ALS Public Libraries SA
Conference 2017
Are we there yet?
Public Libraries in the 21st Century

How Public Libraries Contribute to the STEM agenda

Adam Selinger
Children's Discovery Museum

Children's Discovery Museum

“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”

- How public libraries contribute to THE STEM AGENDA 2017, *STEAM into Sydney* March 2017

The Journey

- Who Children's Discovery Museum
- Why STEM
- What *Little Bang Discovery Club*
- Where Libraries
- How Partnership builds community capacity
- When Now

Children's Discovery Museum

- Established 2001
- Not-for-profit educational charity
- Supported by philanthropy, grants and earned income
- **Evidenced-based mission to improve outcomes for children through engaging learning experiences**

Children's Discovery Museum

Philosophy

- Every child deserves the best start in life
- Learn through play - engage parents and carers
- Improve science and digital literacy
- Start young and support the 5 Cs

Curiosity Creativity
Critical thinking
Communication and a
Can-do attitude

Children's Discovery Museum

Milestone Projects

Opened May 2015
5000 family memberships
200,000+ visits to date

First Sydney library pilot February 2011
Train-the-trainer piloted 2015
Today in 80+ libraries in 3 States and growing

#STEM

Why focus on STEM?

- Technology brings changes in the job market[2]
- 75% of the fastest growing occupations will require STEM skills and knowledge[2]
- Less than 5% of classroom time in preschool focuses on STEM-related activities[1]
- Science achievement gaps begin very early[3]

1 The Conversation: https://theconversation.com/group-work-gets-kids-more-engaged-in-stem-65710. 2016
2 Chief Scientist, SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS: AUSTRALIA'S FUTURE 2015
3. Morgan, et al. Science Achievement Gaps Begin Very Early, Persist, and Are Largely Explained by Modifiable Factors. 2016

#STEM

Evidence based

- **Early childhood** experiences can be critical to life outcomes[1].
- Programs need **not be academically focused** to have academic impact[2].
- Informal, **play-orientated** mediums significantly support science enquiry skills[3].
- **Out-of-school** programs strongly support learning[2]:
  - Adult-child co-learning
  - Heterogeneous audience
  - Metric not curriculum or exam
  - Higher participation rates by disadvantaged families

1. JAMA and Archives Journals. "Early childhood experiences have lasting emotional and psychological effects." ScienceDaily. ScienceDaily, 7 May 2010.
2. Afterschool Programs Make a Difference: Findings From the Harvard Family Research Project Published in SEDL Letter Volume XX, Number 2, August 2008.
3 National Research Council. (2009). Learning Science in Informal Environments: People, Places, and Pursuits. Committee on Learning Science in Informal Environments. Nat. Acad. Press.
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The LITTLE BANG DISCOVERY CLUB experience

- Pre-school children with **accompanying adult**
- **Inquiry-play** sessions
  1. Collect & Classify (sort)
  2. Compare & Measure (differences)
  3. Question & Test (experiment)
  4. Science Fair & Celebration
- Loan of the ***Discovery Box*** and *@home* notes.
- Co-produced and hosted in **public libraries**

INSPIRING SOUTH AUSTRALIA making science visible · LIBRARIES OF SA · Children's Discovery Museum · Randwick City Council a sense of community

