



How might we... Build a Culture of Repair

A toolkit designed to develop a project proposal for an area where people can come to repair/recycle things as a community instead of throwing things out. By hacking, making, repairing and recycling discarded, broken and superseded things, students gain a deeper understanding of the processes that go into manufacturing and industrial design and are encouraged to reflect on the sustainability of current manufacturing process.

The exercises in this toolkit were developed as part of Designer in Residence—My School Space project at Pimpama State Secondary College. The school is based in a Gold Coast area undergoing intense development with new communities forming and large infrastructure, including a new shopping centre, recently constructed.

This project was supported by the Queensland Government through Arts Queensland, part of the Department of Science, Information Technology, Innovation and the Arts.

Read more about the project here: <http://resources.pimpamassc.eq.edu.au/ci>.

AUTHORS

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BENCHMARKS CURRICULUM

National Curriculum
Technology, The Arts

CROSS CURRICULUM PRIORITIES

Asia and Australia's engagement with Asia, Sustainability

TEACHING LEVEL

7-10, 11-12

EXPECTED DURATION



This workshop was delivered over a Two-Day intensive program. The activities here have been broken down into usable 'chunks', which could be delivered as separate exercises over a period of time. Teachers are also encouraged to explore further interpretation (background research) to enhance the ideation exercises

EXERCISES

1. Setting the Stakes
2. Everything that I used to Knoll: Making and Unmaking

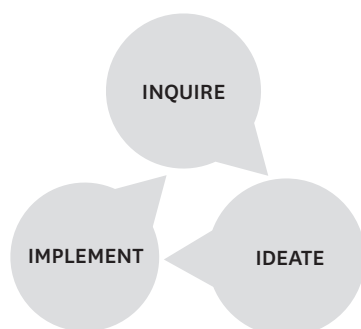
RESOURCES FOR COMPLETION

- Discarded, broken or superseded things (i.e. E-Waste, textiles, recyclable materials)
- Internet connection with access to Google, <http://storyofstuff.org/>, <http://padlet.com/> and <http://www.landfillharmonicmovie.com/>
- Large pieces of paper (preferably used or recycled), either butchers paper roll or sheets A2+
- Tools: screwdrivers, pliers etc. for disassembly of things

RESOURCES FOR DOCUMENTATION

- Students work collaboratively on recycled paper. Padlet used for ideation tasks and documentation of Everything that I used to knoll... Activity
- Digital camera or scanner to document the final project
- Adobe Photoshop or other photo editing software

DESIGN AND CAPABILITIES

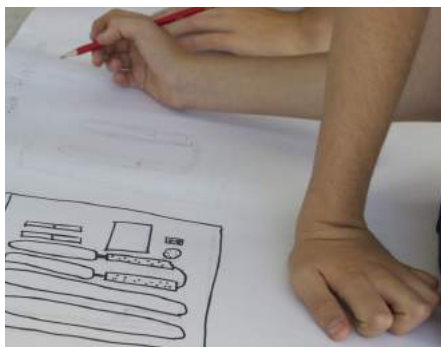


Capabilities for creating successful learners, confident and creative individuals, and active and informed citizens.


Literacy	1	2	3	4	5	6	7	8	9	10
Numeracy	1	2	3	4	5	6	7	8	9	10
ICT capability	1	2	3	4	5	6	7	8	9	10
Critical and creative thinking	1	2	3	4	5	6	7	8	9	10
Personal and social capability	1	2	3	4	5	6	7	8	9	10
Ethical behaviour	1	2	3	4	5	6	7	8	9	10
Intercultural understanding	1	2	3	4	5	6	7	8	9	10


[Visit Design Minds](#) for more info on design phases.

[Visit the Australian Curriculum website](#) for more info on general capabilities.



Setting the Stakes

 7 x 35 minutes each

Inquire
Ideate
Implement 

METHOD

Exercise 1 (Setting the Stakes) is a teacher led conversation broken into 4 discussion points (layers). Each layer is designed to allow students to engage with the over arching question of the toolkit: How might we... Build a Culture of Repair? The reflection activities can be used at any point during the conversation, but will work best after discussion of each layer.

