Chan

Executive Director

In the post-pandemic, how might we boost or strengthen community resilience? This is a question that has always been in my mind.

We create a new fear habit during pandemics, isolating us from the community. We don't talk with people because we are afraid of being infected. We don't eat outside; we buy takeaway food to stay home safely. We can't go out with friends or family because of the social distance limitation. It makes the community separate. However, the community is always a resourceful place.

I believe that Makerspace can foster a community's resilience. Makerspace has been a community hub for us, providing a space for us to come together and work on projects that we are passionate about. We have educated future makers, created impactful innovation projects and supported the makers to sustain their projects. 2022 is a year to start recovering from the pandemic's damage. And it is just a start, still a long way to go. The pandemic challenges everyone regardless of the social, environmental, or economic situation. Luckily, we have great people here and we can make something happen together.

Thank you to all the team members, funders, partners, and community members who support and make all the work happen together. Also, thank you to all participants that you have done and all that you will do.

Together, we can make a difference.

What is MakerBay Foundation Limited?

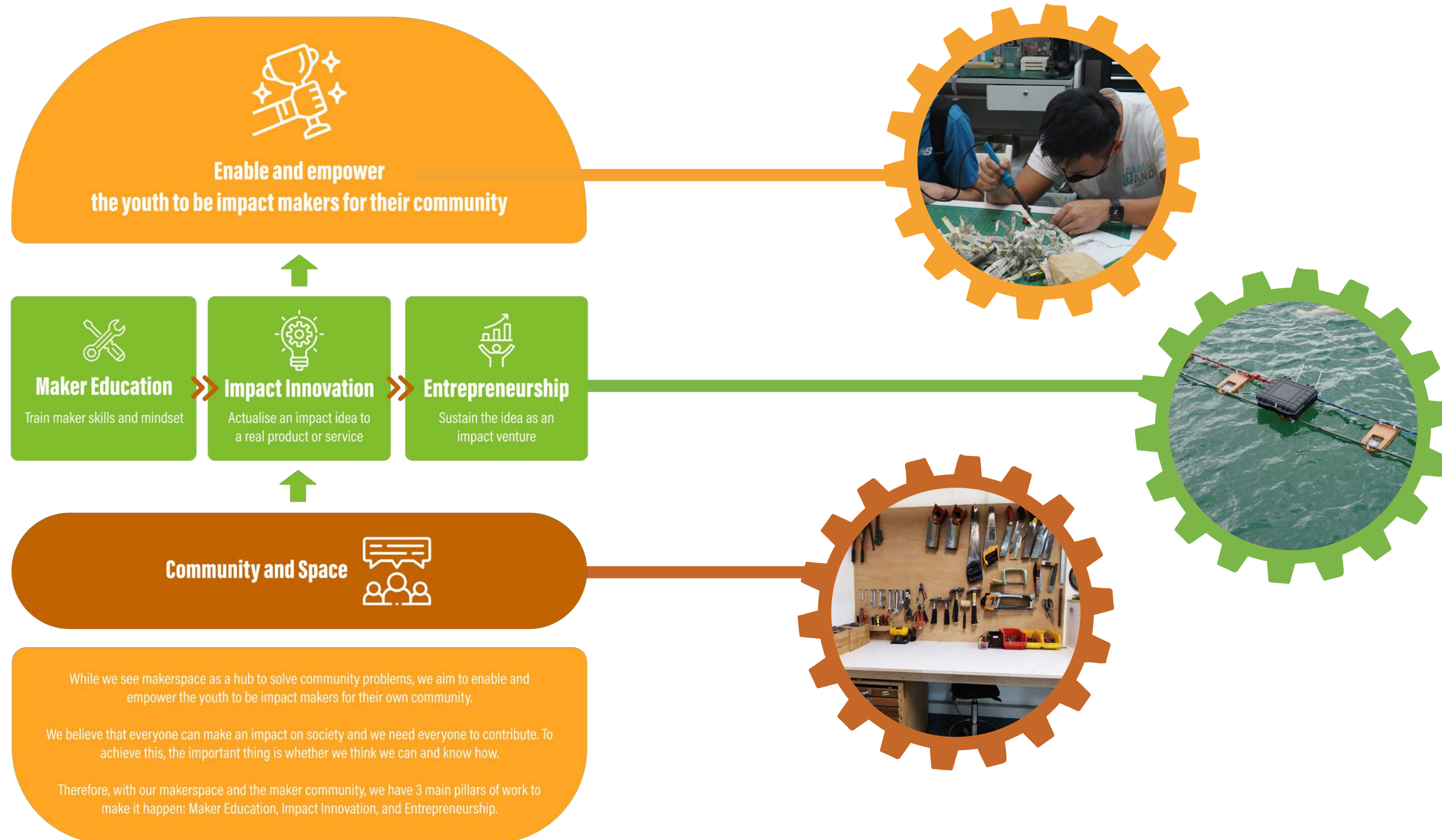
MakerBay Foundation is a creative space and educational platform dedicated to helping youth make an impact through developing their maker skills and mindset.

We believe in the potential of all youth to make a difference in the world, and we are committed to empowering and enabling them to do so. We operate makerspaces in Hong Kong to provide people with the space, tools and training they need to be innovators and serve the community through projects of maker education, impact innovation, and entrepreneurship.

We operate on the belief that everyone can make something. With the tools, knowledge and support from the MakerBay community, everyone can transform their idea into real impact. We are committed to fostering a global movement built by local innovation that will create a long-lasting impact.



