

# Little Bang and Bright Sparks newsletter

Autumn 2019 | Vol 5

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### Nowra Library Profile – Big Bang Science Kits

- Experience delivering a workshop
- Kits now available for sale with accompanying workshop plan

 [www.facebook.com/childrensdiscovery/](https://www.facebook.com/childrensdiscovery/)  
**PLEASE LIKE US!** We'd love to share your stories of science in the library! Some of our resources are also available for sale from here.



## Welcome

### to our 5th newsletter!

We feature two new programs, **Little Bang Discovery PLUS** and **Big Bang Science Workshops**, which are available for libraries and communities to run themselves.

**Little Bang PLUS** is the extension program in much demand from those who have been running the original program for a couple of years.

**Big Bang workshops** are for primary-aged children and based on our most popular activities. Full facilitator notes and equipment are now available.

The Children's Discovery team were once again showcasing immersive learning environments at the annual **Abu Dhabi Science Festival**.

Our **Kids Dig** archaeological experience uses genuine tools and techniques in an authentic looking environment. Each session children create a theory of local human history based on the evidence they uncover.

This year, **Build It**, the house construction experience, was a highlight of the satellite venue of Al Ain. We introduced a new trade (data technician) and profession (architect) into the experience.

We have some new **Spark Technology** boxes – themed sets of equipment and resources to loan from libraries and/or use in workshops and science fairs.

Best wishes,

*Adam*

Adam Selinger, Executive Director  
Children's Discovery Museum



WHERE PLAY INSPIRES LIFELONG LEARNING



www.childrensdiscovery.org.au

Pre-order now!

# BIG BANG BOOK OF SCIENCE



KEEP AN EYE OUT  
FOR THE BIG BANG  
BOOK OF SCIENCE:  
AVAILABLE FROM  
CHILDREN'S DISCOVERY  
MID 2019.



The Big Bang Book of Science is a collection (in two volumes) of our 24 most popular and affordable workshops developed for delivery in libraries by librarians, other community groups, or at home.

It is full of practical hands-on activities designed to encourage scientific inquiry skills and covers a range of STEAM topics for ages 5-12. Each workshop set comes with comprehensive information

and all the resources you need to run it in your service.

This includes:

- Workshop Summary (Key Messages and Equipment/Materials List)
- Full Workshop Plan
- Workshop Risk Mitigation Form
- Additional Resources (Handouts, Recipes, Instructions, Templates, etc)

NEED EXTRA SUPPORT  
TO DELIVER OUR  
BIG BANG SCIENCE  
WORKSHOPS  
YOURSELF?

OUR READY-TO-GO  
WORKSHOP KITS  
ARE AVAILABLE FOR  
PURCHASE NOW, AND  
WE ALSO DO  
TRAINING!



What's New in

# BIG BANG SCIENCE WORKSHOPS

THE AGE-RANGE IS MORE WHAT YOU'D CALL "GUIDELINES" THAN ACTUAL RULES.



## Marble Run (5-8 years)

Challenge yourself in our marble-ous marble run, using household items and recycled materials to create an elaborate and convoluted track to race your marble against the clock.



## Bottled Planet (5-8 years)

Explore the science of life cycles through dress up and role play, and create your own brine shrimp bottled planet aquarium to take home.



## Escape Room (9-12 years)

In this Escape Room themed workshop, race against the clock to solve the mysteries of the Zombie Outbreak, Librarian Crime Ring, Alien Investigation, Pirate's Treasure and Scientific Discovery.



## Inside Out (9-12 years)

Uncover the ins and outs of a living organism, using dissection techniques to investigate the anatomy of a squid to discover how these features function to keep it alive.



## Fossils Rock (5-12 years)

Be transported into the past with this hands-on fossil workshop, including exploring real fossils, reconstructing a dinosaur from fossil evidence and making casts from genuine fossil moulds to take home.

Feature Product



# ENERGY STICK

Looking for a fun and interactive way to explore circuits and electricity? The Energy Stick is an affordable and simple way to teach this topic – just add people!

Simply close the electrical circuit by touching either side of the Energy Stick on the metal strips to experience the fun.

- Test what objects electricity will flow through, e.g.: humans, water, rubber, wood?
- Discover what happens when you break an electrical circuit.
- See how many people you can use to make up your circuit...our record is 30!

The Energy Stick features in our new Circuits & Electricity Spark! Technology Box and Potato Clock Big Bang Science Workshop. Contact us for further information about how you can get one for your service.

