AUSTRALIAN PUBLIC LIBRARY ALLIANCE

Australian Library and Information Association

How public libraries contribute to

THE STEM AGENDA

2017

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ACKNOWLEDGEMENTS

The STEAM into Sydney conference was built around the mid-term meeting of the IFLA Standing Committee on Public Libraries, and was organised by Marian Morgan-Bindon, Manager of City of Gold Coast Libraries, Queensland, and Jan Richards, Manager of Central West Libraries, New South Wales.

The event was sponsored by the State Library of NSW, the NSW Public Library Association, the Australian Library and Information Association (ALIA) and library systems supplier Civica.

This report has been produced by the ALIA Australian Public Library Alliance as an advocacy document to show what can be achieved through local government investment and library staff skills and creativity.

How public libraries contribute to the STEM agenda 2017

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TABLE OF CONTENTS

Photo: Cathryn Ferencz, Geelong Regional Libraries

INTRODUCTION

Governments across the world are agreed that in order for countries to thrive in today's knowledge-based economy, their workforces need a strong STEAM (Science, Technology, Engineering, Arts and Mathematics) skills base.

It is vitally important that people engage with the technical subjects, gain confidence and build a solid understanding so that they can take advantage of new technologies. At the same time, people need to develop the right side of their brain – the side that deals with creativity and imagination – so that they can not only use new technologies, but also be the innovators who create the next wave of inventions.

Public libraries are uniquely placed as centres of informal learning for all ages, at the heart of their communities. They have embraced the opportunities to bring STEAM initiatives to all, from the very young through to those who are post-retirement.

BACKGROUND

In March 2017, more than 100 leaders from public libraries across Australia, Asia, Eastern and Western Europe and the Americas, gathered at the State Library of New South Wales (NSW) for *STEAM into Sydney*.

STEAM into Sydney celebrated the innovative ways that public libraries are supporting the science, technology, engineering, arts and mathematics agenda. Presentations were ambitious, inspirational and demonstrated the kind of forward-thinking that has made public libraries such successful centres for lifelong learning in their communities. There were excellent examples of initiatives in Australia, as well as from around the world.

> Libraries are arguably the single most important grass-roots community space with capacity to provide ALL members of their community access to current knowledge and information. They can provide Internet-enabled computers and tablets, collaborative working spaces, themed activities and programs targeting different audiences and acquire new resources to add to their borrowing collections.
>
> **Adam Selinger, Children's Discovery Museum**

THE DISCOVERY CLUB IN SYDNEY LIBRARIES

The *Little Bang Discovery Club* is a partnership between the Children's Discovery Museum and public libraries in 25 locations around Sydney. It targets pre-schoolers and early primary school aged children and their families, aiming to develop knowledge and skills that inspire early scientific exploration, discovery and learning – the hallmarks of critical thinking and innovation.

The program consists of four one-hour sessions of in-library, hands-on activities, with question and answer time, and a take-home Discovery Box, which is loaned to each family for the duration of the program. The boxes are intended to enhance child, family and community access to age-appropriate, quality scientific equipment. An additional resource for older children (aged 8-12) includes loanable STEM kits with items such as a Galilean telescope, microscope, human torso model, mineral collection, percussion instruments, mysterious magnet tubes and bug collection and identification tools. Relevant books and DVDs are added to the box from the library collection, or specially purchased.

The weekly sessions are based on a sequence of skills, such as collecting and classifying, measuring, and experimenting. A final session is about communication and sharing, focusing on a 'science fair' and a final 'graduation' celebration.

The program is unique in that it requires parents and carers to accompany their children to each session, not as 'baby-sitters' but as equals, co-learning, exploring, asking questions and discovering together.

The *Little Bang Discovery Club* is designed to be run by and within libraries, adding STEM programs and resources to the communities they serve while fitting in with their existing staffing and venue structures. The program is sustainable because it works in harmony with a library's methods of operation and utilises existing resources and networks.

Presenter Adam Selinger, co-founder and Creative Director, Children's Discovery Museum

Adults and children are equally involved participates in the Little Bang Discovery Club.
Photo: Miranda Soliman

Little Bang provides each family with specially designed investigations to try at home between sessions.
Photo: Adam Selinger

Little Bang provides each family with specially designed investigations to try at home between sessions.
Photo: Adam Selinger

CODE CLUB AT LEICHARDT LIBRARY

Code Club started in 2014 and is a worldwide not-for-profit organisation based in the UK. The organisation provides network connections to over 1500 Code Clubs that assist 50,000 Australian children[1] to learn to code.

The library staff launched Code Club at Leichhardt Library in NSW, in November 2015. Sessions run for four weeks during the school term and are designed for a junior 'tween' audience. The curriculum uses Scratch, a free online programming website developed by MIT https://scratch.mit.edu/ and Trinket, a free online programming website that allows you to create and edit HTML and CSS code as well as using Python programming language https://trinket.io/.

