

Questions for discussion

Episode 4
24th February 2015

Freedom Ride

1. Discuss the *Freedom Ride* story with another student. Record the main points of your discussion.
2. How long ago was the Freedom Ride?
3. Which Aboriginal person organised the Freedom Ride?
4. What inspired the Freedom Ride in Australia?
5. Around which state did the Freedom Ride bus travel?
6. What did they find out about the treatment of Aboriginal people?
7. What is segregation? Give an example.
8. How did their trip make a difference to indigenous rights?
9. What is a referendum?
10. What did you learn from this story? Discuss as a class.

Write a message of support about the story and post it in the comments section on the story page.

Solar Energy

1. Briefly summarise the *Solar Energy* story.
2. Working in pairs, record what you learnt about photons.
3. Which chemical element is used to make solar panels?
4. The flow of electrons through a solar panel is called _____.
5. Solar power is a non-renewable energy. True or false?
6. What are the benefits of using solar energy?
7. What are the disadvantages?
8. Where in Australia are they going to build a solar farm?
9. How many homes will it power?
10. Do you think more people in Australia should install solar panels? Why or why not?

Check out the BtN *Solar Energy* resource on the Teachers page

<http://www.abc.net.au/btn/teachers.htm>

Should all Aussie homes have solar panels on the roof? Vote in the BtN poll. Go to

<http://www.abc.net.au/btn/polls.htm>

Wheelchair Day

1. Explain how cerebral palsy affects Caleb.
2. What does Caleb use to help him get around?
3. What was it like for Caleb growing up?

4. What challenges has Caleb faced being in a wheelchair?
5. What sports does Caleb play?
6. Caleb and his partner won a _____ medal at the Hobart table tennis nationals.
7. What competition does Caleb want to get into to represent Australia?
8. Take a tour of your school to assess its wheelchair accessibility. What did you discover?
9. How did this story make you feel?
10. How has your thinking changed since watching this story?

Write a message about the story and post it in the comments section on the story page.

Upcycling Kids

1. Where does rubbish go once it's been thrown away?
2. What sorts of things can be recycled?
3. What is upcycling?
4. In the *Upcycling Kids* story what recycled materials do the students use?
5. What sorts of items do the students make?
6. Have you ever created a piece of art or craft using upcycling? Explain and illustrate.
7. What are the benefits of upcycling?
8. What is your waste management plan at home or at school?
9. Illustrate an aspect of this story.
10. Reduce, reuse and recycle! Explain what these terms mean using examples.

Check out the BtN *Upcycling Kids* resource on the Teachers page

<http://www.abc.net.au/btn/teachers.htm>

Amateur Astronomer

1. Where does Jonah live in Queensland? Locate using Google Maps.
2. Jonah is an apprentice _____ .
3. At what age did Jonah get his first telescope?
4. Explain and illustrate how a telescope works.
5. What did Jonah experiment with to help him take photos high above the atmosphere?
6. Illustrate Jonah's experiment.
7. What happened to the balloon when it reached the stratosphere?
8. What galaxy does Jonah plan to photograph when he sends another balloon up into the air in a couple of months?
9. What did you learn from this story?
10. What question would you like to ask Jonah? Send your question in via the BtN story page.

Write a message about the story and post it in the comments section on the story page.

Activity

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Solar Energy

Key Learning

Students will investigate how energy from the sun can be used to generate electricity. Students will explore the advantages and disadvantages of solar energy, from environmental, economic and social perspectives.

The Australian Curriculum

Science / Science Understanding / Physical sciences

Energy from a variety of sources can be used to generate electricity ([ACSSU219](#)) Year 6



Science / Science as a Human Endeavour / Use and influence of science

Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations ([ACSHE135](#)) Year 8



Science / Science Understanding / Earth and space sciences

Some of Earth's resources are renewable, but others are non-renewable ([ACSSU116](#)) Year 7



Science / Science as a Human Endeavour / Nature and development of science

Important contributions to the advancement of science have been made by people from a range of cultures ([ACSHE099](#))



Discussion Questions

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5. Solar power is a non-renewable energy. True or false?
6. What are the benefits of using solar energy?
7. What are the disadvantages?
8. Where in Australia are they going to build a solar farm?
9. How many homes will it power?
10. Do you think more people in Australia should install solar panels? Why or why not?