03 Impact Model



Defining Maker Education

Maker Education is an authentic learning approach, which allows students to explore real-world problems and projects, engage in meaningful discussions, and construct concepts and relationships meaningfully. It offers teaching and learning that attends to the real and relevant needs of learners and humans. It positions students' interest at the center, asking students to become more aware of the design of the world around them, and begin to see themselves as people who can tinker, hack and improve that design.



In MakerBay Foundation, we believe maker education is fundamentally about people, projects, and space. We know that people need support, tools, resources and community to fully participate in the opportunities offered. We know that learning is contextual and social, and that for students to get what they need, educators must have what they need.

We teach maker education through 9 main hard skills and 8 main soft skills.

Maker Skillset:



Woodworking



Laser Cutting



Electronics &
Programme Adrolino



No Code Web &
App Development



3D Printing



CNC



Sewing



Metalworking



Design Thinking

Maker Mindset:



Experiment Spirt



Empathy



Problem Solving



Collaboration



Creative Confidence



Resilience



Critical Thinking



Initiative



Why is Maker Education Important?

One of the common learning pedagogies that is adopted in makerspaces is constructivism developed by Jean Piaget. According to Piaget, knowledge cannot be given to students but rather must be constructed by the learner through a combination of experiential learning and reflection.

Piaget suggested that learning should be based on children's natural curiosity and love of exploration. Constructionism is a hands-on learning approach that emphasises on active participation. This approach is effective for younger students, though it can be implemented in almost any classroom environment.



People

Meet Our Team



Cesar Jung-Harada
Founder



Cyron Chan
Executive Director



Carina Wong
Human Resources &
Finance Manager



Winnie Wong
Marketing & Public
Relations Manager



Sandy Yip
Marketing &
Community Manager



Kelvin Lee
Program Manager



Marco Chung
Program Manager



Philip Chung
Program Manager



Kalyn Ng
Workshop Manager



Thomas Williams
Workshop Manager



Gaia Yang
Senior Instructor



Kelly Law
Senior Program Officer





Rain Lau
Senior Program Officer



Yuen Cheung
Senior Program Officer



Hera Ho
Program Officer
(Community Engagement)



Michael Cheung
Program Officer



Thomas Tsang
Program Officer



Jessica Chan
Program Officer



Hillman Cheung
Accounts Clerk



Christine Lai
Community Program
Assistant



Stella Law
Community Program
Assistant

Meet Our Board of Directors



Abbie Jung-Harada
Board Director



Sharon Mullan
Board Director



Chicky Bhavnani
Board Director



Maria Li
Board Director

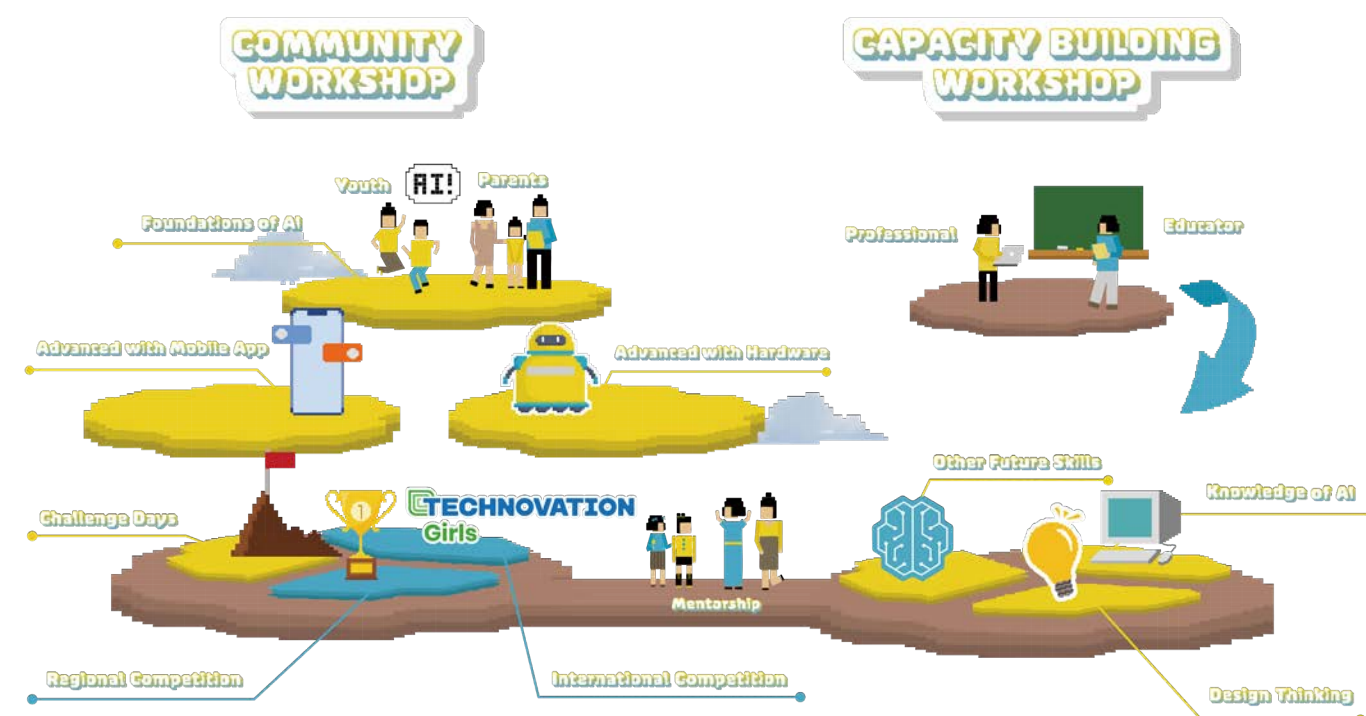


Sylvia Chan May-kuen
Board Director



Flagship Programmes

(i) Jockey Club AI Community Innovation Programme



The Jockey Club AI Community Innovation Programme is an incredible initiative funded by the Hong Kong Jockey Club Charities Trust, designed to equip participants from different backgrounds with the necessary skills related to artificial intelligence (AI). It is a 2.5-year programme that provides hands-on education and encourages collaboration between schools, communities and the industry.