Exercise 2 (Everything that I used to Knoll) is a student directed activity. Students are encouraged to bring in broken, discarded, irreparable items from home for disassembly, classification and auditing, knolling and finally prototyping. The activity is designed to deepen student understandings of each layer to engage with the over arching question of the toolkit: How might we... Build a Culture of Repair?

MATERIALS

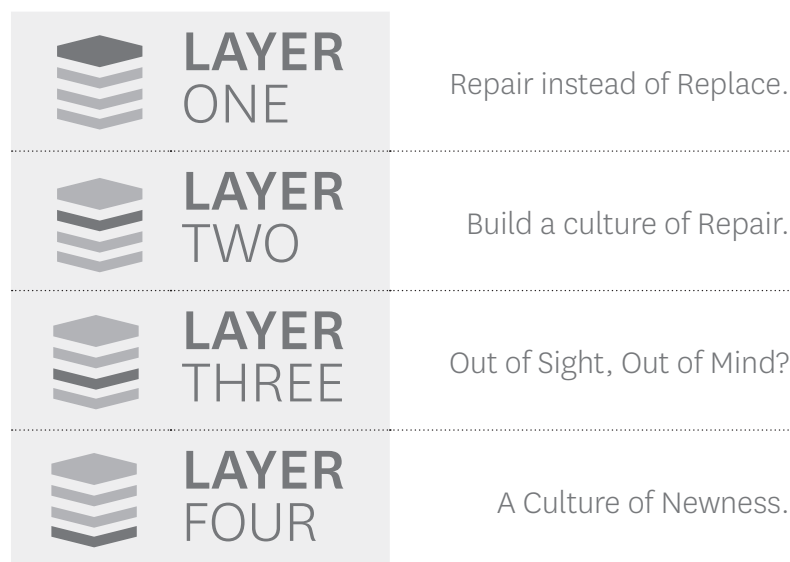
- Paper and pencil
- Washable marker

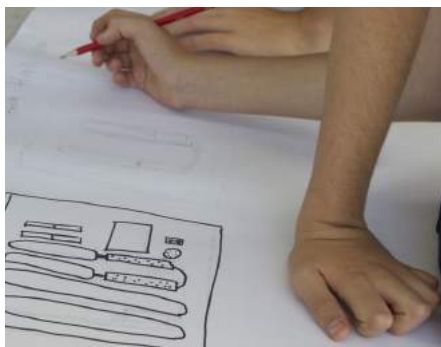
ACTIVITY

Teacher-led discussion with interrelated individual and group Inquiry activities. There are 4 layers to the discussion. Teachers can discuss all in detail or select one or more to develop detailed inquiry. Students are encouraged to understand how each layer relates to one another, to common understandings and to intercultural understandings. Teachers then consolidate student learning with activities at the end.

So, why repair?

There are four, interrelated layers to consider in this conversation:





Setting the Stakes

Layer 1: Repair instead of Replace

 35 minutes (1 period)

Inquire
Ideate
Implement



METHOD

Teacher led, Class investigation

MATERIALS

- Butchers paper and markers (optional)

STARTING POINT

The first layer is a simple answer...the world has only a limited amount of resources to use. We need things to last longer before we use anymore of those resources. As such, we might repair things instead of throwing them out. However simple this sounds, it is harder for western societies to enact this.

REFLECTION

This is a teacher-led discussion, students take notes on recycled paper.

Prompts for reflection:

- Have you ever chosen to replace a broken object rather than repair it? Why?
- Why do you think objects get thrown away instead of repaired?

DOCUMENTATION

Student reflection on paper. Paperwork can be scanned or photographed.





Image: David Kraemer/CC BY-NC 3.0

Setting the Stakes

Layer 2: Cultures of Repair

 35 minutes (1 period)

Inquire
Ideate
Implement

METHOD

Class investigation

MATERIALS

- Butchers paper and markers (optional)

STARTING POINT

A culture of repair still exists in other places around the world, and it is from these other cultures that we can learn. Cultures of repair exist in other countries often because there is little choice; it is simply economically cheaper to repair and they don't have a high enough income to repurchase items when they break. However, in areas where a culture of repair does exist, saving money is not the only motivation. Even those with sufficient income will choose to repair instead of replace as it is much easier for them to do so—either by repairing it themselves or finding someone else to.