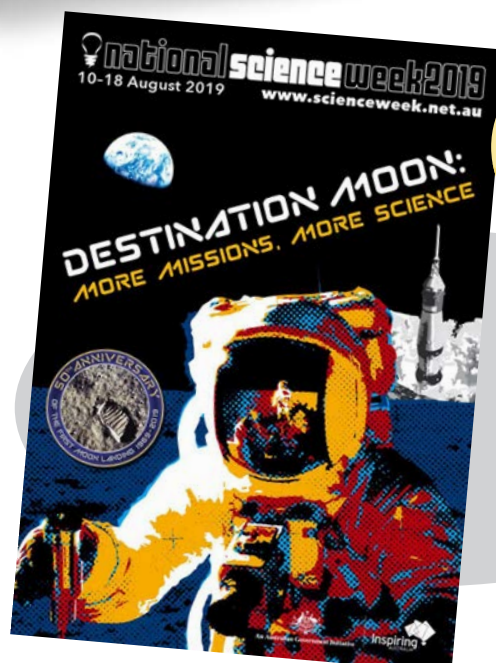


## national science week

# Scientists Speaking in Libraries for National Science Week

Each year, Inspiring Australia NSW facilitates research presentations in libraries to make it easier for community members to engage with scientists. They are again recruiting researchers at all levels of their careers and across all of the STEM disciplines to present short talks and demonstrations in a local library, in particular during **National Science Week** this August. Learn more:

<https://inspiringnsw.org.au/2019/03/04/participate-in-a-library-talk/>

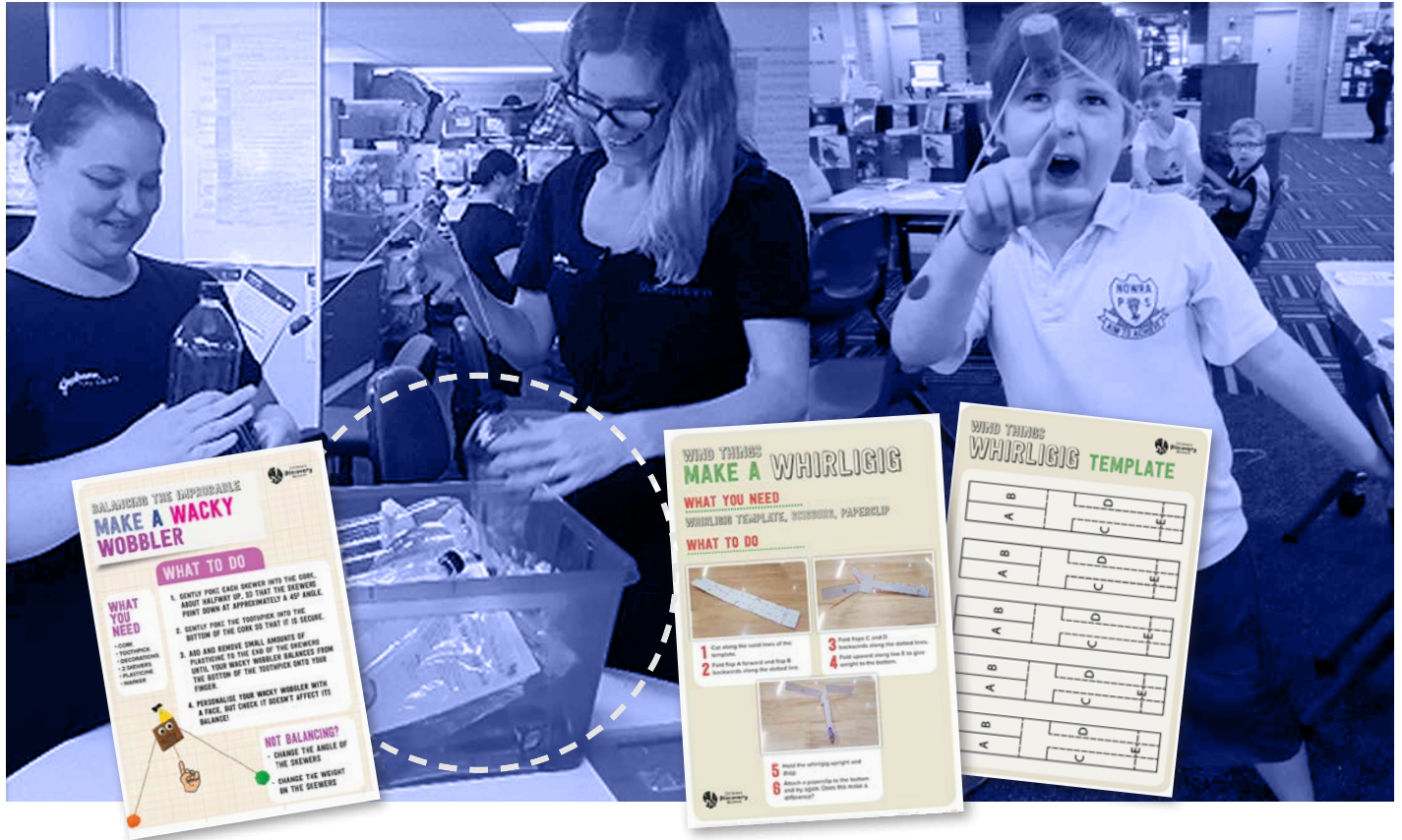


Destination Moon: more missions, more science is the school theme for National Science Week in 2019.



