

SEVEN SIBLINGS FROM THE FUTURE



Teacher guide
25 September 2019

Seven Siblings from the Future

It's an ordinary summer day, sometime in the future. In southern Australia there is a plot of land known as Eucalara. Eucalara is already feeling the impact of climate change. Climate refugees started arriving decades ago, invasive species are on the move, and water is an increasingly precious resource. Amongst all this are seven siblings.

The siblings have inherited this land from their great-grandmother, but can't agree on what should be done with the land. They each have a different idea for what qualifies a good life and a good future.

Meet the siblings and help to shape the future of Eucalara through the choices that you make. In SEVEN SIBLINGS FROM THE FUTURE asks what sort of future we want for South Australia. We consider the way that our personal values shape our decisions. How do these choices affect our greater community?

Adapted from its original showing at the Heureka Science Centre in Helsinki, MOD. is stepping into 2050 and the world of Eucalara. Visit Eucalara from 30 November 2019 — 24 May 2020.

Exhibit Key Messages

	LOCATION	KEY MESSAGES
Introduction	Lecture Gallery	Eucalara is a place on the coast of southern Australia. SEVEN SIBLINGS FROM THE FUTURE is set in 2050 and was created through research on real projections for the future of Australia.
Ava	Universal Gallery	Although Ava is an Austronaut, there will be a huge range of future space careers. They all will require the ability to collaborate, get used to team work.
Julia	Street Gallery	Australia in 2050 will be hotter, drier, and more prone to bushfires. Think about what you'd save for the future.
Luca	The Arcade	Building a sustainable marina means a lot of choices. Who gets to choose? What makes a city liveable?
Kai	The Arcade	The cars of today won't be around forever. It's not likely we will all have our own car by 2050, lots of us will use electric powered vehicles, ride share, public transport, driverless cars, and active transport (walking, riding).
Eucalara	Gould Interactive Gallery	Values are so important because they are very permanent, it's likely that most of us will hold onto the same values for much of our lives. Invasive species are coming.
Alex	Futures Gallery	The future of healthcare will involve personalised treatment, through personalised medicine and sensors. We will be focusing more on health than illness.
Mia	Futures Gallery	The workforce is going to change. AI and automation is likely to augment a lot of the work we currently do. Which jobs will be replaced, augmented, or created are still not entirely clear yet.
Rowan	Futures Gallery	Learning won't always be people sitting in classrooms. Our insatiable hunger for meat may be met by new technologies, maybe even before 2050.
Epilogue: Australia 2050	Studio A	We need a mix of values and people to build a strong future.

Ava's Test

Ava has been genetically engineered to be super intelligent. Ava's parents were hoping to raise a memory scientist, but instead a life in space is on the cards. As an Austronaut, team work and collaboration are really important skills. Ava is frustrated by slow-thinking people, so it's not always easy. But now, the final test of Austronaut school requires group work and Ava is at risk of failing. Can you practice together?

Will we all be genetically engineered Austronauts?

The space industry is growing in Australia. In Australia there are currently around 10,000 people working in the industry. The newly established Australian Space Agency wants to triple that number by 2030. They'll need engineers and technicians, legal experts and communications specialists. We can't yet guess where it will lead us, but we do know it's likely to lead to a future of ongoing learning and development.

But just say in the next few decades when the Australian Space Agency is up and running, will there be mini-Avas that are genetically engineered to be super smart?

Well, we don't know yet. Tinkering with our DNA is something that has gotten much easier over the last decades. In 2001, it cost \$100 million to sequence our DNA, but today it can cost as little as \$1300. What a bargain!

But sequencing our DNA is one thing, what happens when people want to edit them?

CRISPR technology allows us to edit our genes. This could be used to cure genetic disorders, but also enhance our intelligence and sporting abilities. Most Australians are on board with curing disease, but are not comfortable with creating genetically engineered braniacs.

For now, visit Ava in Austronaut School. Help them pass the test and decide what career in space to choose.

