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# THE CIRCULAR CLASSROOM

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MODULE 3

DESIGN & CREATIVITY

# INTRO

## WELCOME TO THE CIRCULAR CLASSROOM WORKBOOK FOR MODULE 3

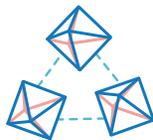
### *Design & Creativity*

In this workbook, you will find a general introduction to the core content of this module, along with activities for in-class learning, further research and exploration.

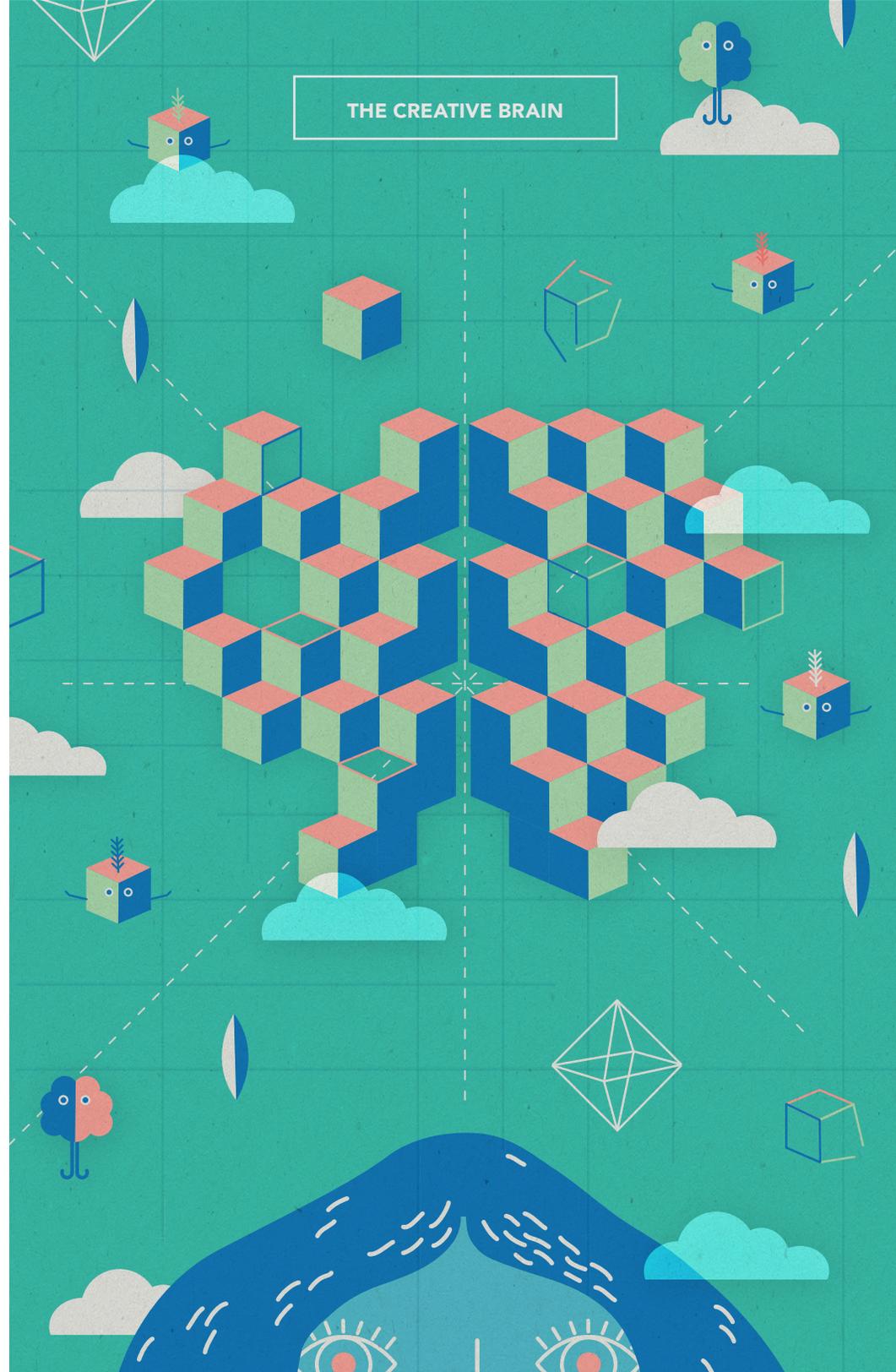
This pack includes three core activities that you can do during class. It also has variations and suggestions for how to extend the learning experience so you can engage in lengthier explorations into the core topics.