Activities

Negotiate with students how many activities they complete from each section.

Remember and understand

- Solar energy quiz. Download the BtN *Solar Energy* transcript to help answer the following questions.
 - What is a photon? Explain using your own words. Using the internet find an interesting fact about photons.
 - What material is used in solar panels that help absorb the sun's energy? Sulphur, silicon or carbon?
 - The flow of _____ is what we call electricity.
 - In your own words describe the process whereby energy from the sun is captured and converted into electricity. Draw a simple diagram.
- Brainstorm ways in which we depend on electricity every day. Think about electricity used in the home, at school and in the community. Think about lighting, heating, cooling and electrical appliances.
 - Imagine what it would be like if you couldn't use electricity for one day. How would it impact on your everyday activities?
- Do you know where the electricity you use comes from?
 - Brainstorm renewable and non-renewable sources of energy (examples: coal, natural gas, oil, solar, wind and nuclear).
 - Where does solar power come from?
 - How is solar energy captured?



Apply and analyse

- Have you ever imagined how much energy the sun outputs every day? Use the internet to help find answers to the following questions.
 - How much energy (in kilowatts) does the sun output in one day?
 - What percentage of the sun's power actually reaches earth?
 - How do we currently harvest energy from the sun?
- List the pros and cons of using solar energy.
 - How does using solar energy impact on the environment?
 - Does it produce carbon emissions?
 - Is it a renewable or non-renewable source of energy? Will we ever run out of solar energy?
 - Is it expensive to build solar panels and solar farms?
 - How much space do solar farms require?

- Is solar power a reliable source of energy? Think about weather and other geographical factors.
- Are solar farms safe for the people that work and live nearby?
- Is solar power a sustainable source of energy? Compare the pros and cons with other sources of energy.
- Use your research findings, to write a magazine article, news report or information report about solar energy. Share your research and opinions about solar energy on a class blog or wiki.
- What are the best locations for solar panels?
 - Why do you think a new solar farm is being built in Townsville, Queensland? Think about the weather and geography of Townsville.
 - Explore where other solar farms have been built around the world. Locate using Google Maps. Compare the geography of these places to Townsville. How are these places similar or different?
 - Have you ever considered that a solar farm could be built in space? Watch this video to find out more. <http://splash.abc.net.au/media/-/m/29970/solar-power>
 - What might affect how effective a solar panel is at harnessing solar energy? Consider the angle of the sun, whether there is rain, snow or hail, the amount of cloud cover or the amount of pollution in the air.

Evaluate and create

- Explore Australia's energy future. What types of energy should Australia use? Use [CSIRO's online tool](#) to get the best 'electricity mix' for Australia.
- *Solar energy is the answer to future energy supplies.* Why or why not? Organise a classroom debate.
 - Brainstorm the advantages and disadvantages of using solar energy.
 - Reflection
 - How difficult was it to think of points to support one side of the argument?
 - Do you think you would have done a better job supporting the other side of the argument?
 - Was I able to convince others of my opinion?
 - Did my opinion change?
 - What did you learn from this activity?
- Watch this [TEDEd Lesson "Why aren't we only using solar power?"](#)
 - Explain the following terms using your own words – direct irradiance, diffuse irradiance and reflected irradiance.
 - As a class, go outside to investigate how clouds affect the sun's rays. Find examples of direct irradiance diffuse irradiance and reflected irradiance.



Illustrate.

- Does your school have solar panels? If not, conduct a study and present it to your school.
 - Research the benefits of using solar energy at your school.
 - Does your school have a plan to reduce its carbon footprint? If so, find out what your schools targets are in reducing its carbon emissions. Would installing solar panels reduce your schools carbon emissions? Explain.
 - Where would the solar panels be located? Is part of your schools roof north facing and free from shade between 9am and 3pm? Is the roof strong enough to support the solar panels? Contact your school grounds person to find out more.