In addition to meeting STEAM skill goals, there have been further benefits. Attendees make new friends, they develop more confidence within themselves and their skills, and they will often seek out opportunities to assist those around them. Some of the attendees who have attended the sessions have helped teach their classmates at school how to use Scratch and they have participated in coding challenges such as 'The hour of Code'. Their enthusiasm has not ended at the conclusion of the programme.

Presenter Selina Breckenridge, Digital Librarian, Inner West Libraries, Leichhardt

[1] Code Club Australia 2017, Code Club viewed 21 February, 2017, <https://codeclubau.org/get-involved/>

PORT MACQUARIE-HASTINGS IMAGINARIUM AND TECH ROOM

Thanks to Library Development Grants, Port Macquarie-Hastings Library has been able to introduce a professional grade recording studio and a Tech Room, showcasing the latest in gadgets and technology.

The Imaginarium is a fully equipped recording studio, available free to all library members. It contains a high-end iMac, Mbox Pro, a suite of professional grade software programs, amplifiers, video camera, green screen, as well as instruments and equipment available on request. Port Macquarie-Hastings has a burgeoning arts and music scene and The Imaginarium addresses an increasing need in the local area. The space has been booked week after week since its launch in July 2015. Users include musicians, dancers, actors, video editors, podcasters and hypnotherapists.

Launched in 2016, The Tech Room contains a range of equipment including 3D printers, 3Doodlers, Spheros, MakeyMakeys, Raspberry Pi's, a drone, as well as virtual reality equipment like Oculus Rift, HTC Vive, and Samsung GearVR. While 3D printers were not completely new to libraries most of the other equipment was a first.

Most of the equipment is transportable. "We have visited remote schools where, in addition to giving the kids hands on access, we have demonstrated just how tricky drone flying is. We visited a nursing home where a 95 year old was brought to tears by VR – and not in a bad way."

The team has held 'weird techie stuff' open days and VRfternoons, and targeted specific groups such as U3A, Probus clubs and homeschooling groups. We have also showcased the various technologies at the Regional Art Gallery and numerous community events throughout the LGA.

Presenter Brendan McDonald, Technical Services Librarian, Port Macquarie-Hastings Library Service

Photos: Brendan McDonald, Port Macquarie-Hastings Library Service

> We are currently looking at acquiring Google's Daydream View VR and hopefully also Microsoft's Hololens in the near future. Certainly one of the ongoing challenges will be keeping abreast of emerging technologies.
>
> **Brendan McDonald, Technical Services Librarian, Port Macquarie-Hastings Library Service**

For librarians: you don't need to have a science background to implement STEM programming. All you need is passion and a willingness to try new things.

Miranda Soliman, Randwick City Library

Photos: Brendan McDonald, Port Macquarie-Hastings Library Service

Public libraries have the unique opportunity to engage youth in fun, exciting, and educational STEM programs; further develop the skills and knowledge base of their librarians; partner and collaborate within the community; and increase their support in the community, all while providing necessary informal education opportunities to support STEM fields.

Miranda Soliman, Randwick City Library

Photo: Miranda Soliman, Randwick City Library

CITY OF PERTH KNOWLEDGE WEEK

Knowledge Week was the brainchild of the City of Perth Library, Knowledge Society and their partners. It was a celebration of ideas, thinking and learning in Perth's new heart, Cathedral Square.