*Refer to the website for live links to additional support materials.*



*Feel free to photocopy this content and use it to activate your classroom.*



## DESIGN & CREATIVITY

Design is one of the most powerful tools that human beings have created in order to shape the world to meet their needs. We design everything from chairs to cities and even government policies.

The power of design is in the creative solutions to complex problems that it allows us to come up with. It also allows many different solutions to be developed, which means we have lots of options and opportunities.

Professional designers work on many different aspects of society. However, we are all citizen designers, influencing what products and services end up in the economy.

This means we all have the opportunity to help design a future that works better than today. In order to shift to a circular economy, it is important to understand and embrace design and creativity. Both are crucial for believing there are different possibilities out there.

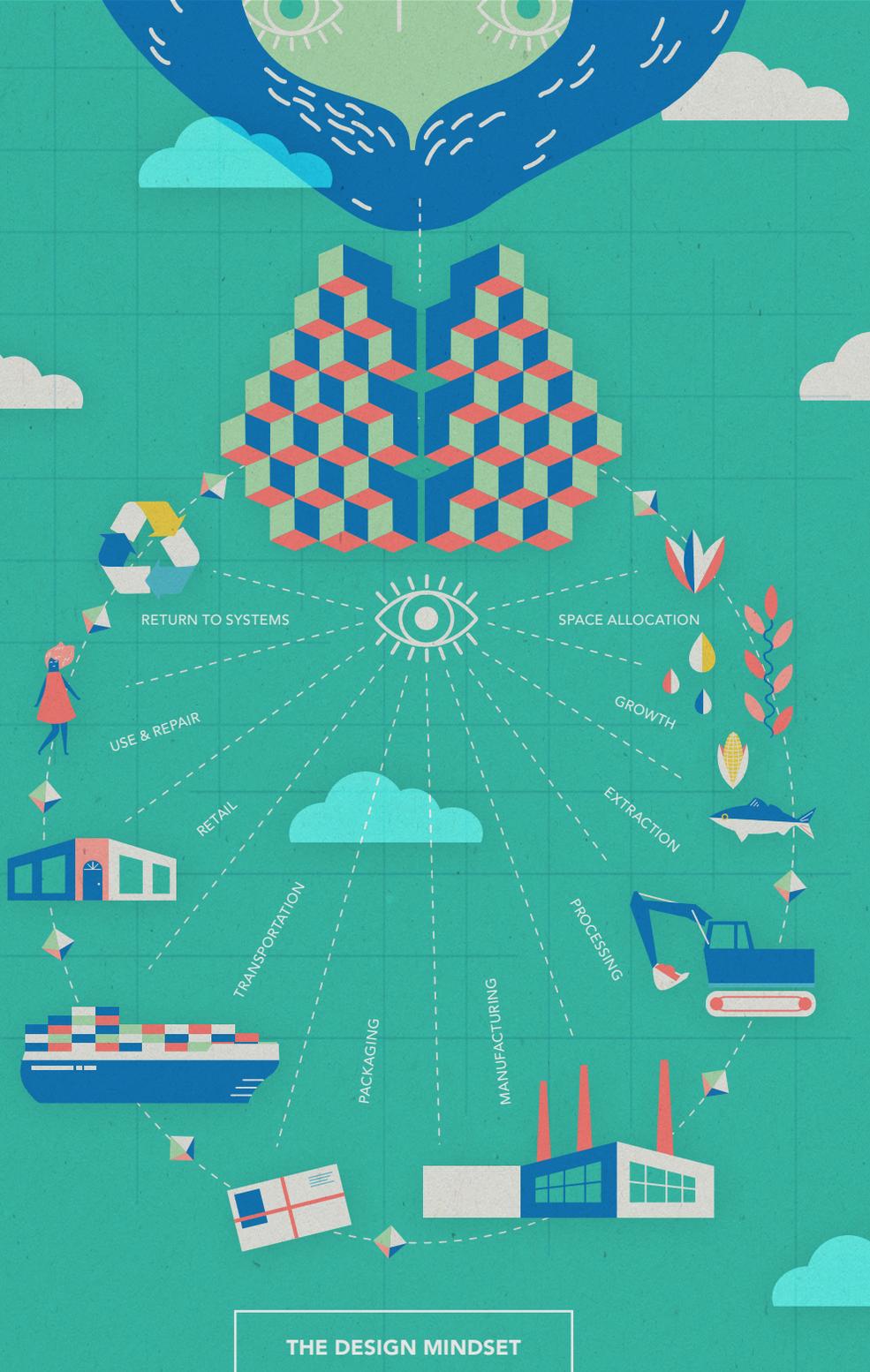
Creativity and design have helped us human beings evolve as far as we have – and they are also the secret ingredients that will help us achieve a more sustainable future.