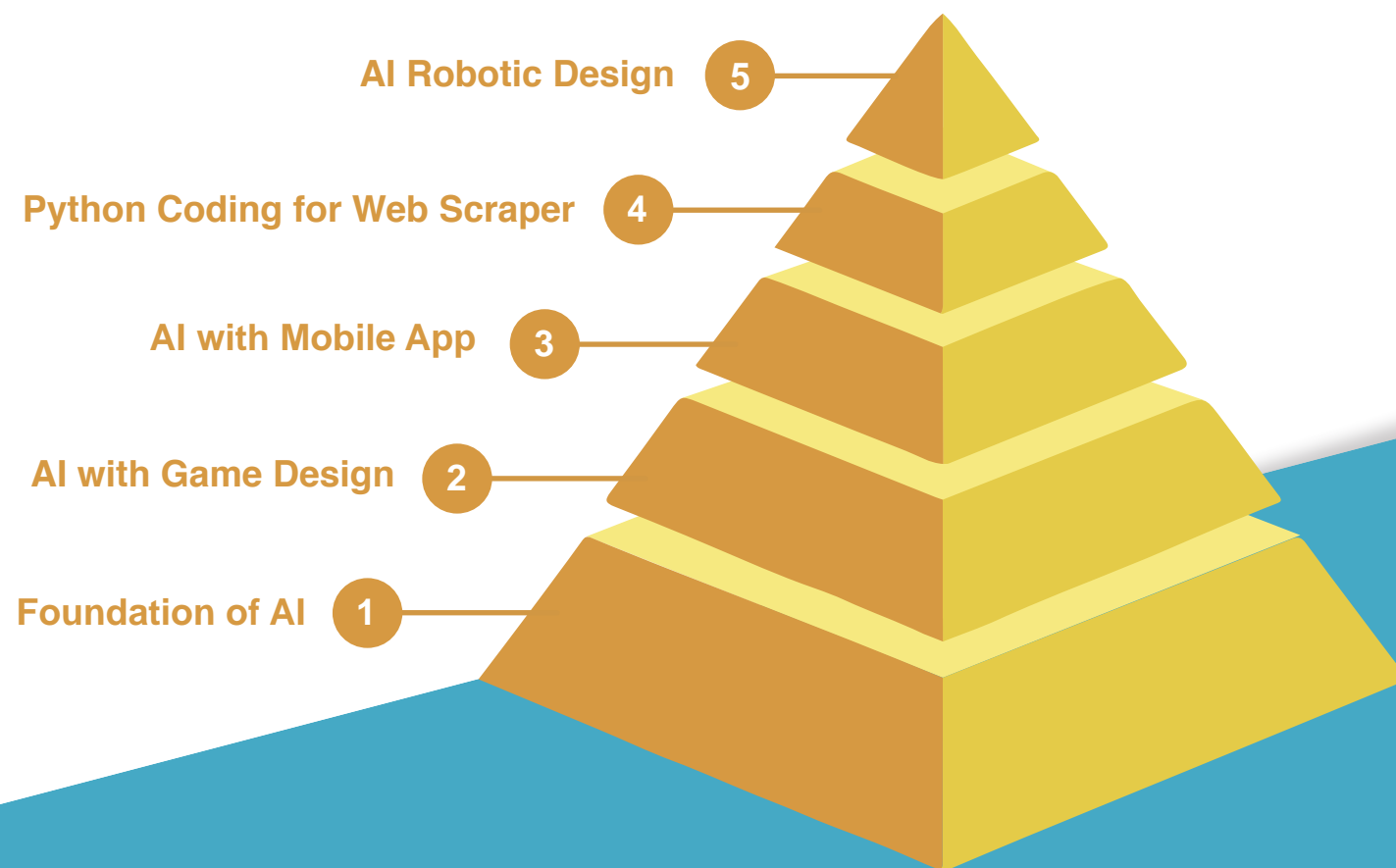
Through this programme, participants will learn about AI, engage in creative activities and work on solutions for real-world problems. With the help of experienced professionals, they will gain insight into the implementation of AI and how these solutions can be used to create an impact. This programme is a great way for everyone to get involved in the development of AI and contribute towards a better future.



