

Fabriko

Half year funding report – Laptops

Report for InternetNZ

March 7, 2016

Overview

Fabriko was funded by InternetNZ 15 April 2015 to provision a suite of laptops for community use, especially for delivering technology education into schools without access to appropriate hardware.

This came about as a result of Fabriko working with a number of schools to discover that available computers were obsolete or inadequate, or schools had invested in tablets or chromebooks that do not support any non-app level of technology learning, or support for BYOD processes (ie internet access and logins) were unclear and difficult to set-up, especially when there are 10 children with a range of devices and operating systems.

With the grant we were able to provide 10 laptops running a range of software that expands the possibilities of technology learning. Free and open source software included:

3D modelling / printing:

Tools that introduce kids to basic CAD design principles and 3D printing (Engineering)

- Tinkercad: run through a browser with OpenGL (ie Chrome)
- Autodesk 123D suite (Design, Make)
- Meshmixer
- Makerware (Makerbot Software)
- Repetier (for Repraps)
- Blender
- Sketchup

Vector Drawing

To design files to laser or vinyl cutting:

- Inkscape
- Roland Cut Studio (Roland Vinyl Cutter)
- RDWorks (Thunderlaser CAM Software)

Other

- Arduino : For programming
- Linux : Dual-boot with Windows

The laptops have been used extensively over the past 10 months within the lab for School and Community classes as well as taken out to schools, libraries and tertiary institutions. An assessment of access hours and impact has been presented on Page 7.

Summary of Funding

Project Details

Project Title	Technology Workshops
Summary	Provision of suite of laptops for delivering technology workshops to low decile schools and communities.
Deliverable(s)	<p>Week 1 Tender for the best available sponsorship or discounted deal on the appropriate laptops</p> <p>Week 2 Purchase laptops</p> <p>Week 3 Install software on laptops</p> <p>Week 4 Make laptops available to the public either via courses or within the Fab Lab.</p>
Report Deadline	31 March 2016

Funding

Project Funding	\$3,500 + GST
The Funding will be applied to:	Acer Aspire Notebooks (E5-511-C105) @ 483.00 +GST
Co-funding Amount [if applicable]	The Recipient will invest \$1330 funding to cover the costs of purchasing slightly higher spec machines
Project budget (as per proposal)	With the \$3500 budget and a bulk discount or sponsorship, The Fabriko Trust hopes to obtain 10 or more laptops. Initial research into laptops suppliers show that appropriate devices now retail for between \$280-350.

Impact Assessment

As a Social Enterprise, Fabriko has developed a Social Impact model. This model is relatively new, but seeks to qualify our progress towards achieving our social goals and mission.

Our Mission:

“Fabriko believes that New Zealanders can be empowered to use maker technology for positive impact.

We activate and grow talent by raising technological awareness, developing skills and confidence, and providing access to tools and opportunities to learn together.”