Nowra Libraries:

# OUR BIG BANG STEAM EXPERIENCE



Towards the end of 2018 Shoalhaven Libraries trialled STEAM Workshops at our Sanctuary Point and Nowra branches.

They were hugely successful, but staff time preparing for these workshops was an issue. This is where the Children's Discovery Museum has stepped in to help. After meeting with Adam we decided to purchase 8 Big Bang Discovery Kits. The kits came quickly and in stackable boxes. Inside was the lesson plan, with the key messages, timeframe, method set out and all the materials you would need. Plus all the activities provided use easily sourced and replaceable materials.

These kits have allowed us to include STEAM Workshops into our regular programming at both Sanctuary Point Library and Nowra Library. Our STEAM Workshops are aimed at 6-12 year olds and are run monthly. Children are invited to develop their STEAM skills and enhance their critical thinking with fun and creative challenges provided by the *Big Bang Discovery Kits*.

So far we have used the *Wind Things* and *Balancing the Improbable* kits. The children loved making the *Whirligig* and the *Wacky Wobbler* was an instant hit. The children were also excited to be given copies of the *Discovery @ Home* notes, which provides a summary of the workshops key ideas and

an activity to complete at home. Parents have all been very positive about the program and we have had a couple of home-schooling families take part and sign up for future sessions.

Thank you Children's Discovery Museum for providing these kits, giving us access to a wealth of specialised knowledge and supporting Shoalhaven Libraries in the development of our STEAM programming.

By Gemma Luxford  
Children's & Youth  
Library Technician  
Nowra Library

## Little Bang Discovery Plus

Thanks to the generous support from Inspiring South Australia, the first training on this extension program to the *Little Bang Discovery Club* took place at the end of last year. Some 30 libraries were trained and equipped to run the program.

### Little Bang Feedback

*"This is a wonderful program that gives our country community an opportunity for a science program that we would not be able to offer otherwise. Thanks so much."*

Wendy Hutchinson,  
Copper Coast SA

*"The training and kit are faultless"*

Cummins Library

Speak to us if you'd like to organise a training 'hub' at your service.



### Cummins Library: Our Little Bang Discovery PLUS Experience

*Little Bang Discovery Plus* was launched at Cummins School Community Library in the last week of February, with seven little scientists, their Lab Assistants (adult) and siblings. The response for the program has been fantastic, with more LBD+ planned for Terms 2 and 3.

We sincerely appreciate the excellent quality of resources for the Discovery Boxes, which were very straightforward to assemble.

Week 1 was a great refresher, revisiting past experiments while practicing our measuring skills.

The scientists were fascinated with the floating egg experiment, making many and varied predictions about what would happen when the egg in salt

water had fresh water gently added to it.

Week 2 provided lots of entertainment with light! We began with great discussion over our experimenting at home and had some excellent drawings of our results – such a great way for scientists to record their findings.

The scientists were engrossed with making shadows, with torches and then the overhead projector. We experimented with paper, cellophane and then prisms, making reflections all around the room!

The LBD+ program is so very well designed, giving an excellent foundation to work with, while encouraging further thought and research about possible experiments to be included. **We love Little Bang Discovery Plus!**

By Jeannie May  
Community Library Assistant  
Cummins School Community Library



# Spark! Discovery Box

## Spark! Discovery Boxes Feedback

*"I just thought that I would report in and let you know that the 10 weeks of Bright Sparks went very well. All 10 spots were booked out each week and there was a waiting list of about 15 each week.*

*The kids love the sound and music one, the human body one and the light and colour ones best. Everyone had fun with the magnets but there were others that were more popular this time. It was too cloudy and we had on and off showers on the telescope night and it wasn't dark enough either. We set the telescope up though and spotted the rainbow and a few other non-exciting things but we couldn't see the stars, etc. We ended up acting out the planets and we put them in order in front of the sun.*

*One of our other libraries wants to do the programme too, so we will see how we go.*

*10 weeks was a big commitment, but they seemed to enjoy it and get into it.*

*We did some planting outside in our garden for plant science week, we blew lots of bubbles and the kids loved using the mirrors and the cds for light and colour. They liked being human instruments in sound and music week and they loved the Jacks and trying to write without their thumbs."*

Karen Johnson, Senior Library Officer, Latrobe City Council

# Spark! Technology Box

Our new range of Spark Technology!