Opportunities for the Youth

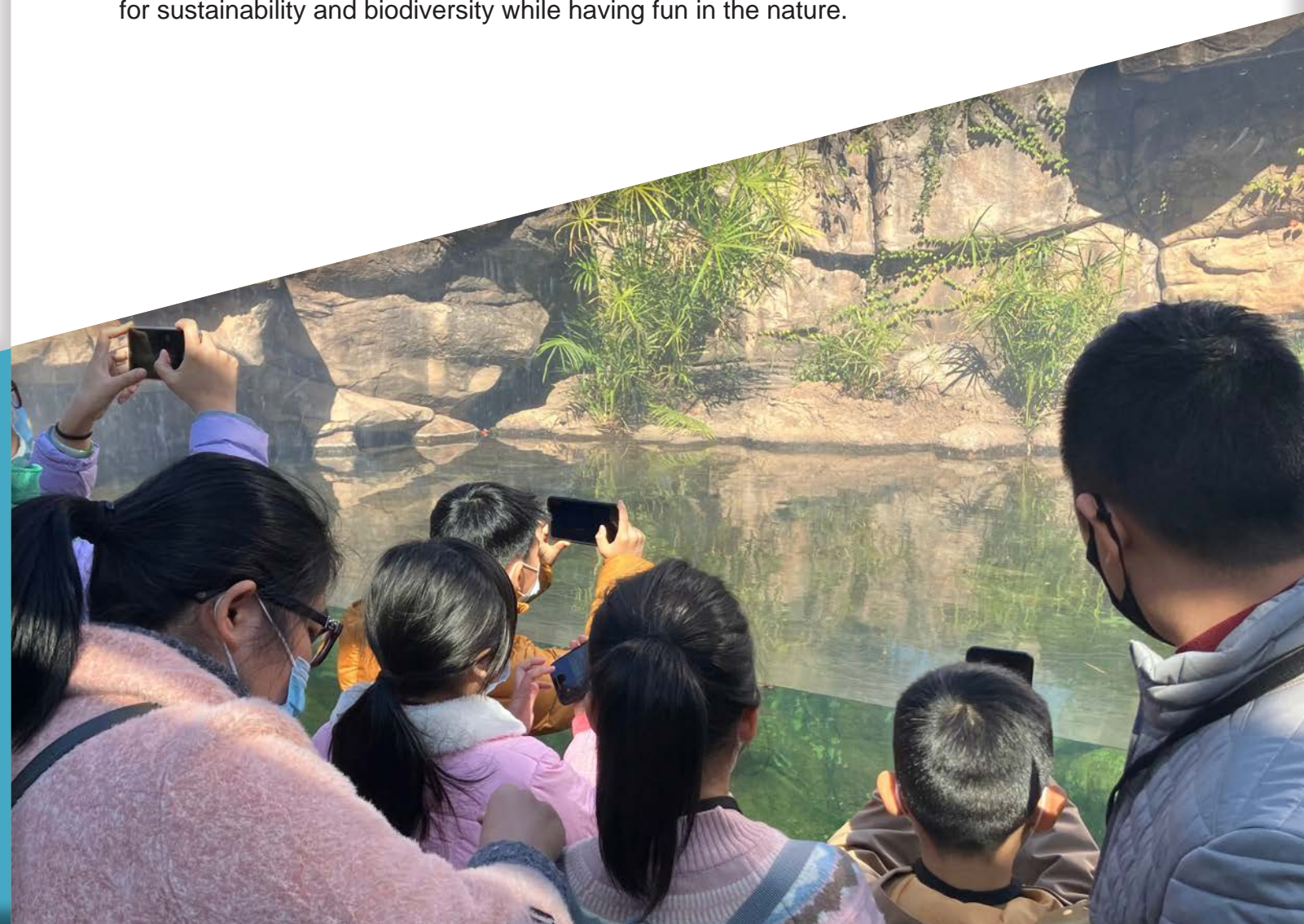
Community Workshop

With the target of the underserved youth aged 8-18, community workshops bring AI learning opportunities to them. These workshops adopt a step-by-step approach and focus on the application of AI to solve social and environmental problems.



Other than public workshops, we partnered with NGOs and schools to offer tailor-made training that fits the students' needs.

Not just learning in the classroom, we brought a group of students and their parents to the Hong Kong Wetland Park where they brainstormed AI solutions for sustainability and biodiversity while having fun in the nature.



A group of students, mostly girls, are focused on a project. One student is pointing at a small electronic device or screen that has some handwritten text on it. They are all wearing face masks.

Challenge Day

Hosted quarterly, Challenge Day provides an opportunity for students to apply their AI learning in a real-life situations. It is a great experience for students to see the impact and design solutions abased on the real users' needs.



Technovation Girls and HK

Technovation is a global technology education noan-profit, empowering underserved groups to tackle problems in their communities using cutting-edge technologies, such as AI and coding. Over the years, it has supported over 130,000 youths, 28,000 mentors and parents across 100+ countries. With the partnership with Technovation, students in Hong Kong can participate in this global competition with our support.

Engaging and Enhancing the AI community

Capacity Building Workshop

We brought interactive and engaging activities to educators, social workers, parents, or anyone interested in AI and empowered them with the latest knowledge and tools of AI.

Community Event

To cultivate a community with individuals passionate about artificial intelligence, online and offline community events were hosted regularly where local and global participants can get involved.