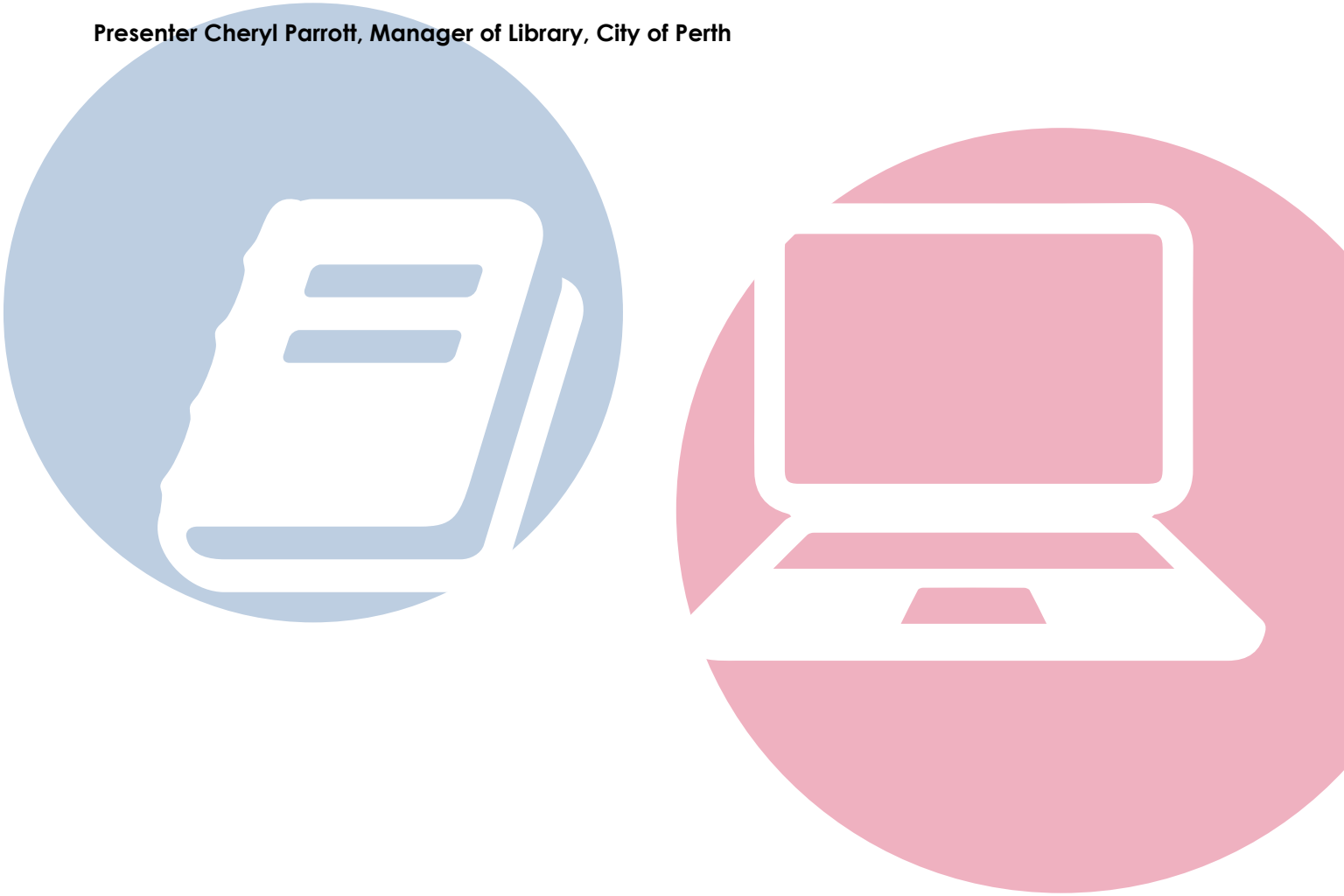
The week started with a major literary event with actor and author, Richard Roxburgh, who spoke on the importance of libraries, literacy and how reading instils a sense of creativity and wonder in our children.

A discussion forum followed with three of Perth's leading lights in innovation and technology, the Executive General Manager of People, Change and Innovation at the RAC, Managing Director of Rio Tinto's Iron Ore's Planning Integration and Assets and Director of Games and Interactive Programs at FTI. These women, role models in their own right, are driving creativity, change and innovation in their organisations and using powerful technology, like big data, to create new economic value in Western Australia.

All sessions during the week focused on specific aspects of STEAM, from how big science and the Square Kilometre Array is 'finding needles in a cosmic haystack' to running pop-up sessions on CoderDojos and virtual and augmented reality gaming.

Coding classes for primary and secondary students, public engagement workshops with the McCusker Foundation for Citizenship, talks in partnership with the International Centre for Radio Astronomy Research and other projects such as the WA Chief Scientist speaking about health research and personalised medicine are all activities in the library which have resulted from the Knowledge Week partnership.

Presenter Cheryl Parrott, Manager of Library, City of Perth



STEAM IN PRACTICE AT CITY OF RYDE

Investment in a new library and refurbished branches provided the opportunity for City of Ryde to explore STEAM opportunities. Library staff began with an idea about creating a space which supported children's science and technology literacy and decided on a large mural with a steam punk theme with two large embedded touchscreens; a collection of science kits available for loan; two large museum style microscopes; a curiosity cabinet with illuminated boxes including an x-ray viewer, 12 drawers containing a range of objects and with four iPads mounted with educational games. Other features were a storytelling chair, dodo-shaped children's chairs and a range of distorting mirrors for bay ends.

Since the work has been completed, the programs team and staff have provided nearly 20 science based activities at West Ryde including a Little Bang Discovery Club and a series of workshops on topics such as the physics of toys, LEGO building, light, earthquakes, water, batteries, food, dinosaurs, magnets and bubbles.

Presenters Jill Webb, Manager, Library Services and Ken Klippel, Senior Coordinator, Library Operations, Ryde Library Services

Photos: Jill Webb, Ryde Library Services

THE LEARNING SPACE, RHODES, CITY OF CANADA BAY

In 2017, City of Canada Bay Libraries opened The Learning Space, a library without print books. It is located in The Connection, City of Canada Bay's community and cultural precinct in Rhodes.