For many cultures, 'repair' is an acceptable and sensible thing to do, for rich and poor. Our task, in thinking of a 'culture of repair', is to think of how we can make repair an accessible and sensible thing to do in Australia? That is where 'culture' comes into play when we speak of a 'culture of repair'.

CASE STUDY

In India, Vietnam and China and other Asian countries, there is a thriving market for device repair services including repairing phones, radios and toasters, shoes and backpacks. Often these repairs take place on the side of the street. Repairs require the right knowledge and are commonly carried out with little more than a screwdriver, a toothbrush (for cleaning contact points), a needle and thread and a flat surface to work on. The flat surface can be in the form of a mobile stand that a merchant will wheel into his favourite street corner spot, work for the day and then ride home!

FURTHER VIEWING

<http://aupindia.org/2012/01/12/repair-culture/>
<http://janchipchase.com/2005/07/repair-culture-india/>
<http://www.treehugger.com/gadgets/repair-still-rules-india-can-america-bring-it-back.html>

REFLECTION

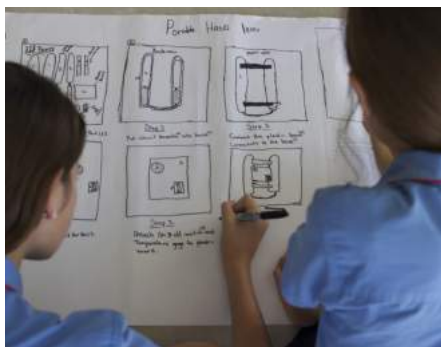
Students participate in teacher-led discussion, students take notes on recycled paper.

Prompts for reflection:

- Do you have any skills that you could use to repair objects?
- Choose one of the following objects: shoes, backpack, t-shirt, watch, pencil case, radio. How would you repair it if it broke?

DOCUMENTATION

Student reflection on paper. Paperwork can be scanned or photographed.



Setting the Stakes

Layer 3: Out of Sight, Out of Mind?

 35 minutes (1 period)

Inquire
Ideate
Implement 

METHOD

Class investigation

MATERIALS

- Butchers paper and markers (optional)

STARTING POINT

The third layer to think about is more complex. It has to do with the way our brain works.

Who has heard of the term 'out of sight out of mind'? This is what has happened to our products.

Thousands of years ago, ancient tools were meticulously crafted from natural materials and intended for repair and reuse. The limited level of technology available meant parts were not packaged and housed inside one another; all components of the objects were visible. All parts were seen and were able to be thought about, honoured, understood and respected for their individual craftsmanship and use.

From 500 years ago, the Enlightenment period involved an acceleration of technology. By the time we had the Industrial Revolution in the late 1700s, this acceleration was at a monumental scale. The level of technology was developed enough for objects and things to become much more complex. With this complexity came the concealment of parts in products. This concealment resulted in efficient, smaller, and longer lasting products. However, it also affected our brains. We couldn't see parts anymore; they were not at the forefront of our mind. We thought about parts less and therefore had less compassion for their impact.

One result of the Industrial Revolution was the rise of a consumerism culture. New technologies meant new mass production methods. This meant an excess of supply and a need for the demand of that supply from consumers.

During the 1950s, advertisers and designers embarked on a project of designing the insatiable desire to consume goods. Concealing parts inside products meant consumers had less concern for the environmental impact of those parts. They also knew that if they designed things to last, the consumer mass production machine would stop turning. They designed planned obsolescence into products. This is why things fall apart much earlier than they should. Furthermore, objects have become harder to fix as the components have been concealed inside the product. It is easier to throw them away and buy new things.

Most importantly, there is an emotional detachment from the hidden materials inside objects. Now, that the components of a product cannot be seen, it is difficult to comprehend the many materials involved in making the object. We cannot imagine them and can't associate being concerned with them. It is indeed out of our sight, therefore out of our minds.

REFLECTION

Students participate in teacher-led discussion, students take notes on recycled paper.

Prompts for reflection:

- Can you guess the number of parts that can be found in the following products: ipod, toaster, calculator, chainsaw. Use Todd Mclellan's photographs ([link below](#)) to count how many there actually are.
- *Alternative exercise:* Using Todd Mclellan's photograph of de-constructed objects as a starting point, ask students to identify what the object used to be before it was pulled apart.