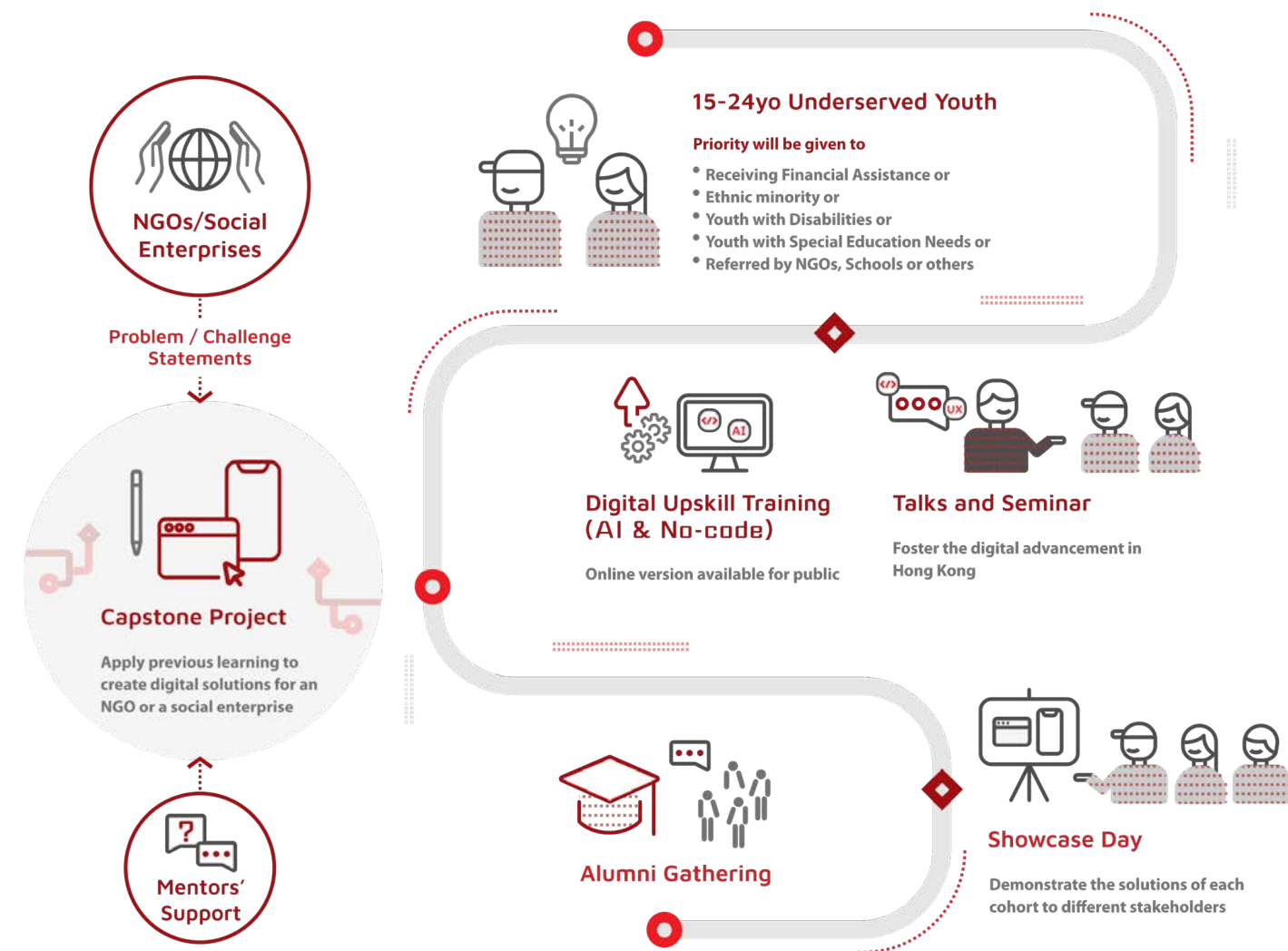
Mentors

To support the needs of creative ideas among students, we are delighted to connect with a group of enthusiastic mentors and offer valuable advices and resources with the youth.

[Click here](#) for the full list of the mentors.

Flagship Programmes

(ii) DBS Foundation InnoFuture Youth Programme



Supported by DBS Foundation, the DBS Foundation InnoFuture Youth Programme is a 1.5 years programme that aims at providing comprehensive upskill training on AI and No-code to improve digital literacy and competitiveness for the underserved youth of 15 – 24 years old. Participants will also take part in a Capstone Project that allows them to ideate and design digital solutions for NGOs/ social enterprises while gaining valuable hands-on working experience. This helps pave their way towards more successful career prospects as well as drive digital transformation in the social sector.

Maker Education

We believe maker education is fundamentally about people, project, and space.

We are here to offer support, tools, resources and community for everyone to fully participate in the opportunities available.



Imaker Class

For students of Buddhist Hung Sean Chau Memorial College

Design thinking is a mindset that empowers the development of human-centric and innovative solutions. It includes Empathy, Creative Confidence, Experiment Spirit. To facilitate the mindset shift, the Imaker Class that consisted of 16 sessions of Design Thinking workshops was conducted for a group of F.4 students to understand users' needs, generate crazy ideas, develop prototypes, fine-tune the prototypes according to the feedback received.

The core of the teaching framework lies in "Learning by Making something for someone". Students were challenged to reflect and rethink the objectives of their products and whether they align with the users' needs, which will be a driving force for them to overcome the difficulties. Another model we implemented in the class design is called "Diverge and Converge" where some sessions are designed to train creative thinking while others focus on utilising logical and analytical skills. With a balance of Diverge and Converge sessions, students' learning can be further enhanced.

In the end, their solutions include both physical and digital products. Some of them also used a no-code tool to develop a mobile app prototype in the class. We are glad to see their changes in being more creative and resilient.