The main space has desks, tables, and occasional furniture to facilitate work, study, gatherings, and programs. A regular photocopier, printer, scanner; a high resolution A0 plotter and scanner, and a 3D printer, as well as public access computers are available to the public.

There are two modest studio spaces, one of which is setup with digital creative gear for photography, video, music, and benches to support maker activities such as electronics, robotics, and 3D printing. It also has a digital classroom, equipped with an interactive whiteboard, which also hosts seminars, talks, and in busy periods, quiet study.

The foyer of the building doubles as the digital gallery. The large scale video wall, two projector screens, and high end sound system allow exhibition of a curated program ranging from international video art, provided through a partnership with dLux media arts, to community created content.

The facility has been a big hit with the community. The school holiday program was well subscribed, the after-school robot club has been a sell-out, and over 70 families attend baby rhyme time.

For families with English as a second language, there are storytimes in Korean and Chinese, and Tech Savvy Seniors sessions in Mandarin and collections in many languages and formats are available online.

Presenter Joy Suliman, The Learning Space Coordinator, City of Canada Bay Libraries

Photo: Ann-Marie Calilhanna and Joy Suliman, The Learning Space, Rhodes, City of Canada Bay

TECH EVENTS IN GEELONG

In 2015, Geelong Regional Library Corporation opened the award winning Geelong Library & Heritage Centre (GLHC). It is not only a flagship central library but also a centre of digital technology for the community.

At the 2016 Pivot Summit[2], Patti Manolis, Geelong Regional Libraries CEO, teamed with Justine Hyde, Director of Library Services and Experience at the State Library Victoria, to tell business entrepreneurs and innovators about the vital role of public libraries in our digital future. They explained that libraries provide a range of hardware, software and emerging technologies from hardwired to tablets to raspberry pi to robotics, to 3D printing to open source computing to eKnow-how sessions and skilled, professional staff. The day after Pivot Summit, GLHC played a central part in the Pivot Connect community festival, with the Geelong Art Gallery, the Courthouse Youth Arts Centre and the City of Greater Geelong City Hall also providing venues for digital activities and experiences.

GLHC was also a logical choice for the Geelong Digital Learning Network school maker fair. The network is a collaborative association between 32 schools from the Geelong, Bellarine and Surf Coast areas. The major events space of the library was transformed into a convention space providing a "circuit training" rotation for students to experience technologies including programmable robots, circuitry sets, 3D printers, virtual reality and interactive classroom computing before turning their attention to developing pitches to use that technology to inspire and entertain. With over a dozen stalls, staffed by schools, vendors, the Gordon (a technical and further education institution) and the library, the experience came together with around 120 students exploring emerging technology and its relationship with the STEaM curriculum.

eKnow-how and STEaM programs delivered across the Geelong library network address the digital divide and encourage digital inclusion by fostering trans-literacy skills and better preparing our users for success in lifelong learning, education and work by providing them with access to technology that might otherwise be unavailable to them. The Information Resource Team delivers Tech Savvy Seniors programs from beginner's basics through to learning about MOOCS, 3D scanning and printing, Green Screen Technology, VR experiences, creative images and digital storytelling. A Raspberry Pi Meet-up is facilitated once a month and run by members of the group.

The introduction of a robotics program using LEGO MINDSTORMS® by Geelong's Children's and Youth Services Team has been highly successful. The course is run over a 10-week period and in addition to allowing participants to build a robot of their choice, it also introduces them to programming using the LEGO MINDSTORMS® software. An important aspect of this program is the progression from LEGO MINDSTORMS® to Advanced LEGO MINDSTORMS® including a trip to Deakin University's Centre for Advanced Design and Engineering Training (CADET)[3].

Presenter Cathryn Ferencz, Executive Manager, Collection and Technologies Access, Geelong Regional Library Corporation

