ESTABLISHING A GENERATION OF INNOVATORS IN AOTEAROA

A not for profit mobile innovation hub
Serving communities in year long project based residencies.

Providing real opportunities to make the lower North Island an incubator for brilliance

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The Mobile Makerspace Initiative is a groundbreaking portable STEAM education platform that aims to transform the learning landscape in Aotearoa. By collaborating with partner schools during year-long residencies, we develop ambitious, high-tech, and creative engineering projects that challenge students to acquire new skills and implement them.

This initiative bridges the digital divide by providing access to cutting-edge technology and learning experiences for students who may not have had the opportunity otherwise.

By enhancing professional development for teachers and fostering a culture of innovation and curiosity, we pave the way for future leaders and problem-solvers in Aotearoa.

Our commitment to engaging the community and ensuring equal access to STEAM education guarantees the sustainability and success of the project, ultimately shaping the next generation of creative thinkers

The model will be funded by a unique not for profit/MOE partnership which will allow for sustainable use of funding and a very productive use of charity income

OUTLINE

PROJECTS

A collaborative project within the Mobile Makerspace Initiative would involve students, teachers, and local community members working together to address real-world challenges or create innovative solutions, such as building an automated vertical garden, developing unique cultural experiences through technology, or engineering small-scale flying vehicles. High schools would benefit from the opportunity to integrate cutting-edge STEAM concepts into their curricula, while teachers would gain valuable professional development and hands-on experience.

The community would be engaged through access to the resources during the course of the year and public showcases of these diverse and high impact projects, fostering a sense of collective pride and accomplishment. Ultimately, these collaborative efforts would contribute to a brighter future for innovation and technology in Aotearoa by nurturing the next generation of creative thinkers, problem solvers, and skilled professionals, ensuring the nation remains at the forefront of global education.

The kaupapa behind the projects is decided in collaboration ahead of time with each school, ensuring we're responsive to the community we join. School holiday periods are used to upskill and prepare for the next project.

WHAT COULD WE DO?

Creating a Vertical Garden with Automation and Interactive Statistic Interfaces

Students will design and construct a vertical garden, incorporating automated watering and feeding systems. They will also create interactive interfaces that track and display various statistics such as plant growth, water usage, and nutrient levels.

Curriculum Links: Technology, Mathematics, Science

Subject Areas: Digital Technologies, Design and Visual Communication, Horticulture, Mathematics, Biology

Key Engineering Skills: Design thinking, systems engineering, automation, data analysis, problem-solving, computational thinking, sustainability

CREDIT: RACHEL HALL

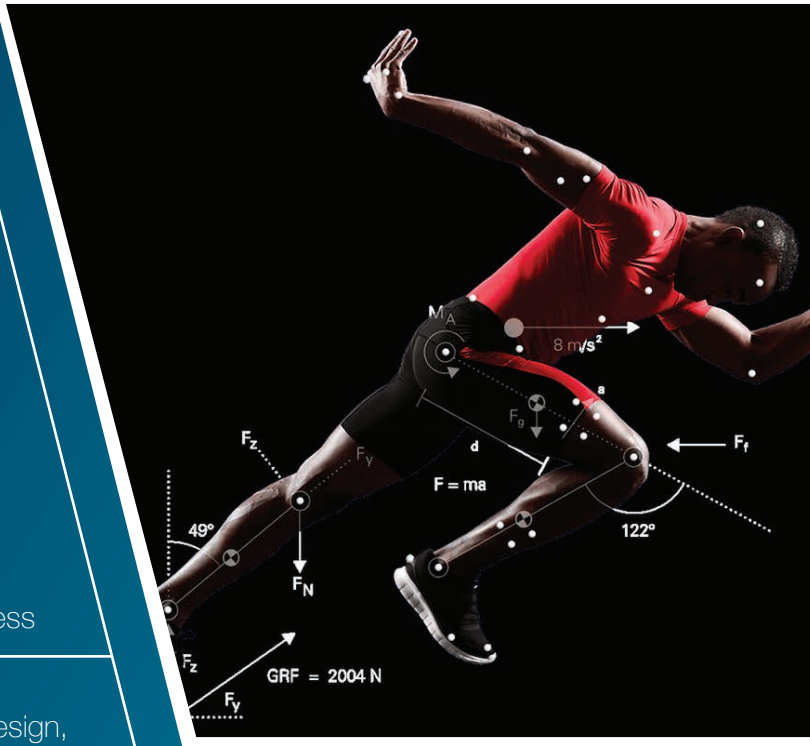
Creating Kapa Haka Costumes with Neopixel LEDs