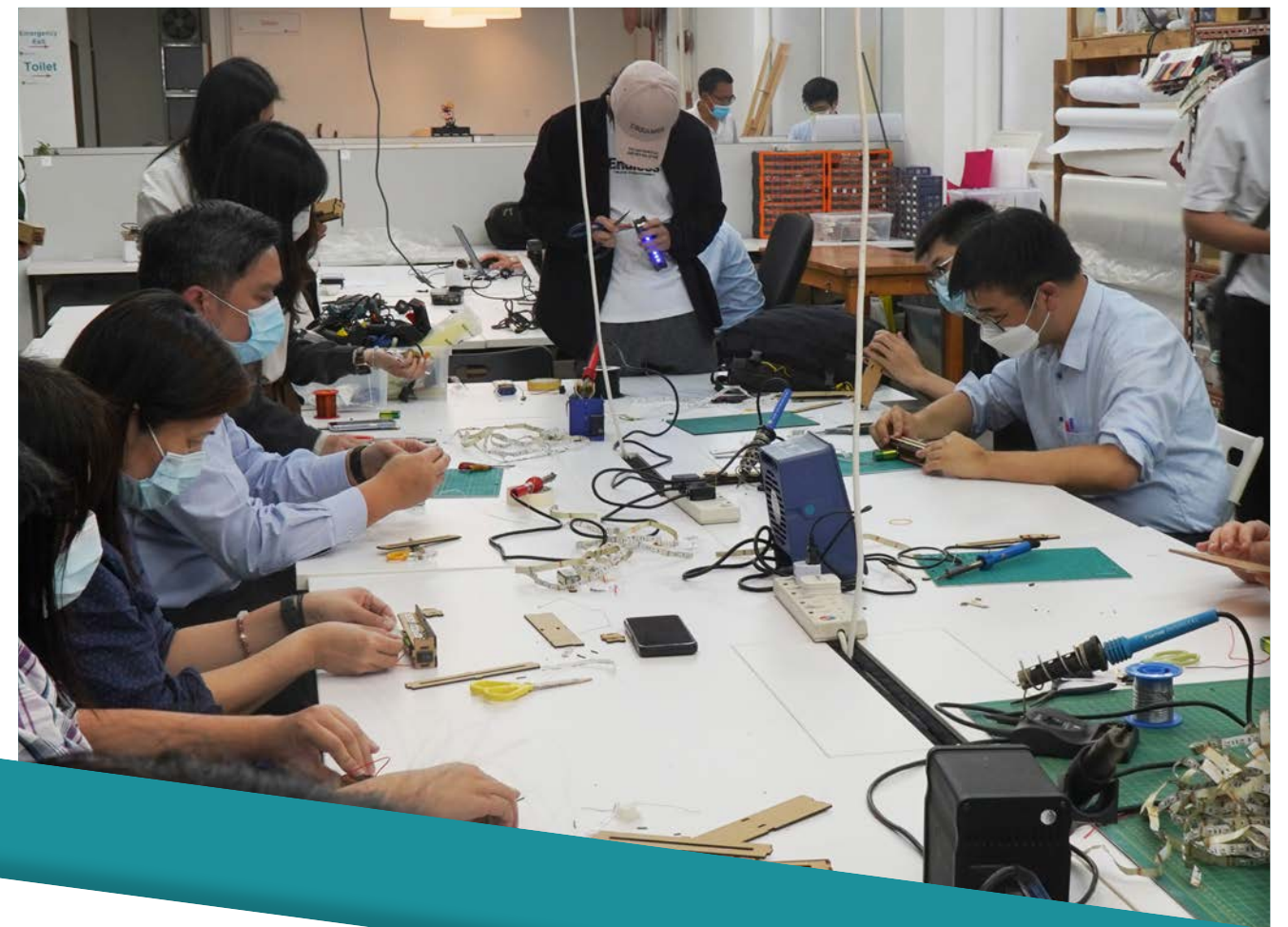


Design Thinking Training

For teachers of Quarry Bay School

We hosted a design thinking training for teachers of Quarry Bay School with a theme of reducing waste on the campus. The instructors guided participants to walk through an innovation journey from defining the question to building prototypes. Among various creative ideas to recycle and reduce waste, a group of teachers suggested a smart sheep that can shred and melt plastics into new toys as students feed it with plastics. Sounds crazy but fun!

We would like to bring this innovative mindset to schools and empower educators in training students' problem solving and life-long skills.



LED Lamp Workshop

For teachers from Association of I.T. Leaders in Education

To equip educators with making and prototyping skills, we organised a LED lamp workshop to over 20 educators in cooperation with the Association of I.T. Leaders in Education.

During the 2.5-hour workshop, the teachers learned soldering and laser cutting skills to make their LED lamps. They also developed a better understanding of maker education and how students can acquire problem-solving and innovative thinking throughout the process.



09 Maker Workshops



Woodworking Workshop

For Grassroots Cultural Hub

From cutting and sanding the wood, to assembling the pieces, a group of young environmentalists from “Grassroots Cultural Hub” overcame different challenges to make their own cart from scratch through trial and error.

With the cart, they would be able to collect tea residue and fruit peel from local shops, which will be used to make cleaners, handmade soaps and natural fertilizers to reduce waste.