FURTHER VIEWING

Further viewing

<http://www.toddmclellan.com/thingscomeapart>

A conversation on the Streamlining Movement also supplements the discussion here:
<http://architecture.knoji.com/streamlined-design-modernity-in-america/>



Setting the Stakes

Layer 4: A Culture of Newness

 35 minutes (1 period) x 2

Inquire
Ideate
Implement



METHOD

Class investigation, individual student work and/or group student work

MATERIALS

• Butchers paper and markers (optional)

STARTING POINT

This layer addresses a problem in society called a ‘culture of newness’. As discussed in layer three, throw-away culture results in a newness culture—desiring the new version of what you’ve thrown away.

The culture of newness is also a result of the rise of consumerism from the 1950s. Advertisers and designers created a desire for new, stylish products. Old looking products were coded to seem outdated and inferior. Older design or non-western design were coded as not as advanced as the West’s measure of advancement. In the eyes of advertisers and designers, these design aesthetics had run their course. The way to accelerate consumerism was to develop an entirely new, clean, comfortable, convenient look and trend.

The new became associated with the status of being wealthy. Owning new products made you appear wealthier, more civilized and more modern. This is the story of designing a modern aesthetic to create symbolic significance in the status of wealth.

In a book named *Comfort, Cleanliness and Convenience*, Elizabeth Shove writes,

“How might we conceptualize inconspicuous consumption as opposed to that which is overtly wrapped up with questions of style, status and symbolic significance?”

...Any number of devices and solutions are sold in the name of convenience and sold to those who feel themselves to be harried, hurried and harassed. Few can pin down just how and when their habits change but again there is a sense that things were not always so...”

Shove, Elisabeth. 2003. *Comfort, Cleanliness and Convenience*, p.2.

The culture of newness, cleanliness and comfort in what we surround ourselves with is a part of the unsustainable story—we simply can’t keep having new things. Remember layer one—there is not an infinite amount of resources on this planet. How do we re-use resources by repairing already made things? If we learn from the symbolic significance that advertisers and designers created in the 1950s to increase consumerism, how might we design the status of ‘repaired goods’ as valuable?

Learning how to fix things and how to design things in the future to be suitable for repair is very important. However, it is also important to learn how to communicate to society that is a valuable idea to build a repair culture, thereby creating a natural desire to fix things!

FURTHER VIEWING

How we design things in the future to be suitable for repair:

https://www.youtube.com/watch?v=FHuLpfpQc_U

A growing movement and Example of solution in action: Repair Cafes

<http://repaircafe.org/>

Repair Café Article: An Effort to Bury a Throwaway Culture One Repair at a Time

<http://www.nytimes.com/2012/05/09/world/europe/amsterdam-tries-to-change-culture-with-repair-cafes>

Phonebloks

<https://phonebloks.com/en>



Setting the Stakes

Layer 4: A Culture of Newness

 35 minutes (1 period)

Inquire
Ideate
Implement



Cont.

REFLECTION ACTIVITY

The below activity is a three step process that requires students to work both individually and in groups can to investigate the four layers of Setting the Stakes

STEP ONE

Students audit repair-orientated services in local community. Students might consider how many exist (if any), what types of repairs/services are offered, accessibility and value for money. Alternatively, audit all electronics viewable in the classroom.

STEP TWO

Classify into repairable, irreparable and not worth being repaired. Justify classifications with reference to the Four Layers.

STEP THREE

Students select belongings from the irreparable and not worth repairing list and undertake Reverse Design exercise (see Reverse Design Toolkit for prompts— <http://designminds.org.au/toolkit-reverse-design/>) to make them repairable – and possible improve the design solution while they are at it! Generate prototypes to communicate and pitch design solutions for feedback from other students.