An important part of the circular economy is being able to shift the way we deliver products to customers so that we close the loop on production.

One solution is to change business models from the linear delivery of a product to market (with zero responsibility for it at the end of its life) to a closed loop model in which recapture and reuse are designed in right from the start.

This is called a “Product Service System” model. There are many other solutions to designing for the circular economy, some of which haven’t even been discovered yet!

This requires changing the business models of linear products to circular ones, which means designing products to fit within a service delivery system.



# ACTIVITY 1

## PRODUCT TEAR DOWN AUTOPSY

### MATERIALS NEEDED

*Broken household items*  
*Scrap paper*  
*Pens*  
*Tools with which to disassemble*

The goal of this activity: Learn how products are designed by pulling apart old, broken items! Disassembly is a fascinating way to discover how things are assembled and just how recyclable something is or isn't. After disassembling, challenge yourself to figure out how to redesign the product in a more sustainable way.

### STEP 1

Collect a range of broken household or school items such as electronics, shoes or pens.

You will also need some basic tools like screwdrivers, pliers, as well as safety equipment.

### STEP 2

Form groups of 2–6 people and select one item per group. Have each group take the item apart, trying not to break it unless there is no other way of reducing it to all its component parts.

### STEP 3

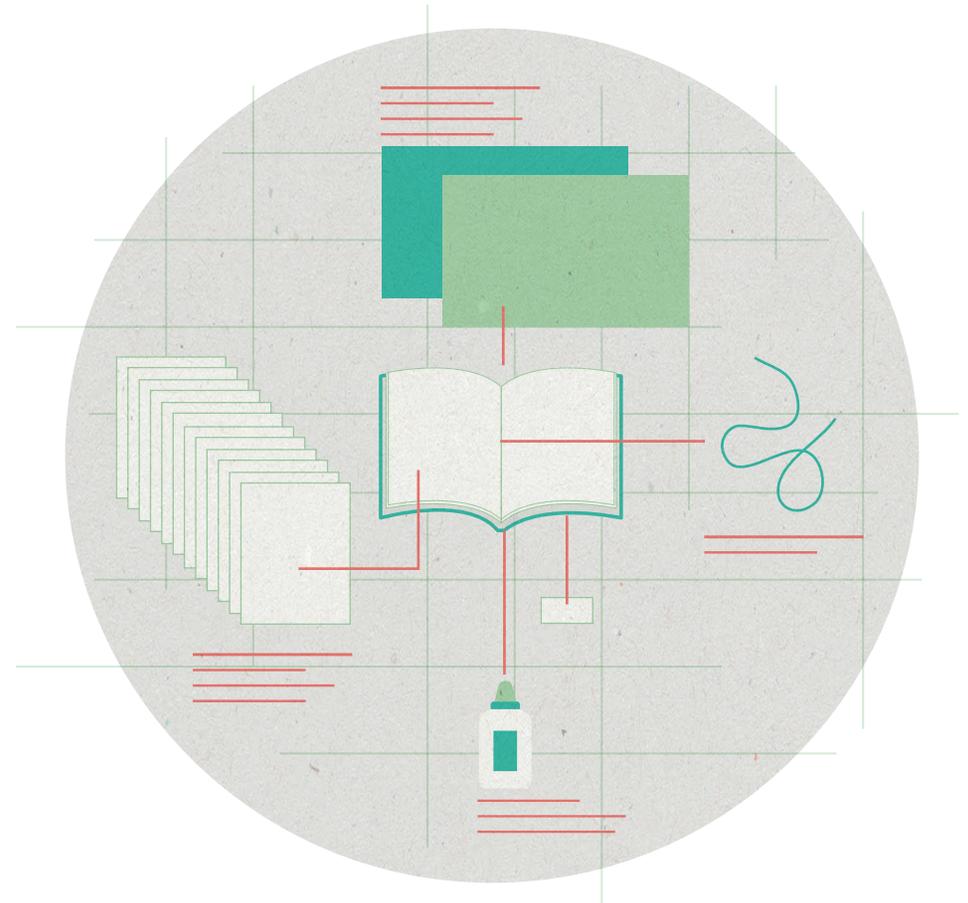
Place each part on a large piece of paper and write a note about what that part is, where it is from and how hard or easy it was to remove.