Related Research Links

Behind the News – Solar Future

<http://www.abc.net.au/btn/story/s3820130.htm>

ABC Rural - Approval for Australia's largest solar farm to be built in Queensland

<http://www.abc.net.au/news/2015-02-12/queensland-to-house-australias-largest-solar-farm/6089286>

Future Sparks – Solar Energy

<http://futuresparks.org.au/inspiration/all-about-energy/solar-energy.aspx>

Energy Kids – Solar

http://www.eia.gov/kids/energy.cfm?page=solar_home-basics

ABC Splash – Solar Power

<http://splash.abc.net.au/media?id=29970>

TEDEd Lessons Worth Sharing – Why aren't we only using solar power? (video)

<http://ed.ted.com/lessons/why-aren-t-we-only-using-solar-power-alexandros-george-charalambides>

Global Education – Sustainable Energy Sources

<http://www.globaleducation.edu.au/teaching-activity/sustainable-energy-sources-up.html>

National Geographic Education – Solar energy

http://education.nationalgeographic.com.au/education/encyclopedia/solar-energy/?ar_a=1

Cool Australia – Flipped Classroom: Why aren't we using solar power?

<http://www.coolaustralia.org/activity/flipped-classroom-arent-using-solar-power/>

Cool Australia – Energy Fact Sheet

<http://coolaustralia.org/wp-content/uploads/2012/12/Energy-fact-sheet.pdf>

Activity

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24th February 2015

Upcycling Kids

Key Learning

Students will evaluate how much waste they produce and explore how materials can be reused to reduce waste.

The Australian Curriculum

Geography / Geographical Knowledge and Understanding

The sustainable management of waste from production and consumption ([ACHGK025](#)) Year 4



The natural resources provided by the [environment](#), and different views on how they could be used sustainably ([ACHGK024](#)) Year 4



Design and technologies / Processes and Production Skills

Evaluate design ideas, processes and solutions based on criteria for success developed with guidance and including care for the [environment](#) ([ACTDEP017](#)) Years 3 & 4



Design and technologies / Knowledge and Understanding

Investigate how people in design and [technologies](#) occupations address competing considerations, including sustainability in the design of products, services and environments for current and future use ([ACTDEK019](#)) Years 5 & 6



Discussion Questions

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5. What sorts of items do the students make?
6. Have you ever created a piece of art or craft using upcycling? Explain and illustrate.
7. What are the benefits of upcycling?
8. What is your waste management plan at home or at school?
9. Illustrate an aspect of this story.
10. Reduce, reuse and recycle! Explain what these terms mean using examples.

Activities

Class discussion

Before watching the BtN *Upcycling Kids* story talk about upcycling.

- What is upcycling?
- Do you know about the three R's (reduce, reuse and recycle)? Explain the difference.
- What do you recycle and upcycle at home and at school?



After watching the BtN *Upcycling Kids* story talk about...

- What did you learn and what surprised you about upcycling?
- Have you ever turned trash into treasure? Describe your creations to other students in your class.
- As a class list the benefits of upcycling. Here are some suggestions:
 - reduces the amount of waste and therefore landfill
 - reduces the need for production using new or raw materials (therefore reduces air pollution, water pollution, greenhouse gas emissions)
 - unique, one of a kind products
 - Save money – for example you could upcycle your clothes into new designs
 - use your creativity
- Experiment with upcycling using recycled materials collected at home and at school.

Here are some interesting examples of upcycling

- Visit this website to see what can be made using recycled materials.
<http://upcyclestudio.com.au/>
 - What different materials are used?
 - What surprised you about some of the materials that were upcycled?
- A house made from a Boeing 747 – <http://upcyclestudio.com.au/blog/david-hertz-boeing-747-house/>
- Ekocycle and Will.i.am <https://www.youtube.com/user/EKOCYCLE>



Baskets woven from reclaimed plastic bags



Necklace made from watch parts



Backpack upcycled from seatbelts & inner bike tubes

Rubbish in photography

Each Australian family produces enough rubbish to fill a three-bedroom house each year, which works out to be about 1.9 tonnes of waste per person. And a lot of that ends up in landfill where it can take hundreds of years to break down. But it doesn't have to be that way if you change the way you think about it.