Students will design and create Kapa Haka costumes incorporating Neopixel LEDs. They will code these LEDs to create a light show that reflects the narrative (pūrakau) of their performance.

Curriculum Links: Technology, Arts, Te Reo Māori

Subject Areas: Digital Technologies, Textile Technology, Dance, Drama, Māori Performing Arts, Te Reo Māori

Key Engineering Skills: Electrical engineering, coding, design thinking, systems thinking, creativity, cultural awareness



Re-imagining Instruments from across the Pacific

Students will research traditional Pacific instruments, then design, build, and play a new generation of these instruments, combining traditional elements with modern innovations.

Curriculum Links: Technology, Arts, Social Sciences

Subject Areas: Music, Design and Visual Communication, Wood Technology, Social Studies, History

Key Engineering Skills: Acoustical engineering, design thinking, innovation, cultural awareness, craftsmanship

Motion Capture Sport Analysis Systems

Students will learn about and use motion capture technology to analyse sports performances. They will then use this analysis to develop models for performance improvement.

Curriculum Links: Technology, Health and Physical Education, Mathematics

Subject Areas: Digital Technologies, Physical Education, Mathematics, Health Science

Key Engineering Skills: Biomechanical engineering, data analysis, software engineering, problem-solving, computational thinking, sports science

TIMELINE

Before the school year

The year prior, in collaboration with the host school we decide on a project suitable for their community and practicalities of implementing it.

The trailer is configured to suit. Our team up-skill where needed.

Start of school year

Working with the Kura begins with the school year. Students are engaged by making some cool, related things while learning some basics of the skills required.

During school year

The project, or projects to be completed are interdisciplinary experiences and can be included in a wide range of curriculum areas and assessment opportunities. The project always reflects on the context of the wider learning experience.

The trailer is also open as an extracurricular experience for both students at the school and the wider community

Nearing the end of residency

The project will be completed before the end of the school year and the last portion of the year will be spent ensuring the school/community is set up to maintain both the project and the learning experiences that it provides.

School Holiday periods will be used to prepare for the project of the following year.

Alumni participant communities will be engaged with for any ongoing support to ensure their project is sustainable.

Begin again in a new community

COMMUNITY OUTCOMES

Fostering Positive Community Outcomes:
-Provides a platform for students anywhere to engage with STEAM disciplines.
-Bridges the gap between traditional education and real-world applications.

Enhancing Skills and Empowering Students:
-Immersive learning environment enhances problem-solving and critical-thinking skills.
-Fosters a generation of innovative thinkers and passionate creators.

Long-lasting Impact on Education:
-Partnerships with schools and professional development of teachers for sustainability.
-Projects designed to be interacted with many years after the residency to impact upcoming cohorts

Promoting Cultural Inclusion and Unity:
-Partnerships with Tangata Whenua are core to creating learning opportunities that impact ākonga Māori
-Celebrates the diverse cultural landscape of Aotearoa New Zealand.

Encouraging Participation from Underrepresented Groups:
-Actively invites and focuses specifically on underrepresented groups to participate in STEAM activities.
-Fosters cultural understanding and empowers existing knowledge through tech

Reducing Educational Disparities:
-Hands-on, collaborative learning experiences for all.
-Offers equal opportunities regardless of socio-economic backgrounds.
-Creating a More Equitable, Innovative, and Culturally Aware Society:

Profound impact on Aotearoa New Zealand's youth and society as a whole.

FUNDING PARTNERSHIP

This is a not for profit charity organization which will create, set up and maintain the space and its vision.