Eventually, you and your group will have a page filled with all of the object's parts, just like in an autopsy.

### STEP 4

Design an alternative to this product using sustainable design strategies, considering how you could turn this into a product service system model.

Share your group's ideas with the class.



## QUESTIONS TO CONSIDER

How easy or hard was it to disassemble your product? How does this affect the possibility of it being recycled?

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Were there any parts that were designed to make it intentionally hard to get into the product?

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How do you think the product's design and assembly affects the possibility of repairing the product?

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What errors do you think the designer made in the product's creation?

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How long do you think this product is intended to be used?

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How long do you think the components of this product will last?

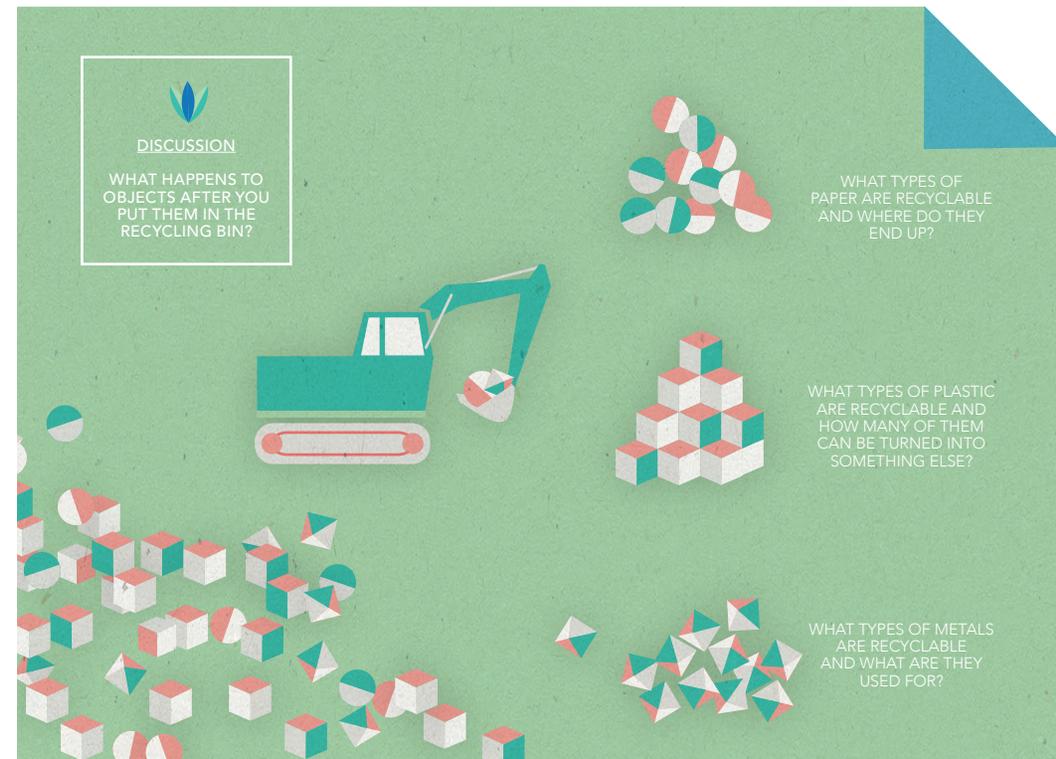
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## AFTER THE ACTIVITY