STEP FOUR

Students design repair manuals explaining 'how to' create their design solutions. This includes visual diagrams and annotations. Think IKEA how to manuals but for repair rather than new goods. (Also see: Readers Digest Repair Manual 1975)

REFLECTION

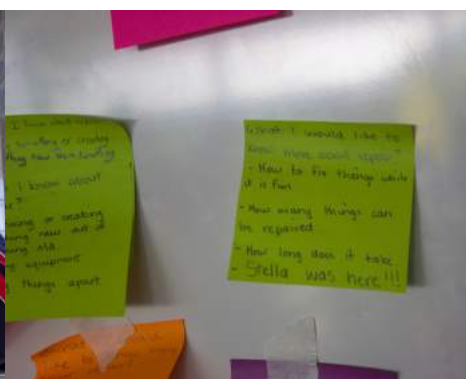
As students participate in teacher-led discussion, students take notes on recycled paper. Throughout conversation, students upload images, thoughts and responses to layers onto Class Padlet

Prompts for reflection:

- When was the last time you, or someone you know had something repaired? Have you repaired anything? Do you own anything that is able to be repaired?

DOCUMENTATION

Padlet can be exported as a PDF, excel or picture. Paperwork can be scanned or photographed.





Everything I Used to Knoll: Making & Unmaking

 35 minutes (1 period)

Inquire
Ideate
Implement 

METHOD

Students work individually and in small groups

MATERIALS

- Recycled paper
- Discarded, broken or superseded things (student supplied)
- Camera

ACTIVITY

Students are taken through a series of activities designed to deepen understanding of each layer and engage with the over arching question of the toolkit: How might we... Build a Culture of Repair? Students are encouraged to bring in broken, discarded, irreparable items from home for disassembly, classification and auditing, knolling and finally prototyping.

1. Students bring in objects from home.
2. Students research the replacement cost for each item in today's currency (i.e. replace same for same) as well as research options for repair (including a cost).
3. Students select objects to dismantle (not break!) being careful to collect all components.
4. Students knoll* disassembled objects and audit components to create a Bill of Materials**.
5. Students consider knolled components and develop an inverted bill of materials*** for each object and for combination of objects.
6. In groups, students design**** for repair (objects that can be fixed), design to upgrade (modular design i.e. phoneblox) or design for waste (no waste stream objects).
7. Students design repair manuals explaining 'how to' create their design solutions. This includes visual diagrams and annotations. Think *IKEA how to manuals* but for repair rather than new goods. (Also see: Readers Digest Repair Manual 1975: <https://www.brotherhoodbooks.org.au/books/reader-s-digest-repair-manual/>)

* Knoll: arranging like objects in parallel or 90 degree angles as a method of organization. Examples: <http://theultralinx.com/2013/09/50-amazing-examples-knolling-photography.html>

** A bill of materials tells us what resources are used.

*** An inverted bill of materials tells us what we can build with the materials.

**** (See toolkit: *Getting Started with Design Thinking* for hints and tips on scaffolding design process.)

REFLECTION

As students participate in teacher-led discussion, students take notes on recycled paper. Throughout conversation, students upload images, thoughts and responses to layers onto Class Padlet

DOCUMENTATION

Padlet can be exported as a PDF, excel or picture. Paperwork can be scanned or photographed.



Feedback

We truly appreciate your contribution to furthering Design Thinking in education through the use of this toolkit. To thank you we would like to send you a FREE book courtesy of State Library of Queensland. Just include your full contact details below and we'll handpick something special for you!

ABOUT YOU:

Teacher name: _____ School: _____

Postal Address: _____

Email: _____ Phone: _____

Age of students involved: _____ No of students involved: _____

Would you like to receive occasional updates from APDL? *(please tick)*

ABOUT THE TOOLKIT:

How well did the toolkit align with and support your existing learning benchmarks?

How easy was the toolkit to use?

How easily understandable did you find the the language and concepts presented?

How well did students enjoy the activity? *(Please provide any examples of student feedback or anecdotal evidence)*

Anything else to share? *(Your experiences, learnings or suggestions)*

HELPING OUT:

I'm interested in being contacted further for:
(please tick)

Providing ongoing feedback

Authoring future toolkits

Becoming a Design Minds ambassador



WHAT'S NEXT?

Return your completed feedback form to the Design Minds team:

E: asiapacificdesignlibrary@slq.qld.gov.au

M: Asia Pacific Design Library
State Library of Queensland
PO Box 3488
South Brisbane QLD 4101

And we'll get to work selecting a special book, just for your school!