S1 Collect and Classify

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S2 Compare & Measure

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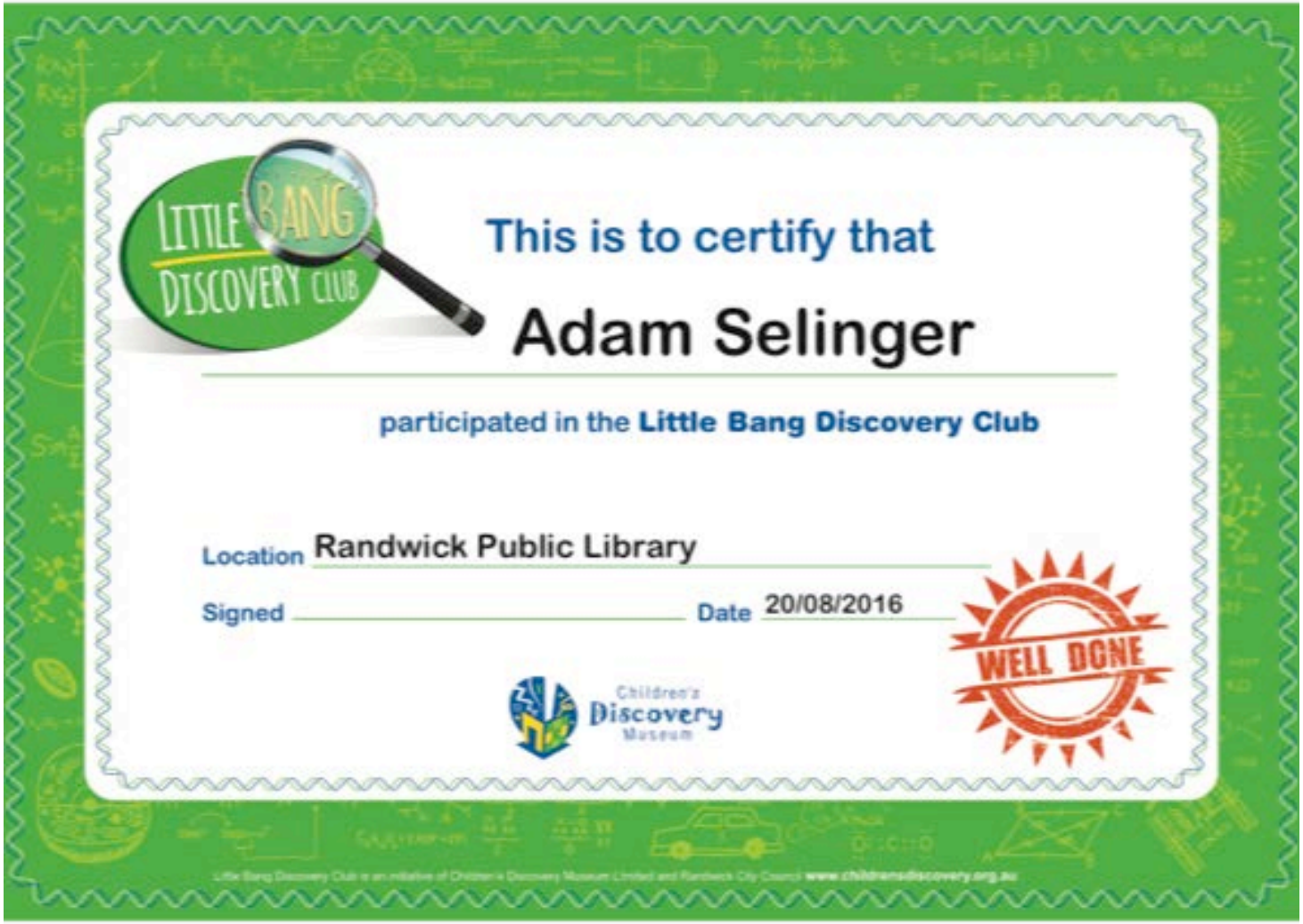
S3 Question & Test

S3 Question & Test

S4 Science Fair

S4 Celebrate



Discovery Box

Little Bang Book & Passport

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LIBRARIES OF SA

Children's Discovery Museum

@*Home* Inquiries

Little Bang Discovery Club

Collect @ Home

Scientists collect things; they collect information, data and samples. Science is also a collection of known facts, and a process by which we come to know things about the natural world.

Observing and Collecting

Scientists collect things that they are interested in knowing more about, or things that provide evidence for their research. In the process of collecting, scientists learn, and so will you! We can apply our own skills in identifying, selecting, discriminating, evaluating, classifying (sorting) and arranging items.

Make a collection

You can create your own collection and bring it to show everyone at the next session. We'd like you to explain what your collection means to you. Why did you decide to collect these items – did one special item spark the idea for your collection?

Record your observations

Use the notebook and pencil in the Discovery Box to write down information about your collection such as when it was collected, where it was collected, what you observe about the items in it.