Salary is a big on going cost for an organization so we want to partner with the Ministry of Education to ensure grants and donations go toward great gear for great learning opportunities

Benefits for the Ministry of Education:

Enhanced learning outcomes: By supporting innovative, project-based, cross-curricular learning, the Ministry can contribute to improved student outcomes and engagement.

Teacher professional development: The partnership will provide opportunities for teachers to learn new skills and teaching methods, ultimately improving their effectiveness in the classroom.

Promotion of STEAM education: By partnering with your initiative, the Ministry demonstrates its commitment to promoting STEAM education, fostering a future generation of creative and critical thinkers.

Community engagement: The partnership will encourage greater involvement from parents, local businesses, and other community stakeholders, fostering a more inclusive and supportive educational environment.

Scalable model: If the partnership proves successful, the Ministry can potentially scale the program to other schools or regions, further amplifying its impact on education.

Positive public image: By supporting an innovative educational initiative, the Ministry enhances its reputation as a forward-thinking and proactive institution.

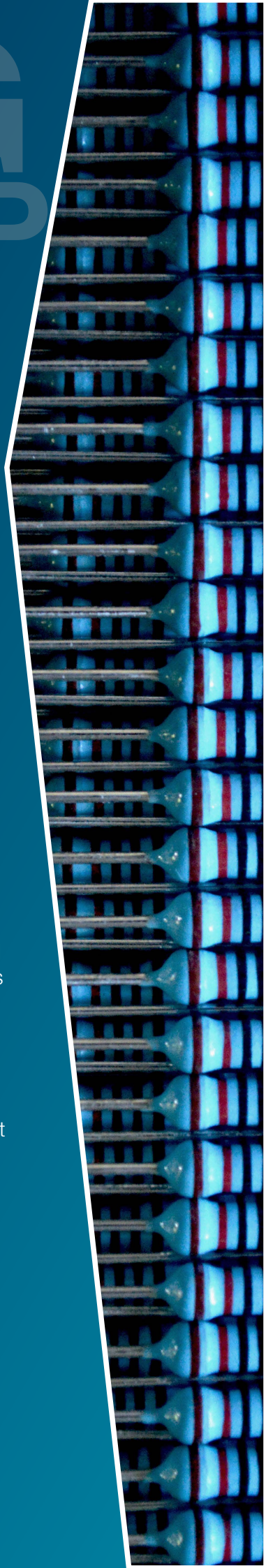
Benefits for the Mobile Makerspace:

Financial support: The partnership with the Ministry of Education will provide funding for staff salaries and equipment, ensuring the sustainability and growth of the initiative.

Access to schools: The Ministry's support will facilitate easier access to schools and teachers, allowing the initiative to reach more students and make a greater impact. We've worked many different areas and schools are unique in how they are deeply embedded in the community. Partnering with schools will give access to communities that is otherwise impossible

Validation and credibility: Partnering with the Ministry of Education lends credibility to our project, which can attract additional partnerships, sponsorships, or funding opportunities. Having salary covered will show project and investment sustainability

Long-term impact: With the Ministry's support, the initiative is more likely to have a lasting impact on the schools it serves, as the partnership can help ensure the continued integration of the project in the curriculum.



BUDGET

We have a 10 year plan which allows for establishing the space but also ensures that it stays on top of the game over time and as technologies develop. Having staff covered by partnership with the MOE allows for the full funding to go toward community benefits and ensures sustainability of the project.