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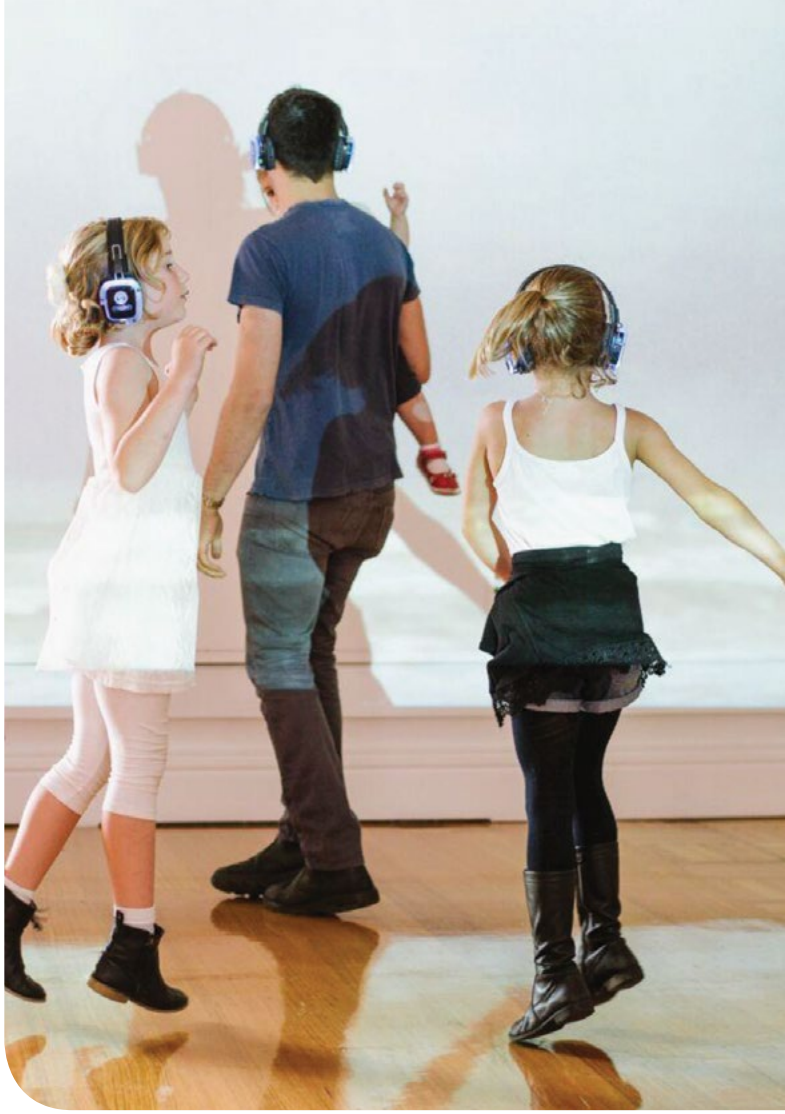
[2] Pivot Summit is an event that brings together Australian and international thought leaders to share insights on the future of digital technology. Its aim is to be Australia's answer to the American South by Southwest Conferences and Festivals held in Austin, Texas. http://pivotsummit.com.au.

[3] Deakin University's Centre for Advanced Design and Engineering Training (CADET), http://www.deakin.edu.au/engineering/cadet.



Photos: Cathryn Ferencz, Geelong Regional Library Corporation

CUMBERLAND LIBRARIES TEACH PROGRAMMING AND CODING

Cumberland Council Libraries provides STEM program for young children that will encourage their understanding of the concepts of science and engineering.

Cumberland Libraries trialled using Arudino as a new innovative approach to engage school-aged students (10 to 18 years) through short, 1.5 hour sessions during the January 2017 school holidays. The basic tools used are Arduino microcontrollers, solderless breadboards, light emitting diodes, resistors and laptops to run a visual programming language. Participants are introduced to basic electrical concepts and learn to build simple circuits and program them using different parameters. A programming method was selected over coding due to it being more user-friendly. Programming is based upon graphical blocks that already exists, with the user needing to drag and drop them in the correct sequence to get the program to work. Coding is more complex and requires strict punctuation and syntax.

In addition, the children were introduced to a SPRK+ (Schools, Parents, Robots, Kids). The SPRK+ is a robotic waterproof ball programmed by a range of apps. It can reach speeds of more than two metres per second. This robot can be used to introduce students to coding and robotics, as it allows the user to control the robot in real time. SPRK has its own C-based language called OVAL. It allows the user to trace a path to direct the robot with an app using their finger tips or can provide block-based programming through the use of Lightning Lab.

As a group, the participants recreated the maze, altered the obstacles and took turns in driving the Sphero through the maze. The smartphone was under the student's control and they were simply enjoying this extra activity as part of a learning curve without realising that they were using mathematical skills in manoeuvring the ball and stopping it before it hit an object. This is intended for students in a class whereby they can learn basic mathematical skills such as speed, distance and time or starting at a particular point and ending at another point by calculating and working out the speed over a particular defined distance, for example, by measuring the time taken to travel between the points.

Presenter David Samuel currently based at Auburn library and provides system support and other library services within the Cumberland Libraries.

> Children are naturally creative and the public library provides an ideal setting and atmosphere to nurture STEM engagement activities suitable for all ages, with varying capabilities.
>
> **David Samuel, Cumberland Libraries**