Check out these interesting photos which will make you rethink waste forever.

- Can you guess what the waste is?
- What surprised you about these pictures?
- How did these photographs make you feel? Explain.
- Why do you think the photographer chose to photograph rubbish?
- This photographic series is called 'Intolerable Beauty: Portraits of American Mass Consumption' what do you think this means?
- Do you think people in Australia are wasteful?



Photographer – Chris Jordan

<http://upcyclestudio.com.au/blog/10-photos-thatll-make-you-rethink-waste-forever/>

Check out this series, '7 days of rubbish' by Gregg Segal. It shows rubbish in a completely different light and the photographs are, in a way, very beautiful. But at the same time they're kind of horrifying – showing exactly how much waste different households generate each week.

He asked people that he knew including other parents, family, friends, his yoga teacher, someone who collects bottles and cans to save all of their rubbish as well as their recyclables (basically, their waste... just not their icky waste) for a week, then to lie down in it and be photographed.

- What can you see in these photos?
- What do these photographs tell us about our waste?
- Did you find these photos shocking in any way? Explain.
- What do you think the photographer was trying to achieve? Do you think he was successful in achieving this?



Photographer – Gregg Segal

<http://upcyclestudio.com.au/blog/7-days-of-rubbish/>

School waste management program

Find out about your school's waste management plan. Complete one or more of the following activities.

- Survey school staff members – Principal, Deputy Principal, teachers, cleaners etc to find out what happens to the waste at your school.
 - Write a report once you have collected your survey results.
 - What did your survey results tell you about your schools waste?
- Conduct an audit on your schools waste.
 - How much goes to landfill? What goes into composting?
 - What is recycled?
 - Take a look at this schools recycling system to see how they deal with their waste.
<http://educationvideo.com.au/btn/storyextra/20120522-Jo-interview.mp4>
- Determine what you think needs to be done to reduce your schools waste and develop a proposal to put to the school council or SRC.
- How could students and teachers at your school be persuaded to make better buying and recycling decisions? Come up with a list of incentives and penalties that you think would make a difference.
- Introduce a nude food day at your school
 - What are the benefits of nude food day? Consider that there will be less rubbish for landfill, healthier lunches, awareness about the environmental impact of rubbish and a cleaner school.
 - Write a letter for all students to take home to parents to inform them about the nude food day. Design a poster to promote the event.
 - Think about starting off your nude food day with an all school picnic. Take photos to include in your school newsletter.
 - For more ideas on how to host your own nude food day check out this website
<http://www.sustainableschools.qld.edu.au/Default.aspx?tabid=921>

Further activity

Become a [local drop off location with TerraCycle!](#) Becoming a public location is a great way to raise more money towards your school or favourite not-for-profit as you'll be collecting TerraCycle Points for each item dropped off at your location.



Related Research Links

Terracycle – Eliminating the idea of waste
<http://www.terracycle.com.au/en-AU/>

Behind the News – Green Art
<http://www.abc.net.au/btn/story/s3880235.htm>

Behind the News – Recycling
<http://www.abc.net.au/btn/story/s3507210.htm>

Behind the News – Landfill
<http://www.abc.net.au/btn/story/s3953606.htm>

Planet Art – 25 things you can reuse at home
<http://www.recyclingnearyou.com.au/education/25-things-to-re-use.cfm>

BtN: Episode 04 Transcript 24/02/15

Coming up:

- What could be the world's biggest solar farm has just been approved in Queensland. We tell you how they work.
- Find out how one kid's trash really can become another kid's treasure.
- And meet the country kid who explores space using equipment he made himself.

Hi I'm Nathan and that's just some of the stuff you'll see a bit later on BtN.

But first today.