Laser-cut Lamp Workshop

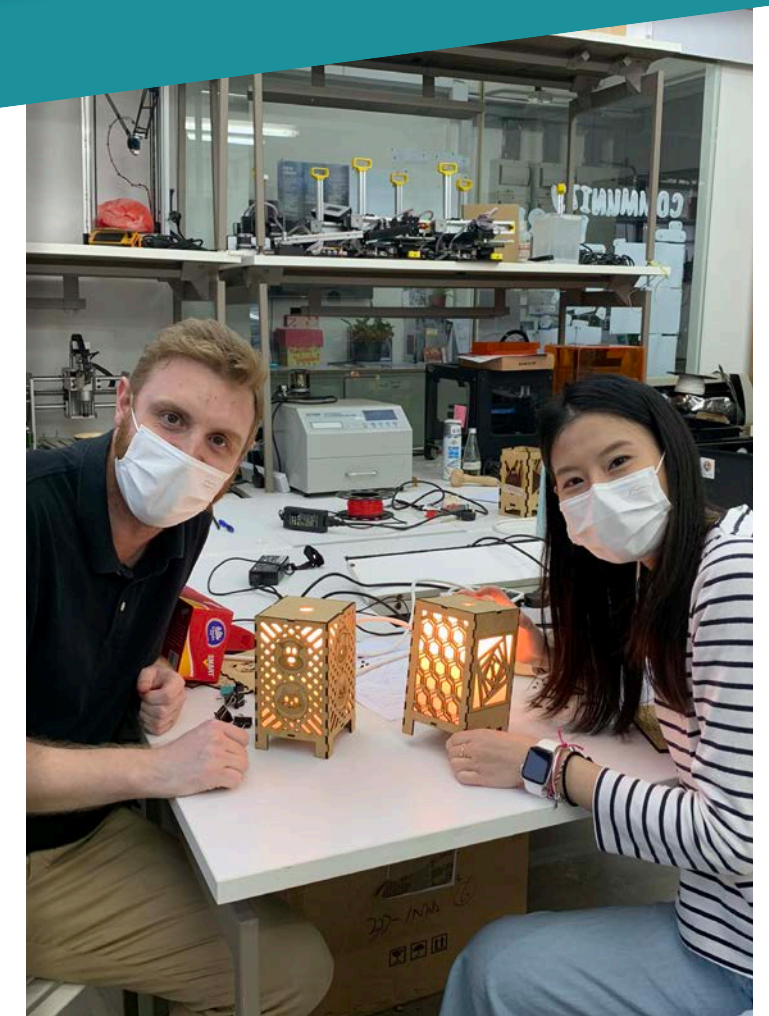
For public

A workshop using Adobe Illustrator and laser cutting to design a lamp is a great way to learn how to use digital design tools and laser cutting technology to create extraordinary, custom-made lamps.

The workshop started by showing participants how to use Adobe Illustrator to create a vector-based design for the laser cutting process.

They then designed a lamp by wood and then cut out their design on a laser cutter. After that, they assembled the lamp, added the decoration and lights.

They left the workshop with a unique, custom-made lamp that they can proudly display in home.





Mini Solar Car Workshop

For French Science Festival

We participated in the French Science Festival by hosting a mini solar car workshop and had fun with participants to create their small solar cars using upcycling beverage cartons.

They first used acrylic paints to decorate the cars, and then assembled the car by soldering the battery box, solar panel, and motor.

Everyone made a unique and environmentally friendly solar car while learning the fundamentals of electronics.



Wheelchair Experience Workshop

For secondary school students

As a leadership training program, students created a wheelchair experience from upcycling the cardboard to design the flow of the experience day. Students learnt how to use the woodwork tools and break down the cardboard into wood planks. Also, they built empathy by trying wheelchairs by themselves.

At the end of the workshop, they were able to influence others by conducting the wheelchair experience for public participants.



Impact Innovation

As the world is facing major challenges, we are all looking for ways to collaborate more effectively to address these challenges.

At MakerBay Foundation, we see ourselves as one of the actors to address global challenges through developing local solutions.



CoralBot: Coral Reef Mapping Drone

To respond to the issue of coral bleaching, we need first to understand where the corals are located and what their condition is. Supported by Design Trust, we developed the CoralBot, an autonomous boat equipped with 5 cameras that can take 36,000 photos per hour. Artificial Intelligence came into the picture to label these photos and recognise the different species of coral with sufficient training to the model. We could then precisely establish the location of each species which will contribute to the further analysis and study.

Ocean Park Conservation Chill Club

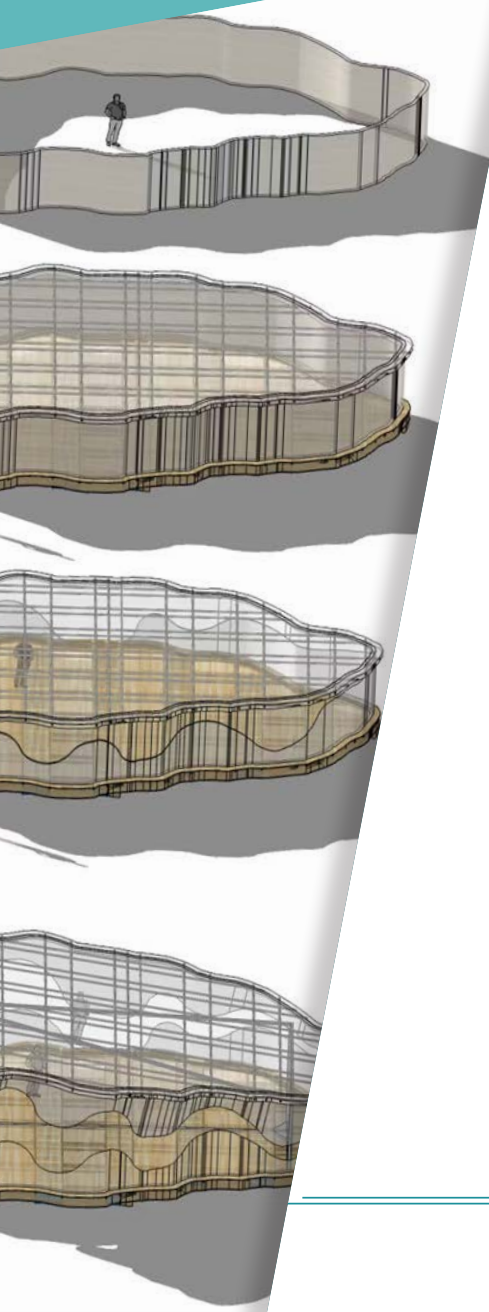
In partnership with Ocean Park, the “Ocean Park Conservation Chill Club” programme was created to equip Hong Kong youth with AI technology and knowledge about coral diversity to help build the AI model for coral reef mapping of Hong Kong.