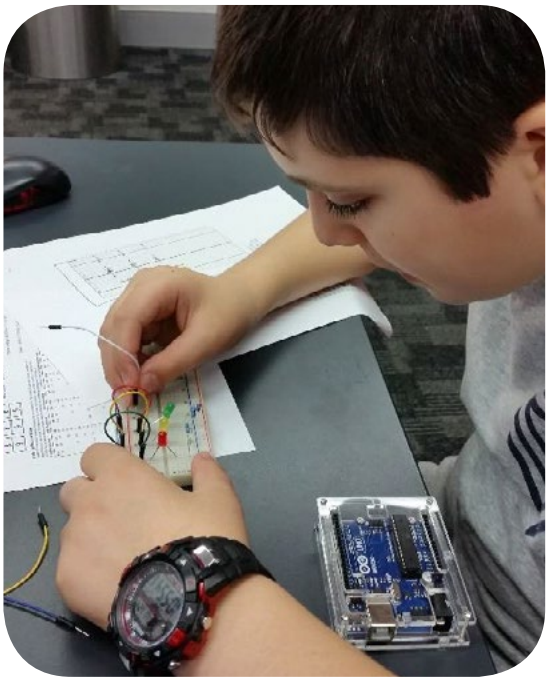


Photo: David Samuel, Cumberland Libraries

CREATIVE PARTICIPATION AND PRACTICE, CITY OF SYDNEY LIBRARY

In response to the increased demand for affordable and accessible creative participation opportunities, City of Sydney Library partnered with Pine Street Creative Arts Centre to deliver a series of workshops during 2016.

The trial series offered introductory workshops in drawing, printmaking and ceramics. Guided by a professional tutor, participants were taken through a series of short exercises to build their confidence in and understanding of the art form and build skills that they may continue to grow.

Each workshop was an accessible two hours in length and at $15 per person was an affordable option.

During the year six workshops were run, with a capacity of 20 people, each workshop was fully booked with an average for 80% attendees.

New for 2017 is the City of Sydney Youth Curators program. This program brings together creative young people aged between 15–18 to curate and participate in a series of collaborative meetups and events called The Outlandish Library in 2017. Young people explore diverse creative practice: from writers to dancers, set designers to singers, animators to actors, coders to painters, filmmakers to musicians and all the many hybrid fusions in-between. In each series, the young curators will have the opportunity to select a resident artist who will attend each session and help shape the meetup activities.

Presenter Ellen Lowrey, Manager Programs and Learning, City of Sydney Library

Photos: Ellen Lowrey, City of Sydney Library

THE EDGE – CASE STUDIES IN PRACTICAL STEAM

SLQ The Edge has spent the last seven years empowering creative experimentation across art, science, technology and enterprise for urban and remote communities in Queensland. Two examples are Creative Community Computing and I Made a Cubby.

Creative Community Computing is a long-term project that looks to develop ICT self-sufficiency in marginalised communities, working with reclaimed corporate ICT hardware. ICT self-sufficiency means that by the conclusion of the program, the participant will have developed a foundational understanding of how a personal computer works – from hardware through to operating systems, software and practical use – ensuring they will not require further support in meeting their personal computing needs. Participants dismantle the computer to components, exploring together what each part does, how each works with the others to make up a computer and how to reassemble it. They install free and open source software (FOSS) and operating systems, and they learn how to use programs for media, communication and education tasks. At the end of the program, the participant takes the computer home.

Initially this was a program delivered by SLQ The Edge, but over the past two years it has undergone a comprehensive documentation process for release of the whole program under a Creative Commons license.

The I Made a Cubby project invites families to work with designers to realise a bespoke cubby house for their children. This program provides the necessary training for parents to fabricate their design using maker technologies. Not only is there a significant learning process in building the cubby, there is also the positive affirmation received from friends and family who see the creation realised. This project has a significant social inclusion agenda, ensuring that a family's financial situation does not prevent their involvement.

Both projects have, at their core, a commitment to addressing the (deepening) digital divide in community and putting the tools (for free) into the hands of individuals and organisations.

Presenter Daniel Flood, Creative Manager, State Library of Queensland, The Edge

> 'Real' science is taught in universities; consumer technology comes in a tamper-proof black box and art is an eldritch pursuit. With these areas of practice there are barriers – financial, educational, social, cultural, psychological – that prevent many communities from engaging beyond the STEAM equivalent of finger painting.
>
> **Daniel Flood, State Library of Queensland**

INSPIRATION AND IDEAS FROM THE STATE LIBRARY OF NSW

The State Library hosted a seminar Makers, Craftivists and Public Libraries on 6 May, 2015, to engage a broad audience of NSW public library staff in exploring a range of ideas and opportunities in the many different areas of creative endeavour that are variously described as makers, hobbyists or STEaM focused programs.

A couple of industry experts joined the seminar via Google hangout to share their experiences, Jessica Pigza[4] author of *BiblioCraft: A Modern Crafter's Guide to Using Library Resources to Jumpstart Creative Projects* and Leann Praine[5], author of three books *Strange Material: Storytelling Through Textiles*; *Yarn Bombing: The Art of Crochet and Knit Graffiti* and *Hoopla: The Art of Unexpected Embroidery*. These keynote presentations continue to be available via YouTube. Live streaming these talks and making them available via YouTube, as well as archiving the tweets and links[6] that were shared during the seminar via Storify and blog posts[7], expanded the opportunities for public library staff to view them in regional and remote locations and at a later date. Public library initiatives were showcased and these presentations were made available from Slideshare[8].