Discover more:

Watch:

- [The ethical dilemma of designer babies](#)
- [Meet Andrea Boyd](#)

Read:

- [Human Embryo CRISPR advances science, but let's focus on ethics not world firsts](#)
- [After China's gene edited baby debacle, CRISPR scientists want a moratorium](#)
- [It's time to rethink who's best suited for space travel](#)
- [The Australian Civil Space Strategy](#)
- [Space 2060 and Australia](#)

Listen:

- [What would happen to your body in space?](#)
- [The habitat](#)
- [World's first CRISPR babies born, are we ready?](#)

Questions for visitors:

- What is your experience of working in groups? Good? Bad?
- Do you think we should be able to genetically engineer people?

UniSA study links:

- **[Southern Hemisphere Space Studies Program](#)**

Julia's Stash

After noticing the environmental changes and the invasive species over the course of a lifetime, Julia is wary. They've built a bushfire refuge and they're stocking up for the end of the world. The siblings dismiss Julia as over-cautious, but are they right to worry?

Getting use to a new, hotter home

Climate change is the biggest and most obvious issue facing the future of Australia. The temperatures will change. There will be shifts in rainfall patterns. There will be more natural disasters and extreme weather events. Our ecosystems will be forced to change. We don't yet know the extent of the change, or how much we will have to adapt. But we do know that there need to be changes from the personal to the global level to reduce emissions and adapt to the change in climate.

You probably know the general gist. The temperatures will rise by up to 4°C by 2050. This doesn't sound like lots, but it will work out to over 85 days over 30°C in Adelaide (previously the average was 49). We will kiss winter goodbye.

The temperature will warm the ocean, which in turn will melt ice, and then increase the sea level. It will also increase the ocean's acidity, impacting the marine life.

We are quickly running out of natural resources. Most of our natural coal and gas will be gone by 2050.

With the current temperature projections up to 70% of ecosystems will be threatened. In the place of rapidly disappearing native flora and fauna are invasive species that can withstand the heat.

We have a growing population and will need more food and water. We have a very productive farming industry, but this could be impacted by the changes in climate. Our water demand will double by 2050, and with less rainfall restrictions are looking likely.

It's a lot! And it's scary! But people are moving. In the Global Climate Strikes of September 2019 we have seen over 4 million people strike around the world. With strikes taking place in over 150 countries, it was the largest climate mobilisation in history. Action needs to take place on a global scale. If not, well, you'll find us bunking with Julia.

Discover more:

Explore:

- [Climate change in Australia](#)
- [My Climate 2050](#)

Watch:

- [This is what climate change looks like in Australia](#)

Read:

- [Bureau of Meteorology and CSIRO's State of the Climate 2018](#)

- [Hello From the Year 2050. We Avoided the Worst of Climate Change – But Everything Is Different](#)
- [2050: The Fight for Earth](#)
- [A million species of plants and animals are at risk of extinction](#)
- [Oceans are increasingly bearing the brunt of climate change](#)

Listen:

- [Election Special: Climate Change](#)
- [100% renewable energy – can we do it?](#)
- [Climate change and health](#)

Questions for visitors:

- What things do you think are most important to save for the future?
- Have you noticed any environmental changes?

UniSA study links:

- [Bachelor of Environmental Science](#)

Luca's Marina

A true entrepreneur and CEO, Luca's plan for great-grandmother's land is to develop it. With Eucalara Bay, everyone's dreams come true. With a growing population and a new climate, Eucalara Bay can be the magical, modern city that we all need. Take a look in the show room at MOD. and choose which facilities you think Luca must include.

What will the cities of the future look like?

The UN has predicted that the global population is going to hit 9.8 billion by 2050. In Australia, a country where most of us live in cities, the population could reach 42 million. Where will all these new people live?

Current research describes liveable cities as walkable and attached to public transport. They have public green spaces and there's access to food and places to go out. Houses are affordable, and there are jobs with an easy commute. Saying that, no Australian city performs well on all these categories. With the size of cities swelling to keep up with the people, what will this mean?

It's probably going to result in more high-density living. And you see this already with Adelaide's suburbs rife with subdivision and apartments shooting up across the city skyline. Research also predicts that public transport needs to improve. And there needs to be more green spaces for when those living in smaller plots of land need time outdoors.