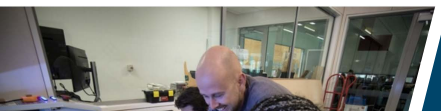
10 Year plan

Category	Item	Year 1	Years 2-10 (Annually)
Trailer and Customization	Makerspace Trailer (shipped)	$500,000	
	Custom Building	$200,000	
Equipment and Supplies	CAD/CAM Machines (3D printers, CNC, etc.)	$150,000	$3,000
	Tools (Hand Tools and Power Tools)	$25,000	$1,000
	Electronics (Components and Supplies)	$25,000	$2,000
	Safety Equipment	$2,000	$500
	Computers	$30,000	$3,000
	Digital Media (Cameras, Recording Equipment)	$20,000	$1,000
	Expendables (General Supplies)	$10,000	$10,000
Consultation	Cultural Narrative and Implementation	$20,000	
Administrative and Overhead	Insurance	$10,000	$10,000
	Office Supplies	$2,000	$1,000
	Software Licenses	$5,000	$2,000
Trust Fund. This covers years 2-10	Future Expenses and Tech Upgrades	$301,500 Breakdown in next column	
	Total Covers ten years of program		**$1,300,500**

Unsung Heroes - Technology winner grateful for school's 'open door' policy

By Chelsea Channing
Published March 12, 2019

For students at Haeata Community Campus in Christchurch, the world is their oyster. And whether they're carving pounamu, working as photographers producing the school's annual staff and student portraits, creating a huge outdoor korowai sculpture or building remote control aeroplanes, there is one teacher who is always behind them, showing them they can achieve more than they thought was possible.



Clark has spent the last decade in education in both the Cook Islands and Aotearoa. he has worked passionately on generating creative learning opportunities for young people that cross the curriculum and introduce people to new and exciting ways to interact with their learning.

He has experience in linking all aspects of the curriculum into the STEAM environment and has created learning cultures where young people all work with their passions as context as and guided them through implementing digital technologies to enhance their work and ignite their vision of their future selves.

He's hugely invested in education beyond the classroom and has been engaged in digital equity through Waitaha and involved in consulting on the NCEA review.

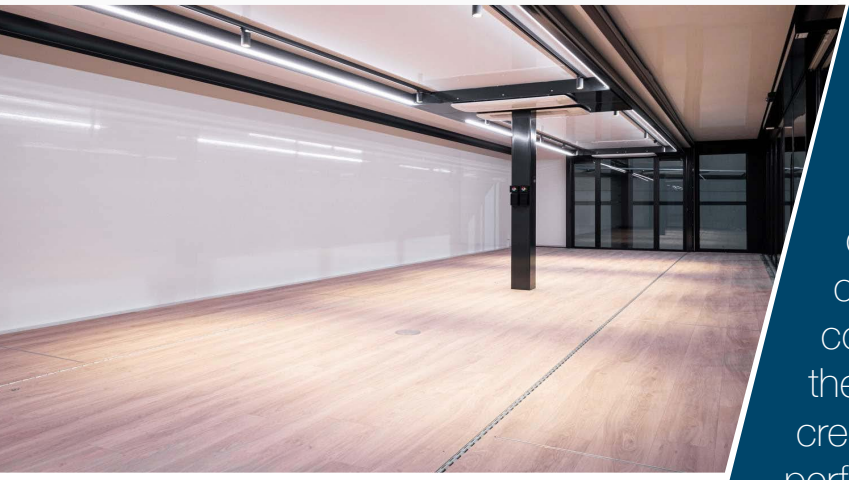
Presenting and participating in conferences as far away as Beijing with leading international schools has made it clear that with the right model being at the top of the world in innovative STEAM education is the benchmark to where he wants to be working. To make the biggest mark possible on future generation he wants to ensure that all of our hidden geniuses have been found and that they have access to a learning experience which will forever shape them.

To do this we need to be able to move, collaborate, form positive relationships with young people and impart knowledge to their teachers to keep the positive inertia of skill beyond the residencies.

WHO LEADS AND ENSURES SUCCESS?

Designed and manufactured in the Netherlands the expendables trailer is easily movable but extremely high quality which ensures the project starts with its best foot forward.

The trailer expands to 62m squared which is enough room to design a digital workshop and have room for a large team to work and learn in.



The fit-out would be a flexible environment which could be re-designed for each project or even different parts of a project. One school community could be working on converting a car to an electric vehicle then the following year it could be used for creating unique high tech sets for performance art. The appropriate tools can be set up for the scale and specifications of the project.