Part of the aim of the seminar was to encourage people to think about partnerships, so presentations from people from Indigenous Digital Excellence[9], dLUX MediaArts[10], and Three farm[11] to help library staff see that there were other groups and organisations they could work with.

Presenters Andrea Curr, Ellen Forsyth and Mylee Joseph, Public Library Services, State Library of New South Wales

[4] https://www.youtube.com/watch?v=ZJpoDkxBDbI.

[5] https://www.youtube.com/watch?v=TTd6VGNy9aI.

[6] "Makers, Craftivists and Public Libraries (Part I) (with Images, Tweets) • Pls_sl • *Storify*." Storify, https://storify.com/pls_sl/makers-craftivists-and-public-libraries. Accessed 7 February, 2017.

[7] "Jessica Pigza at Makers, Craftivists, and Public Libraries: Collections and Community Connections." State Library of NSW, 13 May, 2015, www.sl.nsw.gov.au/blogs/jessica-pigza-makers-craftivists-and-public-libraries-collections-and-community-connections. Accessed 7 February, 2017.

[8] "'nswpln2015' on SlideShare." *Share and Discover Knowledge on LinkedIn SlideShare*, 2015, www.slideshare.net/search/slideshow?searchfrom=header&q=nswpln2015. Accessed 21 February, 2017.

[9] *Indigenous Digital Excellence Home*, idx.org.au/. Accessed 21 February, 2017.

[10] *DLux MediaArts*, www.dlux.org.au/. Accessed 21 February, 2017.

[11] *Three Farm*, https://facebook.com/threefarm.network/. Accessed 24 May, 2017.

CANADA: NEW MEDIALAB AND FAB LAB FOR QUEBEC

In February 2017, the Brossard Public Library launched the Fab Lab[12], a new digital learning space for its community. It is open to everyone, children, teens, students, artists, entrepreneurs, professionals and creators.

The 105 m² space has been designed to accommodate 37 seating areas, a large counter-height central work area, three team work tables, as well as counters all around the room to accommodate the various pieces of equipment. These include 3D printers, laser cutter, digital sewing machine, vinyl and paper cutter, hot press, electronic and computer components, button presses and much more.

Brossard Public Library's Suzanne Payette explained: "The Fab Lab project promotes several key elements one will expect to find in a 21st century library. Learner empowerment and integrated learning opportunities, common spaces for engagement and connection between people, access to hitech equipment and tools for transformation as well as innovative approaches for exploration and creation are a few examples of these elements."

A few weeks after STEAM into Sydney, Repentigny Public Libraries opened a new Medialab, a 300 m² multimedia laboratory developed with, and for the use of, young people. It has been funded jointly by the City of Repentigny and Quebec's Ministère de la Culture et des Communications.

Presenters Chantal Brodeur, Library Director, Repentigny Public Libraries and Suzanne Payette, Director, Brossard Public Library

> The Medialab is a place of informal learning aimed at giving young people the right tools to guide them through their projects. Once the project has taken shape, the participant will be encouraged to share the newly acquired knowledge as well as the realisation itself.
>
> **Chantal Brodeur,**
> **Library Director,**
> **Repentigny Public Libraries**

Photo: Chantal Brodeur, Repentigny Public Libraries

[12] Fab Labs are an initiative of the Massachusetts Institute of Technology designed to provide widespread access to modern means for invention. They began as an outreach project from MIT's Center for Bits and Atoms (CBA). http://fab.cba.mit.edu/about/faq/

NEW ZEALAND: LOWER HUTT CLUBHOUSES FOR DISADVANTAGED YOUNG PEOPLE

Hutt City Libraries runs a Clubhouse[13] after-school program for 10-18 year olds in two of its highly deprived communities. It is a free program, run by library staff and volunteer mentors.

Denise Clarkson, a member of the Hutt City Libraries leadership team, said: "In the last year attendees have learnt Photoshop, completed basic electronics projects with makey-makey kits, mashed up circuitry with fashion design, made and edited films, taken part in robotics competitions, completed graphic design jobs for community clients, formed a band, recorded tracks, and created start-up businesses."

Presenter Denise Clarkson, Hutt City Libraries

> We [libraries] needed to be seen as an innovator, and as being integral and important to the social and economic development and future of the city.
>
> **Lillian Pak, Hutt City Libraries, Lower Hutt, New Zealand**

Photo: Denise Clarkson, Hutt City Libraries

[13] The Clubhouse Network is a global community of over 90 Clubhouses in 19 countries. It was founded in 1993, in collaboration with the MIT Media Lab. The flagship Clubhouse is based at the Museum of Science in Boston. http://www.computerclubhouse.org/

NORWAY: BERGEN'S DIGITAL ARENA

Digital technology and knowledge are at the core of Bergen Public Library's Digital Arena. The goal is to turn the library into an arena of learning, debates and experiences in the fields of new media and digital technology.