As it stands, Adelaide is the most park-poor capital in Australia, so we could do with more public green spaces. These spaces are good for wellbeing, but they also keep the temperature down. As the temperature rises, it is worth remembering that parks have lower temperatures than city streets. A study in California has linked tree-lined streets with reduced use of air conditioning in summer.

So, what should Luca include in Eucalara Bay? What will Australia need in 2050? It's up to you to decide.

Discover more:

Watch:

- [7 principles for building better cities](#)

Read:

- [The Global Liveability Index 2019](#)
- [Cities of the Future](#)
- [Future of Cities](#)
- Shaping Future Cities: Adelaide [Phase 1](#) / [Phase 2](#) / [Phase 3](#)
- [Are our cities planning effectively for climate change?](#)
- [Healthy, liveable cities](#)

Listen:

- [Future cities](#)
- [Model city](#)

Questions for visitors:

- What do you think makes a good city to live in?
- Which of these blocks would you like to see in Adelaide / your hometown now?

UniSA study links:

- [Architecture](#)
- [Bachelor of Construction Management](#)
- [Master of Urban and Regional Planning](#)

Kai's Date

Kai is heartbroken, again. And writing poetry about love and loss, again. And the siblings are sick of it. Luca met their partner Noah on the Hypertrain's dating show and suggests entering Kai. What is there to lose? Maybe Kai will find someone to love, but it's up to the Hypertrain passengers to decide. Take the train and cast your vote.

How we move is going to change

While we're not suggesting that the Bachelor will be screened on all public transport, it's a lot more likely that before long we will be taking more public transport. As less of us own personal vehicles and more of us worry about climate change, the future of transport is going to look very different. In a city with urban sprawl like Adelaide, the city has been designed for cars. Research suggests that self-driving and electric vehicles will replace most of our personal vehicles.

Autonomous vehicles can be found already around South Australia. They are well under development at Tonsley Innovation District, there's an autonomous bus at Glenelg, and the Lyell McEwin Hospital has a driverless bus that ferries passengers from car parks to the hospital's front doors. If these sorts of vehicles are embraced as quickly as smartphones or the internet, it's likely that getting around will be radically different within the next few decades. Then again, it could all happen much sooner than that.

The other game changer is shared mobility, which will massively shift the way we move. Think about the changed landscape with e-scooters scattered across Adelaide. Shared mobility links us from public transport stops to our destination. And don't forget shared cars. With more people living in or close to cities, there's less need to own a car. Car share options have popped up all over Australia and are growing in popularity.

And as for the Hypertrain? That one is still up in the air. While it could link Australian capital cities in a way never believed possible, it would also cost many billions of dollars. For now, you'll need to sit tight in Kai's Hypertrain and just imagine.

Discover more:

Explore:

- [Cooper Hewitt's The Road Ahead](#)

Watch:

- [A future beyond traffic gridlock](#)

Read:

- [The future of mobility](#)
- [An integrated perspective of the future of mobility](#)
- [The future of mobility: what's next?](#)

Listen:

- [True Love](#)
- [Can free public transport save our cities?](#)

Questions for visitors:

- Would you be able to live without a personal car?
- Would you trust a driverless car?

UniSA study links:

- [Bachelor of Engineering \(Civil and Structural\)](#)

Eucalara

Welcome to Euclara, and great-grandmother's backyard. Here you can sit back and relax. Enjoy the dulcet tones of familial arguments, and help the siblings decide who should win. Spend some time thinking about your values, when it comes to your life and the people around you. You might even spot some of the invasive species that are creeping into this part of Australia.

Whose idea of the future?

The future of Australia is built as a result of people's choices and decisions. Every person is guided by their ideas, their hopes, their fears, and, above all, their values. Values are so important because they are very permanent, it's likely that most of us will hold onto the same values for much of our lives.

What qualifies as a good future is ultimately a question of values. You can see that each of the siblings have a different idea for what they think the future of Eucalara looks like. Luca thinks that a marina development is ideal, it can provide for lots of people. Rowan wants to focus on science. What about you? What do you think they should do?