Example Collection: Leaves from my park

Children's Discovery Museum (Ltd)
ABN: 16 103 244 408
www.childrensdiscovery.org.au
wendy@childrensdiscovery.org.au

The Little Bang Discovery Club is an initiative of Children's Discovery Museum and Rendeck City Council.
This Inspiring Australia initiative is supported by the Australian Government.

Little Bang Discovery Club

Measure @ Home

Scientists measure things; they measure the size, distance, speed, weight, density and really just about anything that provides information (scientists call this data).

After participating in today's session we can try a few things out for ourselves at home.

Measuring

Measuring things scientifically means being as accurate as possible. This is because scientists often rely on the measurements made by others – and they want them to be right!

There are some tools in your Discovery Box to help you practice making accurate measurements.

We can compare the length of one object against another (e.g. who is taller). We can be more accurate and use a known measure, such as a ruler, to measure the length of objects.

Perhaps you could use the ruler to measure the size of your Discovery Box? We can compare your measurements with others next session. You could use the measuring tape to measure round items, like your head!

Try comparing the circumference (size) of your waist with the circumference of a tree trunk.

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Experiment @ Home

Sink & Float

Changing the shape of an object can change whether it sinks or flot s.

Experiment:

1. Fill a cup with water (could you use honey?)
2. Make a ball of blutack and release it gently on top of the water (could you drop it from high up?).
3. Repeat the experiment, but this time change the shape of the blutack into a bowl and release it hollow-side up on top of the water (could you place it hollow-side down?)
   a. Make a hollow ball out of the blutack – will it sink or flot ?

Friction & sliding

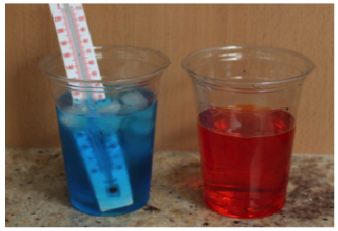
Friction between different objects is responsible for how fast or slow they slide down a slope.

Experiment:

1. Chobse a fla surface that can be sloped, such as plastic, metal or wooden chopping board or use your Discovery Box lid.
2. Choose several different objects to place on the slope.
3. Slowly tilt the surface higher until the objects begin to slide - can you predict which objects will mova firt ?

Taking temperature

Temperature is a degree of hotness or coldness that can be measured using a thermometer.



Experiment:

1. Fill two cups with water and use a thermometer to measure the temperature of the water.
2. Add some ice to one of the cups – what do you notice? Compare to the other cup.
3. What happens if you add more ice to the cup with ice? Compare to the other cup.
4. What happens if you repeat the experiment but start with warmer water in each cup?
5. Redo both experiments but this time you might like to use a timer to measure how long it takes for the temperature to change.
   a. Does tea with milk stay warmer longer than tea without milk?

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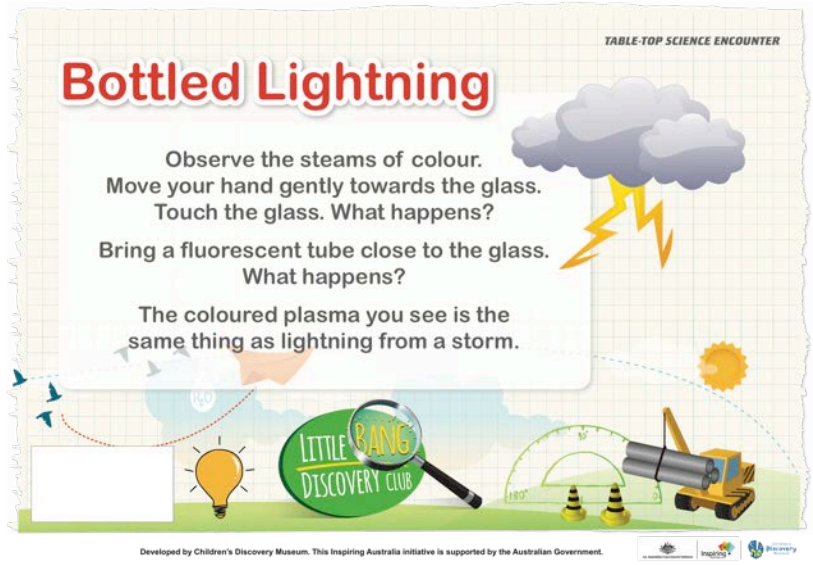
Inquiry-based Investigations



Why Public Libraries?