Freedom Ride

Reporter: Natasha Thiele

INTRO: Fifty years ago a bunch of Sydney uni students made history by travelling around New South Wales on a bus to protest against racial discrimination. It was called the Freedom Ride and it stood up for Aboriginal people at a time when they weren't given the same rights as other Australians. Now, that historic event has been recreated. Here's Tash but first a warning to aboriginal and Torres Strait Islander viewers, this story contains images of people who've died.

NATASHA THIELE, REPORTER: This was Australia in the 1960s. Colour TV wasn't invented yet and this was the most popular boy band around! But society was different in other ways too. Indigenous people didn't have the same rights as other Australians. They weren't counted as citizens and they faced a lot of discrimination.

But this guy Charles Perkins wanted to change that. He was the first Aboriginal person to graduate from uni. He was also a big fan of American civil rights activist Martin Luther King. So, inspired by events King championed in US, Charles organised a campaign he hoped would help. At midnight on the 12th of February 1965, Charles invited a big group of students to set off with him on a bus trip across country New South Wales to find out how Aboriginal people were actually being treated. It became known as 'The Freedom Ride'.

For two weeks they travelled to outback towns and found Aboriginal people living in poor conditions. They were also being treated really badly. Segregation was everywhere. For example, Aboriginal people could only swim at local pools when other people weren't

there. They weren't allowed to sit in restaurants and if they went to the movies, they could only sit at the front. The students saw a lot of bad things during their trip that they wanted other people to see too. So they held protests as they went which made the news. A lot of people didn't like what they were doing and they were even chased out of one of the towns! But their trip did make a big difference to Indigenous rights. A couple of years later a big vote called a 'referendum' was held and Australia voted to remove discrimination from the constitution and to count Indigenous people as a part of the country.

50 years on, many of the people from the original Freedom Ride are still around today. So to celebrate the anniversary of their trip they decided to do it all again. Joining them were students from the same uni they all used to go to and supporting the ride were young people like Skye!

SKYE: Hi BtN, it's Skye here and I'm on the Freedom Ride to get a better understanding of what really happened in 1965.

They went to the same towns, meeting locals and visiting schools like this one in Walgett. While a lot has changed since 1965, some reckon there's still plenty to be done for Indigenous rights.

JULIA ROBINS, UNI STUDENT: What I think a really good thing about this trip is to encourage this next generation take off where they left off. There's still so much work to be done, there's still, like I said we're not the lucky country yet, we need to keep going.

The Freedom Ride changed the way Indigenous people were treated in our society and it was all thanks to a group of students on one important bus ride.

The Wire

Last week was tough for Queenslanders caught in the middle of Cyclone Marcia. And while the cyclone's gone now it's left a ton of destruction in its wake. Around one thousand, five hundred homes have been damaged by the cyclone. Tahn's house was one of them.

TAHN SMITH: It's been through the whole house probably wrecked my room's pretty ok except for the roof.

Lucky for Tahn his pet survived!

TAHN SMITH: Your pet fish survived.

Yeah pretty weird must be superman superfish I mean. But there's still a lot of work to do in many towns.

SUNNY: We have no power or water so it's a little hard to function. We've had to drive to friend's houses to fill up our water bottles.

And school's out too.

SUNNY: We got told school's been cancelled until Thursday because there's no electricity.

The government's helping out by giving money to those affected.

And soldiers from the Army reserve have been sent to areas around Rockhampton and Yeppoon to help with the clean-up effort.

Meanwhile Elcho Island off the coast of the Northern Territory was also hit hard by another Cyclone, cyclone Lam. Lots of people there are still without power. But no-one was badly hurt.

Health authorities reckon these brands of frozen berries are to blame for at least eighteen Aussies becoming infected with Hepatitis A. It's a virus that affects your liver and it's pretty serious although people usually get better. The berries were all grown and washed overseas. And that's where authorities reckon the virus came from.

And some of Hollywood's biggest stars were out for the 87th Academy Awards. Or Oscars! They were hosted by How I Met Your Mother star, Neil Patrick Harris and there was a pretty awesome performance of everyone's favourite lego song. As well as a few special lego statues! A real golden statue for best feature animation went to Disney's Big Hero Six.

Quiz 1

Okay next we're going to look into solar power. But first a quiz about where it comes from.