Discover more:

Watch:

- [What makes a good life? Lessons from the longest study on happiness](#)

Read:

- [Schwartz theory of basic values](#)
- [Australian values are hardly unique when compared to other cultures](#)
- [Feral camels](#)
- [How we kept disease-spreading Asian Tiger mozzies away from the Australian mainland](#)

Questions for visitors:

- What do you consider your most important value?
- Who did you get matched with on the Future Visionaries? What did you think about their vision for the future?
- How do you manage invasive species? Are biological controls a good idea? If we could genetically engineer mosquitos that couldn't breed, a virus that would destroy camels? How does that make you feel?

UniSA study links:

- [Bachelor of Environmental Science](#)
- [Psychology](#)

Nurse Alex

Alex works as a nurse with the elderly, but is stationed remotely. Instead of living in nursing homes, the patients stay at home longer. They are observed through their wearable medical devices by nurses like Alex and reach out when they have concerns. This is why Alex was so shocked that their great-grandmother stopped monitoring her health. In a world where everyone lived longer and stays healthy, why would anyone do such a thing?

Revamping health

When we think about health care today, we think about putting out fires. You go to the doctors when you're in pain or when you're bleeding or oozing somewhere you shouldn't be. It won't always be like this. By 2040, researchers think that people will be at the centre of the health care system. Surrounding us will be a network of care, with doctors and pharmacists and allied health all looking out for us. Health will be defined as a state of wellbeing. Feeling healthy will be normal. We are more likely to be monitoring ourselves in health, not illness.

This monitoring has grown exponentially over recent years. Everyone either has a Fitbit or a smart watch or their phones track their steps and sleep. This technology has neatly integrated into our lives and the industry is growing. Health monitoring devices are likely in the future. Embedded in our skin or built into our homes, they could be anything from smart contact lenses that check for cancer or toilets that check your urine.

This is representative of the biggest change that will hit the health care system: personalised medicine. Health today is built on standards of care. 10,000 other people have responded to a medication, so chances are you will too. But there are lots of things that make us different — age, family history, diet, and genome for instance. This is where personalised medicine comes in. Moving away from this "one-pill-fits-all" approach, personalised medicine is already in development. By working on individual characteristics, we can offer new approaches to diagnosis and therapy.

With such a close focused approach on health, it's not surprising that Alex is busy at work and can't visit great-grandmother's house. Go visit her house and see if you can find any clues as to why she stopped monitoring her health.

Discover more:

Watch:

- [The future of medicine](#)
- [How technology helps blind people explore the world](#)

Read:

- [Wearable medical tech is about to become crucial for staying alive](#)
- [How personalised medicine is transforming your healthcare](#)
- [12 innovations that will revolutionise the future of medicine](#)

Listen:

- [Psychiatry for the future](#)

Questions for visitors:

- Would you share your data with Big Health? Did you opt out of My Health Record?
- Do you already have any wearables?

UniSA study links:

- [Health Sciences](#)

Mia's Training

Mia has had a rough time at work. A robot just took their job as a barista. Now they've started a barber apprenticeship, but there's lots of robot competition here too. Really, Mia just wants to open up an heirloom food café with their partner, Naomi. But with all the water sensors and restrictions it's not looking likely. Mia is hoping that Luca will pull a sponsor to sort them out, but for the time being they are stuck worrying about work.

Automation-based anxiety

Anxiety about automation in the workplace is not new. Since the early 1800s there have been people who have been worried about machines, later came computers, and now robots. It's great at creating jobs for those that make the tech, but what about everyone else?

There are some jobs that will outlive the robot revolution, known as Industry 4.0. They're the ones that involve managing people, creativity, decision-making, or social intelligence. Basically, the things that humans are better at doing than robots.

It's not just people on factory lines that are at risk. Big media organisations are already using AI to generate reports and articles. And machine learning algorithms can detect breast cancer better than most radiologists. So, where does that leave us?

In Australia, it's likely that we will need real people working in industries that will deal with our ageing population (like health care and social assistance). We need people to build all the things to deal with our growing population (like construction). There needs to be someone to teach all the people (education). And we need people to program the technology (like programmers).

If you aren't working in any of those industries, don't worry. Most fields estimate that AI and robots will augment the workforce, not replace them. For the time being, Mia has a lot of feelings about this. Why don't you visit the salon? Get a haircut and hear a little more about how automation is impacting the workforce in Eucalara.

