

# Astrophysicist and Women in STEM Ambassador Lisa Harvey-Smith's School Holiday Activity Guide

## *Activities to help parents encourage curiosity and problem-solving through play-based learning during the school holidays!*

Astrophysicist, author and ambassador for Women in STEM, Professor Lisa Harvey-Smith, has created a smart list of activities kids can play with to encourage curiosity and develop problem-solving skills during the seven-week school break.

As a passionate advocate for opening up the world of Science, Technology, Engineering and Maths (STEM) to children – especially girls seeing women are under-represented in many areas of STEM fields in Australia – Harvey-Smith has created this list to get kids engaged in loads of activities which can foster a love of learning through imaginative play, creative pursuits, reading and discovering.

From simple home experiments through to toy robots, Lisa has suggested a list which caters to all budgets helping kids learn while keeping them busy over the longest school break of the year: every parent's dream!

Says Harvey-Smith, "Learning problem-solving skills through play is a very important thing, so children can learn how to resolve conflict to prepare them later in life. When kids hone this skill, it can lead to a healthy level of self-esteem and self-confidence.

"Research has shown a clear link between creative problem-solving play and improved maths achievement for girls. As women make up only 17% of the STEM-qualified population in Australia, we especially need to give young girls the support and environment to play, explore, be curious and problem solve." Says Lisa.

Play also provides a framework for children to learn collaborative skills through sharing ideas, negotiating and self-expression. Play researchers, developmental researchers and neuroscientists tend to agree that joy is the emotion most often linked to enhanced learning, creativity, motivation and attention.

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### Read

Books are available through all good booksellers.

1. *How to Save the Whole Stinkin' Planet* by Lee Constable

A mix of scientific facts and practical activities encouraging children to become 'Waste Warriors'. A funny, gross approach to talking all things rubbish and waste, starting with your own home.

2. *Under the Stars: Astrophysics for Bedtime* by Lisa Harvey-Smith

An incredible journey through the night sky, exploring our solar system from the comfort of your cosy bedroom. Find out why the sky is blue. Fly around a black hole and peer inside! Learn why Jupiter has stripes.

3. *How to Code a Sandcastle* by Josh Funk

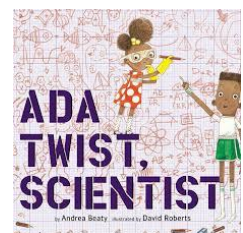
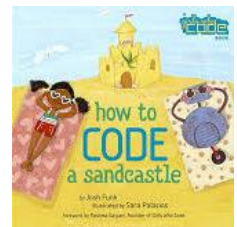
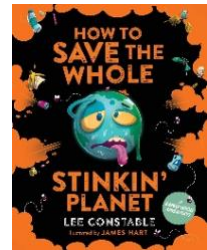
As Pearl is on her last day of summer holidays, she is yet to build a sandcastle. Join Pearl as her sandcastle fails as she learns from her mistakes to build an even better one all while learning coding principles.

4. *Ada Twist Scientist* by Andrea Beaty and David Roberts

Ada Twist loves to examine, discover and explore starting from that common little question - why? For those that ask endless questions at home, join Ada Twist the curious Scientist as she goes searching for answers.

5. *Girl Geeks, the Hackathon* by Alex Miles

Brought to you by the Girl Geek Academy, a book filled with tech speak that won't overwhelm beginners. Join Hamsa and her group as they learn to hack, code and design while managing group work, friendships and more!



### Play

Lisa recommends play based learning and below are some examples:

1. **Build** - with Magnetic Tiles, Wooden or Plastic Blocks. A versatile gift that can be used again and again from building rockets to bridges, the only limitation is imagination (just watch out you don't step on those Lego pieces!)



- Grimm’s Building Blocks  
<https://www.honeybeetoys.com.au/play/blocks-floor-play/wooden-blocks-standard-building-set-by-grimm-s/>
- Magnetic Tiles from Kmart  
[https://www.kmart.com.au/product/50-piece-magnetic-tiles-playset/2075898?&gclid=Cj0KCQiA0NfvBRCVARIsAQ4930nn-5024OHkYP\\_jTCwxXM2xUEkkr38\\_eL-wQwEJxx6dEkLjhPAfQuUaAsQBEALw\\_wcB&gclsrc=aw.ds](https://www.kmart.com.au/product/50-piece-magnetic-tiles-playset/2075898?&gclid=Cj0KCQiA0NfvBRCVARIsAQ4930nn-5024OHkYP_jTCwxXM2xUEkkr38_eL-wQwEJxx6dEkLjhPAfQuUaAsQBEALw_wcB&gclsrc=aw.ds)
- Classic Lego Box  
<https://www.lego.com/en-au/product/lego-large-creative-brick-box-10698>

2. **Science Kits** - from growing your own crystals to making your own slime or technicolour foam, science kits provide the materials and instructions for any budding scientist! These kits can have your family creating experiments with household items from rocket launchers with a bottle rocket to chemistry explosions with bicarb and vinegar.



- Mega Crystal Growing Lab  
<https://www.amazon.com.au/Mega-Crystal-Growing-Lab-Display/dp/B01C3DSKTY>
- Secret Formula Lab  
[https://shop.questacon.edu.au/extreme-secret-formula-lab-smartlab.html?category\\_id=249](https://shop.questacon.edu.au/extreme-secret-formula-lab-smartlab.html?category_id=249)

3. **Robotics** - to support your children’s exploration of computer science and coding. The market is flooded with all types of options from robotic pets to robots to support problem solving, build communication skills and learn how to code



- Ozobot  
[https://www.edtechs.com.au/product\\_p/ets-ozbot-bit-w.htm](https://www.edtechs.com.au/product_p/ets-ozbot-bit-w.htm)
- Sphero



An Australian Government Initiative

## Women in STEM Ambassador

<https://www.jbhifi.com.au/products/sphero-sprk-edition-app-enabled-robotic-ball-1>

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