What colour is the sun?

Yellow

White

Or Orange

Answer: White

It often looks orange or yellow but that's only because they are the main colours that make it through our atmosphere. Beyond that it's white!

Solar Energy

Reporter: Carl Smith

INTRO: Now, Queensland is set to become home to what could be the world's biggest solar farm. The project has just been approved and when finished it's expected to collect enough energy to power half a million homes. But how do solar farms even work? Carl explains.

The sun's sizzling energy rains down on Australia every day. It's a bit of a shame that so much of it is wasted on getting hot and sweaty or trying to soak up some Vitamin D. But what if you could catch that energy and put it to better use?

Well that's what solar power is all about. You see that bubbling, fizzing mass in the sky that we call the sun is constantly shooting out photons. They're the tiny things that make up light. But they are also little packets of energy.

When photons hit Earth the power stored in them helps to heat the planet. Plants also convert photons into the energy they need to grow. Ok but how can we grab them and turn them into electricity? Well that's what these things are for: solar panels.

Here's how they work. Inside solar panels is an element called silicon, which can absorb a photon's energy. When that happens the photon knocks a negatively charged electron off the silicon. As more electrons build up on one side of the panel they start to flow through wires. That flow of electrons is what we call electricity, and it can power just about anything.

So should we be collecting more solar energy? Well solar is a green renewable energy, meaning it's great for the environment. And you probably don't even notice them when they're around - they can just sit on the roof of your home or your school absorbing the sun's energy for years.

And finally silicon which is used to make the panels is commonly found in sand, and there's obviously plenty of that around! But there are also a few problems with using solar. The main one is that turning silicon into a sophisticated solar panel takes a lot of work and money.

So it can cost a lot more than other energy resources to set up. Another problem is reliability. If we're counting on the sun's rays to fuel everything then a cloudy day or even night-time can be a big problem.

But scientists and engineers around the world are getting better at making the panels, meaning the cost is coming down and they're now much better at catching and converting the sun's energy too.

Meaning giant solar farms are starting to pop up all around the world. In Australia there are already small solar farms up and running across the country. But now one of the biggest in the world has just been approved in Queensland. This giant farm will be built near Toowoomba, and when it's finished it'll power half a million Aussie homes.

Many people are predicting the solar energy industry will keep growing too. So maybe that extra sunny power will finally be put to some better uses.

Online Poll

So, that's how solar power works. But should we be doing more of it?

Should all Aussie homes have solar panels on the roof?

To vote, just head to our website.

Last week we asked you if cursive handwriting should be taught in schools. It got a big reaction and the result was close. After 5000 votes the winners were the cursive handwriting fans by a 10% margin.

Thanks for voting!

Wheelchair Day

Reporter: Emma Davis

INTRO: Now, the 1st of March is International Wheelchair Day. And it's a day that 15-year old Caleb wants all kids to mark. He's been in a wheelchair for years, but he says his wheelchair hasn't ever hindered him. In fact, it's helped him achieve a massive amount. Here's Caleb with more.

CALEB: Hi I'm Caleb, I'm 14 years old and I've been born with cerebral palsy. It's a disorder in the brain that affects things like body movement, muscle control, balance and coordination. It affects people in different ways. For me, it mainly affects my legs. So I use a manual wheelchair to get around.

Growing up with cerebral palsy hasn't been easy. For as long as I can remember, I had lots of trips to hospital and many therapy appointments.

CALEB: "I've got a really big family, I'm the youngest of 10 kids. They've always been doing sport so I was always expected to do it as well."

Using a wheelchair in a world that is designed for people who can walk is particularly challenging. I have had to do things differently to the way that people consider normal. Because of this, I have learnt to think outside the box, anticipate situations and to solve problems more creatively.

Like trying to open the door without rolling backwards down a ramp. Or not being able to buy things at the shops because the shop assistant can't see me over the counter.

One thing that bothers me is when people feel uncomfortable with me because I'm in a wheelchair. Or when people only acknowledge my wheelchair instead of using my name to start a conversation. All I want them to do is just to be comfortable and treat me like a normal person, that's all.