- Widespread trusted community portals to information
- Complimentary mission and adapting to modern community needs & expectations
- Utilise their venues and networks of borrowers
- Highly engaged staff
- Not school

Public Libraries towards 21C

- The 21st century library positioned as a community centre of learning, innovation and creativity.
- Provide a lifeline to jobs, educational opportunities, literacy, health resources and government and community services, especially for new arrivals and disadvantaged populations.
- Public libraries are highly trusted institutions rooted in the neighbourhoods that they serve.

A Shared Mission

Principles that have always been at the center of the public library's mission:

- Equity, access, opportunity, openness and participation.
- A capacity to drive opportunity and success in today's knowledge-based society.
- A network model that promotes economies of scale, broadening the resource reach while preserving local identity.
- The right people, in the right places with the right assets.

Scale-able and sustainable

- Public libraries inspire learning and empower **people** of all ages, culture and demographics.
- Promote a better trained and educated **workforce**.
- Ensure equitable **access** and provide important **civic space** for advancing democracy and the common good.
- Are engines of **development** within their communities.
- Over 1,500 public library services servicing over 110 million visits annually there is a significant physical presence and **infrastructure** to leverage for long-term success.

Intentional Partnership

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Our common goal is a society that values science, critically engages with scientific issues, and encourages young people to pursue STEM careers.

PRODUCT: National strategy delivered through effective local implementation.

Our libraries are valued as institutions of civil democracy and community engagement. They are hubs of knowledge, creativity and innovation.

PRODUCT: State-wide programme aligned to achieve specific Federal outcome.

Together with our supporters and partners we seek to improve life outcomes for children through early access to inspiring educational experiences.

PRODUCT: Legacy project through access to key audiences and the means to train, equip and sustain.

Children's Discovery Museum

LITTLE BANG DISCOVERY CLUB

Up-skilling Librarians

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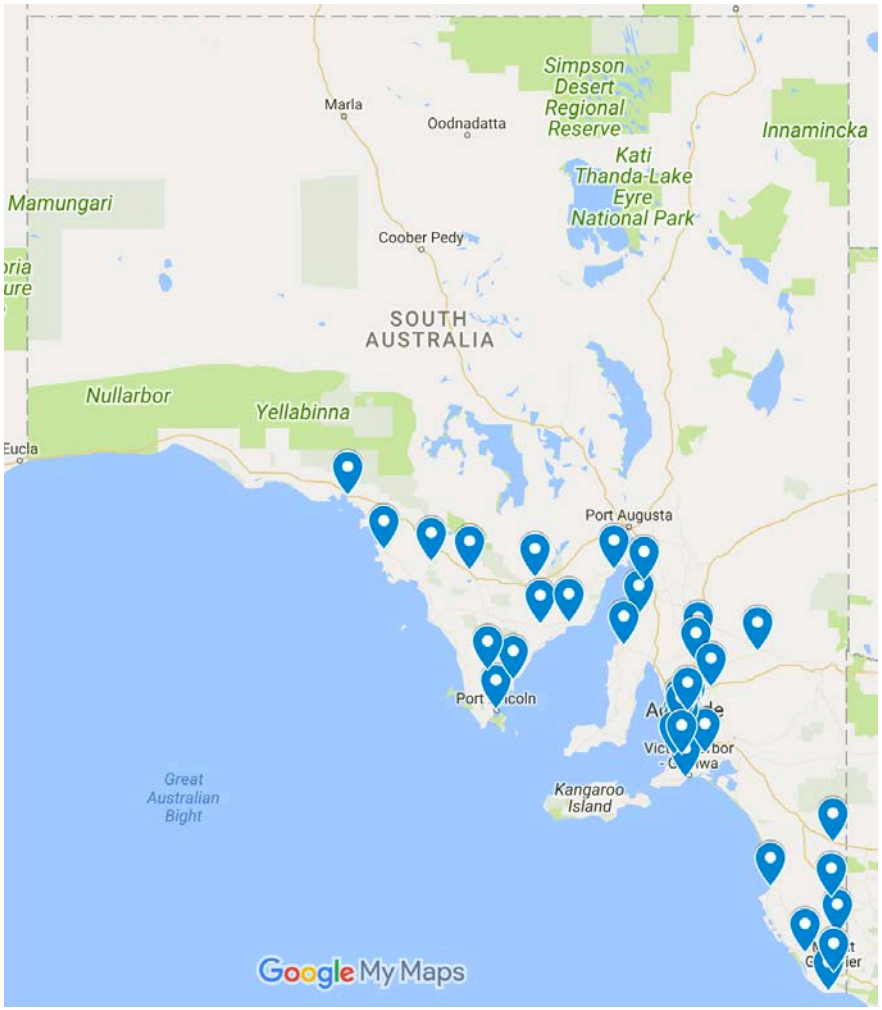
Children's Discovery Museum