**WHAT'S IN THE BOX?**  
Merge VR headset  
SCIENCE Augmented Reality - book  
Cinemascope tablet  
Zoo Kazam markers

**Safety Messages**  
Young children should always be supervised by an adult when using virtual reality. Merge do not recommend the headset for children under 10 because of the weight on the head.  
Do not spend more than 15 minutes using virtual reality at any time.  
Don't forget to take a break and give your eyes a rest when using the VR headset.  
Be aware of your surroundings and use your common sense when using the VR headset. Consider your surroundings and how you are sitting and standing when using the VR headset.  
Do not point the VR headset directly at the sun.



**WHAT'S IN THE BOX?**  
Edison Robot  
EdComm Cable  
4 x AAA batteries (replace with alkaline batteries if required)  
Discover Edison Notes

**Use the items provided to learn about the use and programming of robots.**  
This program will use an Edison robot to demonstrate how to program a robot to do a task. It will also demonstrate how to program a robot to do a task that is more complex than the one provided in the program.

**What is a robot?**  
It can be difficult to define what a robot is, as in the modern world there are so many different kinds. One thing most people agree on is that they are programmable machines that can execute tasks automatically (autonomously) by themselves. DISCUSS with an adult what you think a robot is and IDENTIFY any robots in your house.



**WHAT'S IN THE BOX?**  
Potato Clock Kit  
Energy Stick  
Snap-On Circuits Kit with instruction book  
4 AA batteries (use with alkaline batteries if required)

**THE ITEMS PROVIDED TO LEARN OF CIRCUITS AND ELECTRICITY:**  
This program will use a potato clock kit to demonstrate how to make a clock that runs on the power of a potato. It will also demonstrate how to make a clock that runs on the power of a potato.





**Virtual Reality**  
VR is a simulated experience that can be simulated via a computer, a console, a handheld device, or a headset. It can be used for a variety of purposes, including entertainment, education, and training.

**VR Trivia: Water Cannon**  
Experience the thrill of a water cannon fight in a virtual world. This game is available on the Oculus Rift and HTC Vive.

**Sea World VR2**  
Explore the underwater world as if you were there. This application is available on the Oculus Rift and HTC Vive.



**How do robots work?**  
Robots generally require three main parts:  
1. The **Controller** is like the brain of the robot and requires a computer program to run. The computer program provides instructions for the robot to follow.  
2. The **Mechanical** parts of the robot allow it to move, turn, grab and lift. These include motors, gears, pistons, wheels and sensors and can be powered by air, water or electricity.  
3. **Sensors** tell the robot about its surroundings. They allow the robot to recognize faces, shapes, spaces between objects, pressure and much more. Robots are programmed to do repetitive actions or jobs controlled by a computer program. For example, robots are used in factories to build things, in cars, construction to build things, in cars, construction to build things, in cars, construction to build things, in cars, construction to build things.

**Robot Facts**  
1. The word robot comes from the Czech word robot which means 'servant' or 'slave' but must be done.  
2. Leonardo da Vinci drew plans for a robotic machine in approximately 1495. It was a self-actuating mannequin that could move and speak.  
3. The first humanoid robot was created in 1929. It was named 'Elektro' and could speak 700 words.  
4. Approximately half of all the robots in the world are in Asia. Japan has the most robots of any country in the world.  
5. The smallest robot is called a 'nanobot'. It is only a few hundred atoms in size. Use the Discover Edison Notes to learn more about the use and programming of the Edison robot. You will need a computer to be able to create a program for the Edison robot. You can explore the programming language in the Discover Edison Notes.

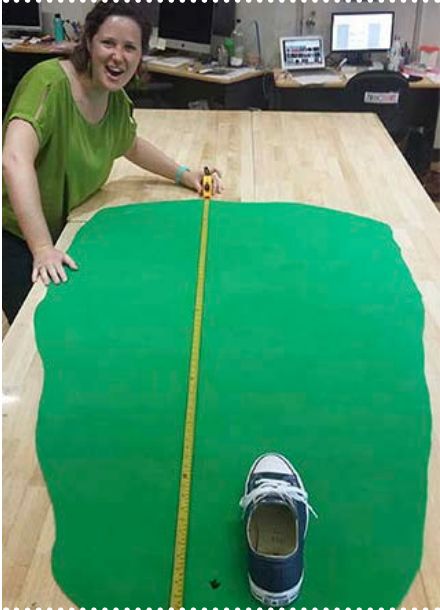


**Circuit Components**  
There are many different components used in an electrical circuit. Here are some useful definitions for components you will find in a simple circuit.  
**Conductors** - the wires that make the path through which electricity flows.  
**Switch** - a small gap in the conductor where you can open and close the circuit (start or stop the flow of electricity).  
**Resistor** - the component used to reduce the flow of electricity. eg light, buzzer, motor, etc.  
**Battery** - the power source.