When I play sport with my friends it's no different really. All I have to do is adjust the way I play a bit and then we can just have fun like everybody else. I can play table tennis, I can play basketball, I can swim, I can ride a surfboard, I can skate and I can rock climb. Only recently I went to Hobart for table tennis nationals. I'd never met my partner before, he was from New Zealand, but we ended up winning silver in the doubles competitions.

My next goal is to get into the International Pan Pacific School Games which is here in Adelaide to play table tennis and to represent my country.

I'm no different from anyone really, just cos I'm in a wheelchair it doesn't stop me from doing the things that I wanna do.

Upcycling Kids

Reporter: Carl Smith

INTRO: By now we all know the kind of stuff that can be recycled like glass, cans, cardboard and cartons. But what about all of the other stuff that we throw out? Isn't there something that can be done with all that stuff? Well there is. Here's Carl to show you.

When you throw something in the bin do you know where it goes? Well rubbish actually goes to a lot of different places. This is a dump. Or it's sometimes called landfill. And most of the waste we make ends up here in giant holes with everything mixed in.

Some of it breaks down, but some things like plastics or electronics can hang around for a very long time. Which means a lot of useful stuff can be caught up in landfill and wasted.

So a few decades ago people started to think about how they could pull out some of the stuff that could be re-used.

RECYCLING AD: 'paper, bottles and cans, can go around again, come on do your bit, you can recycle it.'

Now as those weird bins just said, we all know that you can recycle a bunch of stuff. It can all be melted down or combined together to be re-used. This keeps us from wasting lots of materials and from having to make more of them, but plenty of useful stuff still get's left in landfill.

Well that was until these guys came along: the up-cyclers. But they aren't really super-heroes, they're kids. And there are thousands just like them across Australia. They're all looking for new ways to re-use things that we normally think of as garbage.

“Hey so what's your name? My name's Georgia. Georgia what have you made here? I've made a bow out of toothpaste tubes. Pretty cool isn't it? Yes

It's called upcycling, it's where you don't really change the product, you kind of just keep it like it is and you cut it up or something and make it into something completely different.

“You can upcycle toothpaste tubes into pencil cases, bags and some other things as well.”

About 50,000 Aussie kids have already helped to divert more than 5 million pieces of 'rubbish' from the dump just in the past year.

"So I see you guys here have collected all of these products for us!"

TIFFANY THREADGOULD: All of these things are made out of waste that we've collected from students like at this school. So Terracycle's a program where we collect hard to recycle materials - things that we wouldn't put into regular recycling bin. And we take them and we recycle and upcycle them into new products.

And these workshops give them plenty of easy and creative ways to give a new life to their trash.

“And was it easy to make? Yeh, it was actually really easy I though, and at the start I didn't know where to put the pin but after that it was easy!”

There are loads of people around the world all experimenting with up-cycling, and they aren't the only ones looking at other ways to re-use waste. Others are using it to generate power or fertilise plants. Rubbish is even used to create some massive artworks.

So before you throw something in the bin take a moment to stop and think: maybe just like these guys you'll be able to turn that trash into treasure.

Quiz 2

Let's go to another quiz now.

Quiz Opener

Recycling one tonne of paper is like saving how many trees?

Is it -

2

8

Or 13

The Answer: 13

Okay sport time now. Here's the week's hottest moments.

The Score

Australian cyclist Anna Meares now holds the record for the most gold medals ever at the track world titles! She just won her 11th.

"I don't even remember the race I was just enjoying myself out there!"

Meares also grabbed silver and bronze medals in other races giving her the record for the highest total number of medals too.

Some of Meares' teammates also set a record at the world champs. The Australian women's team pursuit squad beat the current world record for the event by almost 3 seconds.

The South Sydney Rabbitohs are another bunch of Aussies with a new world title. They've won the World Cup Challenge thrashing Super League title holders St Helens.

Australia's female cricketers are gearing up for a new women's big bash tournament. Eight teams will compete in the first season, scheduled to start later this year.

And some less exciting cricket news.