Little Bang family, SA

- Port Lincoln
- Tumby Bay
- Cummins
- Cleve
- Streaky Bay
- Ceduna
- Cowell
- Kimba
- Karcultaby
- Whyalla
- Wudinna
- Morgan
- Bordertown
- Penola
- Port Macdonnell
- Naracoorte
- Kingston SE
- Mount Gambier
- Millicent
- Port Broughton
- Clare and Gilbert Valley
- Riverton
- Kadina
- Port Pirie
- Burnside
- City of Charles Sturt
- Tusmore
- Woodville South
- Modbury
- Brighton
- Hallett Cove
- Saint Peters
- Tumbi Umbi
- Unley
- Victor Harbor
- Aberfoyle Park
- Morphett Vale
- Strathalbyn
- Noarlunga
- Aldinga Beach
- City of West Torrens
- Willunga
- Salisbury
- Nuriootpa



Resources

Little Bang Discovery Club - Session 1

133 views

Library Sets

The City of Newcastle | NEWCASTLE REGION LIBRARY

HOME CONNECT EXPLORE WHAT'S ON LOCA

Connect
Explore
What's On
Children's Activities
Library Activities
What's On Calendar
Local History
eLibrary

Library / What's On / What's On Calendar / Little Bang Discovery Club - City Library

Little Bang Discovery Club - City Library

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Tatiara Bordertown Public Library

Little Bang DISCOVERY CLUB

Lake Mac Libraries
Share the story

Home Catalogue eCollections Events

News Archives
Events
Activities for Kids

Little Bang Discovery

1 AUGUST 2017

Join the Little Bang Discovery Clu
years and enjoy hands-on activiti
and skills to inspire scientific expl

EAST GIPPSLAND SHIRE COUNCIL

WHAT
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Library Events

17/08/2017 to 07/09/2017

Little Bang Discovery Club

Feedback

I have been meaning to get in touch to let you know that our Little Bang Discovery Club sessions have been fantastic – regular storytime sessions morphed into the Little Bang Discovery Club and the resources were incorporated at home where they were thoroughly immersed in STEM.

Thanks to you all, we are enjoying incorporating this valuable and engaging program into our Library and community.

Best regards

Louise
Manager Library Services Port Lincoln

Thank you so much for a truly amazing 4 weeks!
The children had a wonderful time. It was fascinating to see how their interest and abilities grew from week to week. I thought Sandra's experiment with the jelly was brilliant. Science you can eat - maybe that's an idea for a new lesson?

The kids would have loved it if there were more sessions - we will definitely be doing this again.

Kate

Children and Youth Services Librarian
Hurstville City Library

A Sustainable Future

- Little Bang Discovery *Plus*
- *Big Bang* Science club for ages 6 to 8 and 9 to 12
- Spark! Discovery Boxes and Little Spark.
- Maker Spaces
- Touring *experiences*
- *Curious Science talk series*
- Supported network

QUESTIONS?