**Types of Circuits**  
Circuits with more than one load, can be connected in two categories depending on their configuration.  
**Series Circuits** have a single path through which current flows, with all components connected end to end. If there is a break in any of the resistors, the entire circuit will not function as the path is blocked off.  
**Parallel Circuits** have multiple paths, allowing electricity to bypass any faults in the circuit. Think of all the lights in your home. They are in parallel so when one light burns out, the others still work.







## Phoebe and Simone

This month we sadly said farewell to Phoebe Armitage and Simone Thompson.

For the past 13 months we have enjoyed an immense boost from these highly talented women. Together they spearheaded improvements and developments to our range of **Big Bang Science Workshops** for children aged 5 to 12, posted regular (and humorous) updates to our **Facebook** page, started a **Pinterest** collection and revamped our **Spark! Discovery**, **Spark! Junior** and **Spark! Technology** loanable STEM boxes.

Phoebe and Simone also demonstrated their wonderful creativity in creating memorable new STEM experiences. **What's Your Secret Animal Superpower** featured last August during National Science Week and attracted some 2,000 families who attempted the eight animal challenges; comparing their eye-sight, sense of smell, memory and

grip strength against a selection of animal traits. A one-hour science club version has now been developed.

From conversations with many of our library partners, Phoebe and Simone selected 24 of our most popular **Big Bang Science Workshops** and developed these into 'ready-to-use' kits for librarians and educators to use, complete with all the materials needed to run the workshops with minimal preparation time.

During this process they started work on our soon-to-be published **Big Bang Book of Science**, which contains facilitator notes, equipment lists and associated materials to run those 24 workshops.

**Pre-order your copy now!**

*We wish Phoebe and Simone well on their future adventures and thank them for their immense contributions.*







اهلا وسهلا

Ahlan wa Sahla

In February, our team travelled to Abu Dhabi to participate in the annual *Abu Dhabi Science Festival*. Together with the team from the *Edinburgh International Science Festival* and our hard-working Science Communicators from local universities and volunteer groups, we delivered 10 days of discovery and innovation to the schools and public of the UAE!

Wendy and Simone represented *Children's Discovery* at the main site in Abu Dhabi, delivering our *Kid's Dig* experience. In this simulated archaeological dig, participants discovered artefacts from ancient civilisations in Abu Dhabi, specifically exploring the innovation of copper smelting. The impact of our hard work was especially apparent when we discovered one of our Science Communicators had actually visited our experience in previous years and now given the opportunity at university, wanted to be a part of delivering it!

Adam and Phoebe travelled to the satellite festival at Al Ain, delivering our *Build It* experience.



Participants learnt about the knowledge and skills involved in building design and construction while working on a simulated house building site. Despite being closed one night due to rain, an auspicious occurrence that only happens five times a year, the festival was a hive of activity, full of young scientists and innovators ready to learn through play!



Over the duration of the festival, our two experiences welcomed approximately 4,500 participants. After this intense but rewarding experience, we are straight back into it, delivering *Little Bang Discovery Clubs* and *Big Bang Science Workshops* all around Sydney!

## The Young Scientists of Australia Promoting Science to the Youth of Australia



The YSA is a society of young Australians aged 14-25 with a passion for science.

There are Chapters in Sydney, Melbourne, Brisbane and Adelaide. The Sydney Chapter has been active in providing volunteers to libraries running science clubs.

These young scientists radiate their enthusiasm, bring a good knowledge of STEM and can share their personal story with children (and their parents) of why they have chosen to study science and/or pursue a science-related industry.

Contact your local YSA office to enquire about volunteers for your STEM programs.

Contact YSA Sydney:  
[outreach@sydney.ysa.org.au](mailto:outreach@sydney.ysa.org.au)

Find other local YSA contacts:  
<https://www.ysa.org.au>

Recommended Resources

Science-Technology Activities and Resources for Libraries (STARnet)  
<http://www.starnetlibraries.org>

CSIRO's Double Helix magazine  
<https://doublehelixshop.csiro.au>