Divide all the broken items into different recycling categories (plastic, metals, etc.) and then weigh them to see how much would be actually recyclable. Make sure you find the right recycling location for the items after the activity!

See if these types of products can be recycled in your area.

Research the global e-waste recycling system and the European Union's WEEE Directive as a follow-up activity.



## ACTIVITY 2

### POST-DISPOSABLE REDESIGN CHALLENGE

#### MATERIALS NEEDED

*Project cards*  
*Scrap paper*  
*Pens*

The goal of this activity: Understand the life cycle of a product and how it can be adapted to the circular economy. This requires us to think about the end of life, and also the beginning, when functionality and material choices are being made. This challenge requires you to work in "design studio teams" to see who can solve a circular design challenge!

#### STEP 1

Divide into pairs or small groups and obtain a project card.

Come up with a team name and take 30 minutes to produce an idea based on your team's project card.

#### STEP 2

Take two minutes to pitch the idea to the other groups, acting as though you are pitching to a client, and include the following: the problem that the "client" has outlined, their idea, how it relates to the problem, and how it fits into the circular economy. Use the planning chart on the next page to work through your ideas.

## PROJECT CARDS

You are a small design studio that has been asked to design a toaster that fits within the circular economy.

You work for a large company that makes non-recyclable cell phones. Pitch your boss an idea that would enable the company to make the cell phones part of the circular economy.

You are an independent design team that wants to make fashion more circular. Design a business that helps people get hold of fashionable clothes in circular ways.

You work for a company that sells millions of bottles of water and soft drinks every day. You have to redesign the entire production line to make it more circular and reduce waste.

You work for a small furniture company that wants to be a leader in sustainable and circular household furniture at cost-effective prices. Design a range of furniture that is fully circular and stylish.

You have been commissioned by a leading sports footwear company to create a new shoe that is fully recyclable at the end of life and uses recycled materials. Design and pitch the new shoe concept.



## QUESTIONS TO CONSIDER

What other types of products do you think need to be changed into circular products?

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What products would it be hard to do this for and why?

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How can you encourage the brands and companies you like to adopt this approach?

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What do you feel about the design process?

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What will you look for the next time you make a purchase?

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Do you have any bad habits that you will try and change?

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## ACTIVITY PLANNING CHART

Group:	
Problem Statement:	
Who?	What?
Where?	How?

## AFTER THE ACTIVITY

You will have had a taste of what it's like to be a designer solving complex, real-world problems with a circular mindset and should be excited about the power of creative problem solving.

Build on this by researching real-world solutions to the problem you were given. Present the examples you found to the class.

## ACTIVITY 3

### CITIZEN DESIGNERS

#### MATERIALS NEEDED

Scrap paper  
Pens  
Internet access

The goal of this activity: Discover what type of corporate citizenship companies have or don't have and discover the power of customer feedback and active citizenship. The purpose is to learn and then take action on something you can be a part of designing better.

#### STEP 1

Choose a company from which you have purchased a product. Carry out research to find out if the company has a sustainability agenda or information available to the public on what sustainable design strategies it has adopted.

#### STEP 2

Develop a list of recommendations that the company could use to help make its products circular and lower their environmental impact.