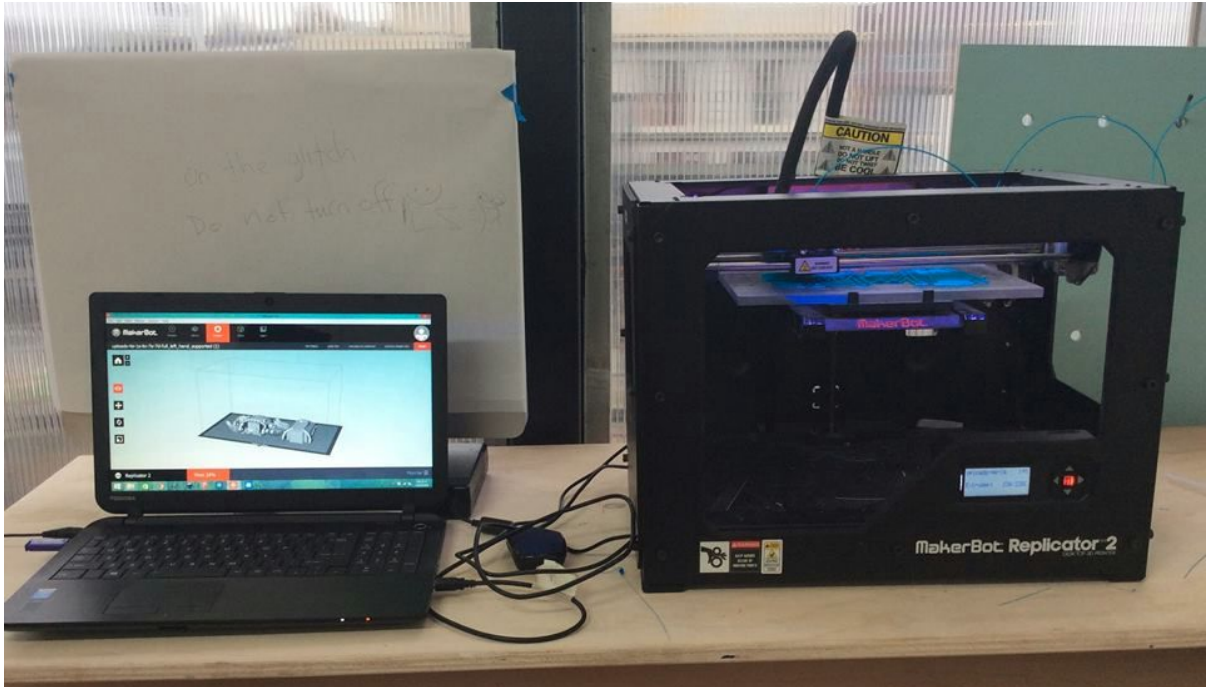
Awareness and Access

A key component to achieving this mission is **awareness** of new and emerging technology, which is delivered through events, presentations and demonstrations, and **access** which includes access to computers that enable the creation and design of 'things'.

The purchase of laptops have been an integral part of delivering on our vision. They been available for teaching and use in the lab, they have server files to the 3D printer demos at events.



Awareness: Public Events: Big Science Day



Community Access: Printing a Prosthetic Hand : <http://enablingthefuture.org/>



Initial install and set-up of laptop software



School 3D printing and Fab Lab workshops
Opawa Primary School (pictured)



Community Classes:
Laser cutting competency

Impact Summary

Below is a summary of the outreach undertaken by Fabriko over the past 12 months. While not all activity required access to the funded laptops, the majority did.

Awareness

Fabriko Events: 16 Reaching 1,480 people	External Events: 8 Reaching 11,400 people	Social Reach: 1,017 Posts reaching 2,500 per month	
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Access and Agency

Students Engaged: 224 Directly taught maker skills by FabEd	Teachers Engaged: 90 Directly in hands-on skills building workshops	Schools Engaged: 17 with FabEd knowledge and information	Adults Engaged: 212 Directly participating in night courses
	Students Engaged: 2700* Indirectly influenced by FabEd		Machine Access: 6000+ Hours of machine access provided

* Assuming 30 students per class

Activation

Makerspaces Influenced 6 Schools / Libraries	Partnership Projects 4 involving 162 participants	Learners becoming teachers: 28 Passing on knowledge and skills to 164 more learners	Active Communities: 3 Involving 80 active makers
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Case Study



For 18 months, Fabriko delivered a makerspace class including Redcliffs, Heathcote, Mt Pleasant and Sumner Primary Schools. Of the small group of 12 students that were taught, 4 Sumner Primary students were so captured with the potential of a school makerspace that they took it upon themselves to set-up and manage their own. As summed up by Deputy Principal, Jill Pears:

Last year we were very fortunate to have Fabriko come to Sumner School and run Makerspace sessions for the Bays Cluster Schools. This was an amazing opportunity for the students and inspired them to set up their own school Makerspace. The result of this is that a core group of students, supported by Fabriko, developed the skills and now plan and run lunchtime sessions for other students across the school two lunchtimes a week.

As a result these students are not only developing their skills in ICT, STEM and digital fabrication they are developing a range of leadership and business skills.

– Jill Pears - Deputy Principal, Sumner Primary School

This experience was 100% enabled through the access of laptops equipped with all the software available to design and prototype projects in class.

Fabriko has developed a plan to package up this experience into a Makerspace Leadership Programme. The objective over the next 12 months is to run a pilot programme with the view to replicate the success achieved at Sumner School – students teaching other students within a makerspace environment.

and the remaining 9 from Dick Smith:

1x Acer Aspire: \$499.00 (incl GST)

8x Toshiba Satellites: \$499.00 (incl GST)



Total investment: \$5,206.00

InternetNZ Grant: \$3,500.00

Difference: \$1,706.00 (paid by Fabriko)

Summary and Future Goals

We are very grateful of InternetNZ for their support in providing access to the tools of invention. Since getting our set of 10 laptops, we have been able to offer experiential, enquiry-based learning experiences for all sectors of our local community in Christchurch.

In the Fab Lab, learners can now use free software to design their own 3D models to print, use Inkscape to design their own files for lasercutting and vinyl cutting, program Arduinos, research tutorials online, rapid prototype their inventions right in the lab from PC to machine and re-iterating until completion.

Not all schools are kitted out with pcs either, even high decile schools such as Sumner didn't have enough for us to teach electronics and code to a class of kids - so we carried the new laptops out to schools with our 3D printers.

The programmes we are developing since getting pcs are now whole-device design oriented, using computers to design casing, fittings, circuits, code and graphics for a gadget or device, and connecting them to the internet.

The combination of open software and accessible hardware has the potential to spark new thinking and approaches to the design of smart devices and technology. We have a number of projects and initiatives lined up in 2016, including partnerships with CPIT, University of Canterbury, Haeata School (PPP) and Ngai Tahu that will help us reach a wider audience. The experiences we've gained over the last 12 months in solving issues of access to technology, will be instrumental in guiding schools and organisations towards making better technology choices.