100 students and teachers from 30 secondary schools in Hong Kong joined our journey to participate in the building of the AI model for coral reef mapping.

Workshop for WWF Hong Kong

In partnership with WWF Hong Kong, we organised a workshop in Hoi Ha Marine Life Centre to raise public awareness of the need for coral conservation as well as testing the CoralBot.





Ocean Imagineer

The Ocean Imagineer is a floating oyster farm and solar hydrogen production plant pilot art project. It uses solar panels on the roof to produce green hydrogen on board and is embedded with IoT sensors to collect environmental data, compute and serve as a wireless node.

Through various public engagement workshops, we invited the participants to join us and learn more about oysters and their huge contribution to the ecosystem, and how we can do the same, through the use of clean energy alternatives. They tried our demo which was partly powered by solar power and hydrogen, make & tested their own toy boat powered by clean energy and experimented with filtering water using natural means.



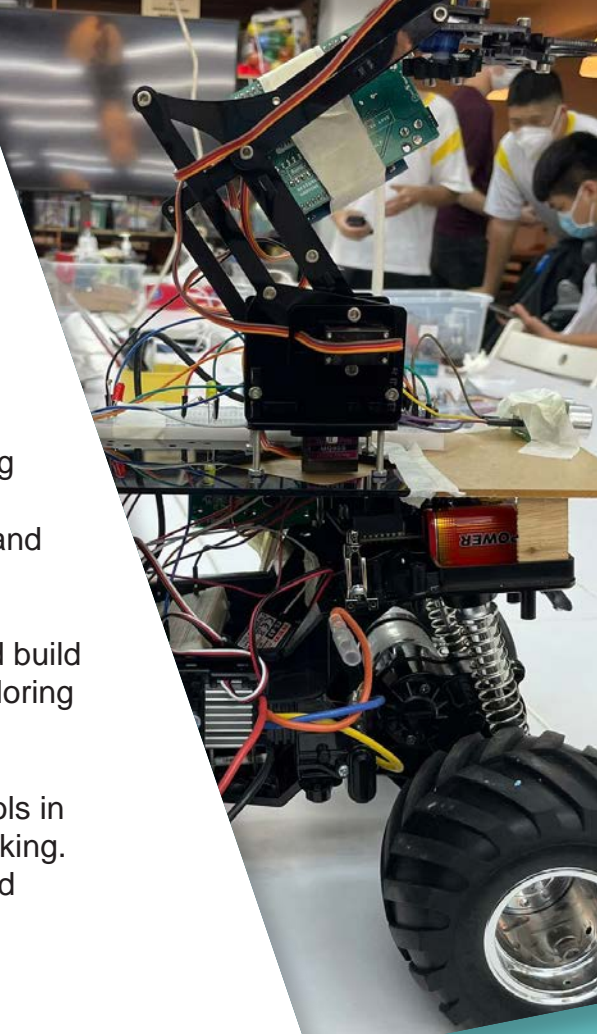
Innovation Consultation

Building Autonomous Vehicles for Space Exploration

We supported a group of young makers from TWGH Mrs. Fung Wong Fung Ting College on building satellite models and self-driving cars equipped with a grappling arm, distance sensors and LCD displays.

The students worked in three teams to develop their ideas and build prototypes of one satellite and two autonomous rovers for exploring the surface and atmosphere of extraterrestrial planets.

Each team made use of different materials, electronics and tools in our maker space, such as laser-cut, 3D printing, and woodworking. Our team helped the students to improve their coding skills and creative problem-solving!



Community

We promote the maker spirit and bring public to explore amazing makers in the community with different channels and approaches.

With the expertise and contribution of members, Makerbay will be a hub to solve community problems and empower youth to be impact makers for the community.



Maker Education Guide

We know that to train students and get them prepared for challenges in the future, educators need support and resources on different approaches of teaching. Maker education allows students to explore real-world problems and projects, construct concepts and build prototypes. To facilitate the teaching experience, we interviewed several teachers to learn more about their needs and will publish a series of guidebooks regarding maker education.

The first issue about Design Thinking and Interactive Game was published. It is expected to develop students' creativity and human-centered mindset, empowering them to explore possibilities in the process of problem-solving through conducting games. You may download the full guidebook [here](#).

Local Maker Map

The term, 'Maker', refers to a person who generates designs and produces their own work. They inherit craftsmanship, bring social impact and demonstrate its unique mindset. There are quite a lot of developed makers/maker groups, forming a great network altogether in Hong Kong recently.

We interviewed makers in Hong Kong who work on interesting projects such as upcycles waste into interesting items, R&D of the production of wearable devices that can help Parkinson's patients, building a maker community and many more. Their stories have been featured in the [Local Maker Map](#) through interview videos and articles so that the public can learn more about these makers/groups that are bring positive impact to the society.





Finances

AS OF 31ST MARCH 2022

	2022 HK\$	2021 HK\$
PROPERTY, PLANT AND EQUIPMENT	78,472	15,920
CURRENT ASSETS		
Deposit paid	196,000	180,000
Account receivable	36,979	337,072
Cash and bank balances	1,548,295	445,081
	1,781,274	962,153
CURRENT LIABILITIES		
Account payable	(45,000)	(110,101)
Accruals	(45,505)	(29,300)
Deposit received	(89,750)	-
Deferred income	(1,344,000)	-
Amount due to a related company	-	(458,920)
	(1,524,255)	(598,321)
NET CURRENT ASSETS	257,019	353,832
NET ASSETS	335,491	379,752



Partners

Funders



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

Organisations