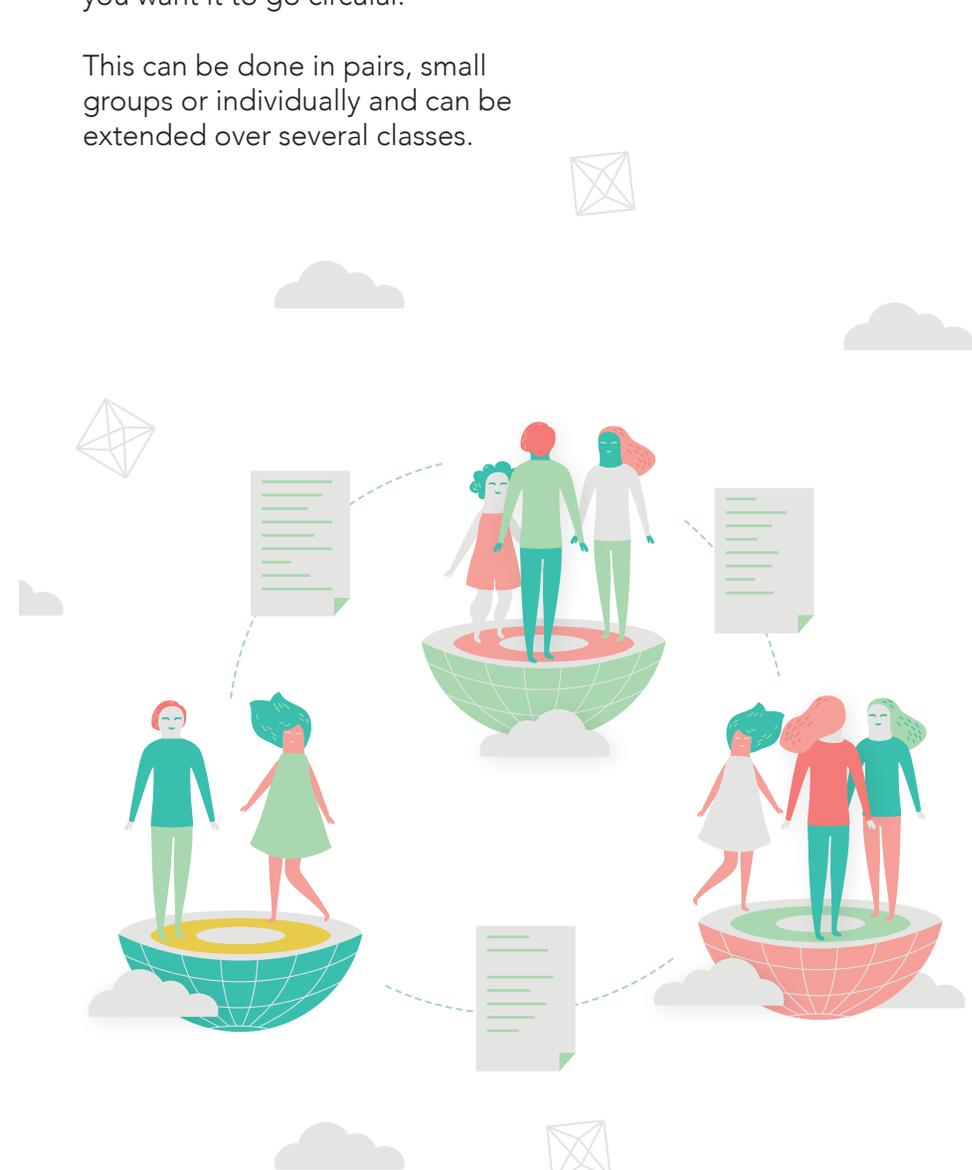
#### STEP 3

Design a way of approaching this company to submit the list of recommendations and the reasons why, as a customer, you want it to go circular.

This can be done in pairs, small groups or individually and can be extended over several classes.

#### STEP 4

Send the company a letter or engage with it on social media to flex your active citizen designer muscles and spread the word!



## QUESTIONS TO CONSIDER

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How can you take more daily actions to influence positive change?

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What is the power of active citizenship in sustainability and design?

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What role does the consumer play in influencing the goods and services we have in the economy?

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How do you think social media and other ways of public engagement affect companies?