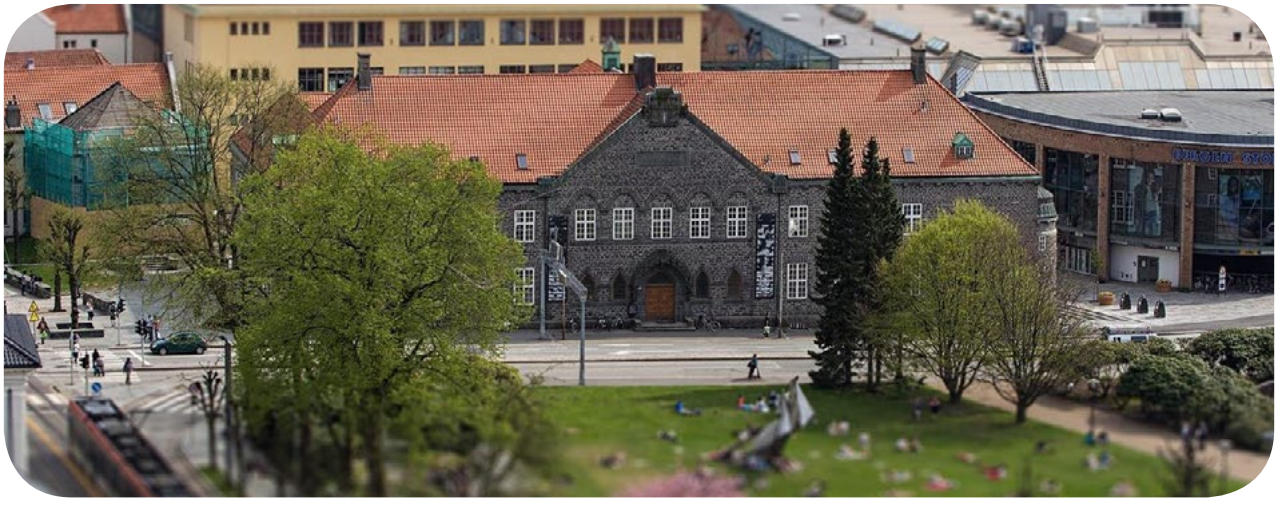
In the Digital Arena, Lær Kidsa Koding! (Teach Kids Code!), inspired by the British Code Clubs, is working to provide children with an introduction to computer programming. The library hosts an entry level course for children, the Code Club, teaching children the basics of coding through Scratch and NXT Lego Mindstorms. The library also offers a separate code club for refugees and immigrants.

As there are fewer girls in Code club, the library holds therefore a separate Girl Tech Party once a year. Girls aged 8 to 10 learn coding, soldering, makey makey and hardware programming.

In summary, Bergen Public Library's Leikny Indergaard, said, "The new public library must usher in people on their own terms, create networks, facilitate activities and be the meeting place required by future citizens."

Presenter Leikny Indergaard, Bergen Public Library, Bergen, Norway

> The new public library must usher in people on their own terms, create networks, facilitate activities and be the meeting place required by future citizens.
>
> **Leikny Indergaard, Bergen Public Library, Bergen, Norway**



Photos: Leikny Haga Indergaard, Bergen Public Library, Norway

Photos: Leikny Haga Indergaard, Bergen Public Library, Norway

SWEDEN: MANUFACTURING SKILLS FOR ASYLUM-SEEKERS

In the south of Sweden, Vaggeryd's joint public and upper secondary school library is the site of the first makerspace in Sweden, opened in 2013. Over the last four years, makerspace programs have evolved to meet the technical skills needed in a community where furniture making is the main industry. There are workshops on robotics, lessons in CAD drawing, and the library is home to an upholstery machine that has enabled asylum-seeking unaccompanied minors to learn upholstery and carry out furniture repair as a social enterprise.

Library Director Lo Claesson explained, "Asylum-seeking students have also come to makerspace to try out different equipment like the laser cutter, the 3D-printer or sewing machines. If they will get a residence permit then this could help them decide the kind of education or job they would like. If they don't get permission to stay, these skills will help them anyway. At the very least it will be something meaningful to do while they are waiting and may help distract them from distressing thoughts and memories."

Presenter Lo Claesson, Library Director, makerspace, Sweden

> Asylum-seeking students have also come to makerspace to try out different equipment like the laser cutter, the 3D-printer or sewing machines. If they will get a residence permit then this could help them decide the kind of education or job they would like. If they don't get permission to stay, these skills will help them anyway. At the very least it will be something meaningful to do while they are waiting and may help distract them from distressing thoughts and memories.
>
> **Lo Claesson, Library Director, makerspace, Sweden**

Photo: Lo Claesson, makerspace, Sweden

Photo: Chantal Brodeur, Repentigny Public Libraries