Australia's hopes for a perfect score in their pool matches during the World Cup have been blown away by a cyclone. The wet weather in Queensland drenched the Gabba before Australia could play Bangladesh. So both teams received a point each. That leaves Australia lagging behind New Zealand in their pool.

In Scotland the country's soccer league goal of the month that would usually go to a star player has gone to an 11 year old boy! Celtic fan Jay Beatty met his favourite players and took part in a shootout during the break. And fans loved it enough to vote it the best goal of the month.

And finally to a different sort of cycling championship in Tassie. You don't see these bikes called Penny Farthings very much these days. Perhaps because they don't have brakes, or air in their tyres. And if you fall it's a long way down.

JOHN KITCHEN: "The first ride was terrifying. Absolutely terrifying. But once you get used to it, it's just a bicycle."

The winner of the main event was James Fowler from Sydney who reckons he'll be back to defend his title next year.

Amateur Astronomer

Reporter: Emma Davis

INTRO: Last up today. Living out in the country isn't for everyone but for Rookie Reporter Joe, it's perfect. Because out away from the lights of the city is the best place to see the millions of stars up in our sky. He loves it so much, he even built his own telescope and weather balloon to capture photos of it all. Here's Joe's story.

G'day I'm Jonah and I live in outback Queensland, near the town of Cecil Plains. I'm an apprentice diesel mechanic and I help out my dad on our property. Living out here might not appeal to everyone but it's actually the perfect place for stargazing and I love it.

I started getting interested in space a few years ago. I'd looked at all the cool photos of galaxies and gas clouds in magazines and wonder what else was out there. Then I got my first telescope when I was 15. After a while I decided I wanted to upgrade to something a bit bigger so that I could see more but big telescopes are really expensive! I love to design and build stuff so I got to work and built this one myself! So the starlight comes through the top of the telescope, down the tube, and is reflected off the primary mirror, back up the tube, off the secondary mirror and into the camera.

I've taken photos of planets, galaxies and comets. One of my photos was even featured in the magazine that first got me interested in astronomy! But I wanted to see even more. I really wanted to get a photo of the blackness of space and the curvature of the earth but to do that I needed to get really high above the atmosphere and after some research I figured out that'd be possible with a weather balloon.

The whole thing took me about four months to organise. There was a lot to do, like experimenting with different cameras, seeing if they can work in different conditions and choosing batteries and a GPS. I also needed to make a parachute and the box that the cameras would sit in.

I spent the next few weeks waiting for the perfect weather conditions but finally it was time to launch! When I let the balloon go it was really exciting and a little bit concerning because it's out of your control now. This is just the neighbour's paddocks, it's spinning around because of the wind and then it just goes up and up, right into the edge of space and it's cool to know that that's our space, right above us. Our place is just right down underneath us at the moment.

The weather balloon went about 33 kilometres up into the sky. That's in the stratosphere, where the ozone layer is. Up there, the balloon stretched to about 8 metres in size. Then it burst! So you can see all the little fragments of the balloon, also the parachute flapping around. The rope got caught on the camera pole out the side and it's falling sideways.

It took about half an hour just to fall and that's when things went a bit wrong. The GPS unit in the balloon failed so I had no way to find out where it had fallen! We did mail, made flyers and put them all in the mailboxes of the whole area. But five weeks later I had some luck. Someone found it on their property about 50 kays away. He was spraying the weeds in his sorghum and had seen my payload lying in his paddock and that was awesome to hear that.

I got the payload back safe and sound and I was really stoked to see all the footage. It was just what I'd hoped for. I'm planning to send another balloon up into the air in a few months, this time at night so I can get some awesome photos of the Earth, as well as hopefully capture some shots of the Milky Way! And after that, who knows? When it comes to space, the possibilities are endless.

Closer

Thanks Joe. And that's it from us!

Now, we'd like to thank all of you who've taken the time to fill in our kid's opinion poll! We've now well and truly cracked the 3000 mark which is enough to declare it closed.

So you can look forward to hearing some of the results from it in the coming weeks and months. Thanks for responding and bye for now!