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How can you persuade your friends and family to be active citizens?

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What other actions can you take to help bring about change?

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## AFTER THE ACTIVITY

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Follow through and check back with the company! This is about participation and seeing how small acts

can make a major impact. See what next steps you can take to extend your reach.

## ADDITIONAL ACTIVITIES

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Learn from nature

Research the Fibonacci sequence and other nature inspired design solutions, such as Leonardo Da Vinci's work. Write an essay about the ways human beings can learn from nature to design more sustainable products.

Food chain

Learn about the impact of consumption on the ocean by researching microplastics in the ocean, what causes it and what impact it is having on the food chain.

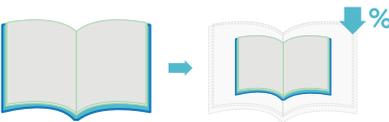
Circular Design

Carry out a research project on a designer or design agency that have used circular design to create products for the circular economy. Identify the different design strategies that they have used. Use the Design Play Cards on the next sheet to activate your thinking!

# DESIGN PLAY CARDS

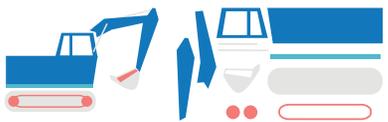
We have provided these Circular Design Play Cards to be cut out and used in your activities to help explore these different design strategies.

### DEMATERIALIZATION



Reducing the overall size, weight and number of materials incorporated into a design is a simple way of reducing the environmental impact. As a general rule, more materials result in greater impact so it is important to use fewer types of materials and reduce the overall weight of the materials you do use.

### DISASSEMBLY



Design for Disassembly requires a product to be designed so that it can easily be taken apart for recycling at the end of its life. How it is put together, the types of materials that are used and the connection methods all need to be designed to increase the speed and ease of taking it apart for recycling.

### PRODUCT, SERVICE SYSTEM



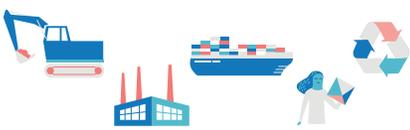
An alternative to purchasable products are leasable products that exist as part of a company-owned system or service. Leasing a product out, rather than selling it directly, allows the company to manage the product across its entire life cycle, while also reducing waste. Think about how your product could be part of a system service model.

### LONGEVITY



Longevity is about creating products that are aesthetically timeless, durable and retain their value over time so people can resell them or pass them on. Products that last longer are not replaced as frequently and can be repaired or upgraded during their life. What design changes can you make to your product to increase its useful life?

### LIFE CYCLE THINKING



Looking at all the life cycle stages a product goes through will help you identify where environmental impact occurs. Map the life cycle through extraction, manufacturing, packaging, transportation, use and end of life. Each of these stages requires resources and generates waste. Identify these in your map and find ways of reducing these stages through your design.

### REMANUFACTURE



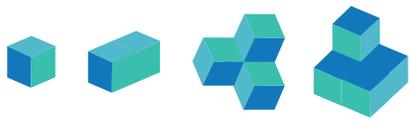
Remanufacturing is when a product is not completely disassembled, recycled or reused. Instead, some parts are designed to be reused and other parts recycled. Consider how the parts of the product, or the entire product, can be remanufactured into new usable goods in a closed loop system. It is critical to the technology sector, but works perfectly well for many other products.

### RECYCLABILITY



Consider the recyclability of all the materials you use and be careful about how they are put together so that they can be disassembled easily for recycling at the end of their life. Also, make sure there are systems in place so that the product can actually be recycled at the location at which it will end up! For it to be circular, the product has to fit within a closed loop system.

### MODULARITY



Products that can be moved and configured in different ways adapt to different spaces and uses, increasing their ability to function well. This also allows for end of life reuse scenarios as the owner can decide on how to extend the life of the product in various ways.

### REPAIR



Repair is a fundamental aspect of the circular economy. Products wear out, break and get damaged. They need to be designed to enable easy repair, upgrading and fixability. Along with extra parts and instructions on how to do this, we need systems that support, rather than discourage a repair mindset.



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