Discover more:

Watch:

- [Shift Change](#)
- [Why we need to build robots we can trust](#)

Read:

- [The New Work Reality](#)
- [How to Future Proof your career – the top 10 growth jobs over the next decade](#)
- [The Australian Government Jobs Outlook](#)

Listen:

- [Organic Food](#)
- [Outsourcing, automation, and the messiness of global labour](#)

Questions for visitors:

- How do robots or AI assist you already? Siri, Alexa, coffee machine?
- Should robots be paid for their work?
- Do you think there should be restrictions on robots entering the workforce?

UniSA study links:

- **[Bachelor of Engineering \(Electrical and Mechatronic\)](#)**

Rowan's Kitchen

Rowan values freedom. A self-taught biohacker and scientist, Rowan demonstrates a changing education system. We already have access to expertise for any problem we face — thanks YouTube. But going forward, learning in the traditional sense will be revolutionised.

Learning will be revolutionised?!

It's going to be pretty different. Education in the future is life-long and personalised. We will learn from anywhere and the content will be personalised to our individual needs. Learning will be project-based and collaborative to reflect a changing workforce. As we adapt to a freelance economy, students will spend more time applying their knowledge in real-world situations.

Rowan has benefited from these changes. Working remotely from the lab, they take advantage of the vast expertise available online. This is how Rowan was able to create their bio-implant. After a life-long struggle with anxiety, they created a bio-sensor to keep their emotions in check.

Bio-hacking is a DIY manipulation of your brain or body to optimise performance. Rowan might be ahead of the curve here, but it's not a far jump to make from wearing a Fitbit on your wrist. Saying that, there are already about 10,000 people around the world with chip implants. These chips hold personal details and credit card numbers, and can be used to travel or in place of money.

Now Rowan has created this bio-implant, their attention has turned to synthetic meat. This is something that is increasingly a part of the current dialogue around food today. There are dozens of Silicon Valley start ups racing to be the first to bring this meat to the mainstream. Beginning as a sample of animal muscle, lab-grown meat is grown in petri dishes. While it is a more ethical way of eating meat, it's not sure yet whether it is more eco-friendly.

While in 2019 we aren't quite there yet, it's likely that we will be eating lab grown meat much sooner than 2050. In the meantime, do you mind giving Rowan a hand to un-lock the lab computer?

Discover more:

Watch:

- [The future of protein will not be animal meat](#)
- [Fake Meat: the growth in popularity of artificial meat](#)
- [You've gotta fight for your right to free knowledge!](#)
- [Biohacking – you can do it too](#)

Read:

- [Lab-grown meat industry start-ups join Australian market to tackle issue of mass production](#)
- [The trouble with fake meat](#)
- ['Plant factories' needed to grow more food as world population heads towards 10 billion by 2050](#)
- [Weighing up lab-grown steak: the problems with eating meat are not Silicon Valley's to solve](#)

- [Why Swedes are inserting microchips into their bodies](#)

Listen:

- [Soy, Almond, Oat Milks: Are They Udder Bull?](#)
- [No Such Thing As An Elephant Polo Rider In A Sombrero \(first part\)](#)

Questions for visitors:

- What would make you want to try synthetic meat?
- Would you bio-hack yourself? What would you do?
- What's the last YouTube tutorial you watched?

UniSA study links:

- [Bachelor of Medical Science](#)
- [Bachelor of Nutrition and Food Sciences](#)

Epilogue: Australia 2050

As we come to the end of the siblings' story it's time to think about our own. Here we can find out which sibling is most similar to ourselves and take some time to talk and think. What sort of future do you want to see for Australia? And how will your values play into this?

In SEVEN SIBLINGS FROM THE FUTURE we have portrayed a vision of the future, but it's not necessarily the only way. We all have power and agency, whether we are entrepreneurial like Luca or on the defence like Julia. Benevolent like Alex or innovative like Ava. We can make changes ourselves on a small scale, not to mention lobby for changes on state and national levels. The future is looming, but we are the ones that will shape it. And we can make a difference.