We won't see class set style resources, we will see a range of CNC, electronic, design and manufacturing resources. The community will have access to digital resources that are fit for whatever job

The truck itself would not need to be purchased we will look to partner with a local trucking company to move the set up after each project.

THE INVESTMENT

COMMUNITY APPETITE

There is a country-wide conversation around school attendance and pass rates. The answer is simple. Engaging learning opportunities. Giving young people a chance to be excited about coming to school and capturing their curiosity.

Preliminary consultations with schools has shown us that there is a VERY strong desire to host and participate in this. We have had discussions with teachers and departments to test the process which resulted in excited and energized teachers. Principals have also shown a very strong interest, within 24 hours of distributing this document 5 years of schools had replied wanting to be first. By the end of the week over a decades worth of interest came from schools in the Wellington region with a strong interest from all girls schools and lower socio economic areas. The problem will not be finding host schools, rather, prioritizing them.

In the last two years we have been working with the Kind Foundation to host the 80 best young makers in engineering competitions the country and only 1 of these was from the Wellington Region. Feedback on program and huge quantities of applications showed that there is a real desire for hands on STEAM based learning and New Zealand schools are not often meeting this demand.

We have already engaged with the following schools who are all interested and want to be the founding hosts.

-St Catherine's College
-Chanel College
-Nga Tawa College
-Mana College
-Manukura
-Wellington Highschool
-Rangitīkei College
-Waiopehu College
-Solway College
-Tawa College

Alongside this, we have done working groups in Ōtautahi, Christchurch. Working with Avonside girls science department we tested the project development and curriculum link process.

We also worked with a group of 10 principles on refining the program and assessing its strengths and weaknesses. All educators who have been engaged with have been very interested in hosting.

GOVERNANCE

Clark Williams

10 Years of experience in STEAM education, experience building makerspaces and integrating tech into communities. Boma Education fellow. Expertise in building unique learning experiences and sharing them with eudcators all over the world

Irihāpeti Mahuika

Irihāpeti Mahuika, the CEO of Health Hawke's Bay, formerly served as the Director of Hauora Māori and Equity at Pegasus Health, Canterbury. She's an advocate for Kaupapa Māori, aiming to foster strong community relationships for enhanced healthcare. She has an extensive background in education in teaching and learning and school leadership

Pania Watson

Pania is a kaiako at Te Aratai College. She has experience in leadership across many in school initiatives. Pania has experience multiple boards of trustees. She is currently working towards her masters in education

Lex Davis

Lex is Deputy Principal at Ormiston Senior College. He has over 20 years experience in education over the world and in the Pacific. Lex has also worked in education professional development He has experience as a trustee on multiple boards.

ESTABLISHMENT SUPPORT

The Kind Foundation
Mō tātou katoa. For all of us.

The Kind Foundation (formally the YMCA Christchurch) has been operating since the 1860's and is very interested in incubating and supporting the establishment of this project to ensure its success and security of any funding toward it.

We have been working with The Kind Foundation of Christchurch over the past few years in their tech hub - the 4C Centre. This has allowed us to trial some of the concepts behind this idea and also build relationships with a wide community of schools and see how we can work with them as best we can.

Option 1
Sole sponsor of the project

Take on the whole sponsorship of the project. For $1.3 Million, a minimum of a decade worth of unique community based education opportunities and the establishment of 10-30 different sized projects to leave in communities in the Wellington Region.

What do you get?
Up for negotiation! A sole sponsor may want to brand and name the makerspace with their organization. Their brand will be linked with a new generation of engineers, creatives and tech experts. The brand would be protected by good practice ensured by the NZ Teachers Council

Option 2
Become one of 13 establishment donors
At $100,000, 13 donors would be enough to ensure this project is successful. This will allow us to set up projects in communities that continue for years after we move on to the next, compounding our reach and numbers of young people impacted.

What do you get?
A supporter could be acknowledged by brand representation within the workspace and on-line. They may view this as an opportunity to secure talented future employees.

Option 3
What Can you're organization offer to support this be successful?

If any of these appeal, please contact Clark:
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HOW TO SUPPORT