



Syllabus Focus: Stage 4 - Interconnections

Key Inquiry Questions

- What role does technology play in connecting people to people, goods, services and information in other places?
- What are the consequences of a globally connected world for people and places?

Outcomes

- GE4-2 - describes processes and influences that form and transform places and environments
- GE4-3 - explains how interactions and connections between people, places and environments result in change

When teaching the supply chain in the Interconnections unit, one way to start is to investigate each of the stages briefly to give the students a sample of what to expect using different examples. Students can define and explain each of the stages and within each stage they can start their glossary terms. It is important they are familiar with words like extraction, processing, consumption, distribution and waste. As they move through each stage they explore:

- laptops, denim jeans and chocolate in the extraction stage
- apples in the manufacturing stage
- tomatoes, salmon and paprika in the distribution stage
- they watch extracts of 'Confessions of a Shopaholic' (2009) in consumption
- they learn about dumpster diving in waste

It doesn't stop at waste. The need for the supply chain to be circular as opposed to linear means we should emphasise sustainability and look at how we can reduce waste by reducing consumption, recycling and upcycling. The case study 'Sustainable fashion hiding in my fruit bowl' looks at unique ways to combat food waste.

There are four activities to support teaching the supply chain.

1. The Supply Chain
2. Introducing Gucci's sustainable packaging
3. Sustainable fashion – hiding in your fruit bowl
4. Upcycling
The upcycling activity has student sample work included to demonstrate quick and easy ways to repurpose fashion items.

The Supply Chain

The supply chain is the journey of a product from its source to the consumer and then its disposal once used.



STAGE 1: Extracting or growing raw materials

Explanation		
INVESTIGATE – What raw materials are used to make the following products?		
LAPTOP	DENIM JEANS	CHOCOLATE

Extractive industries are responsible for half of the world's carbon emissions and more than 80% of biodiversity loss!

Resources are being extracted from the planet three times faster than in 1970, even though the population has only doubled in that time. Each year, the world consumes more than 92b tonnes of materials – biomass (mostly food), metals, fossil fuels and minerals – and this figure is growing at the rate of 3.2% per year.

Sourced from: Oxford Insight AC for NSW Stage 4 – Collins et al (2017)

STAGE 2: Manufacturing or processing

Explanation

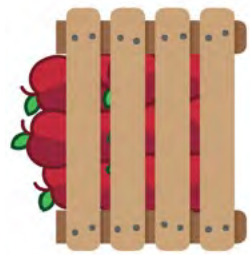
APPLES – SORTING, GRADING AND PACKING LINE

Watch Novatec's *Sorting, Grading and Packing line for Apples* at:

<https://www.youtube.com/watch?v=S6v27nUONvE>

Draw a labelled flowchart to demonstrate the process of sorting, grading and packing apples.

REMEMBER: use a lead pencil!



INVESTIGATE –

In what countries are the different parts of denim jeans made?

Cotton for jeans: _____

Cotton for pockets: _____

Synthetic indigo: _____

Denim cloth: _____

Thread: _____

Polyester fibre: _____

Thread dye: _____

Thread wound on spools: _____

Brass wire for zip teeth: _____

Brass in buttons and rivets: _____

Polyester tape for zips: _____

INTERCONNECTIONS: THE SUPPLY CHAIN

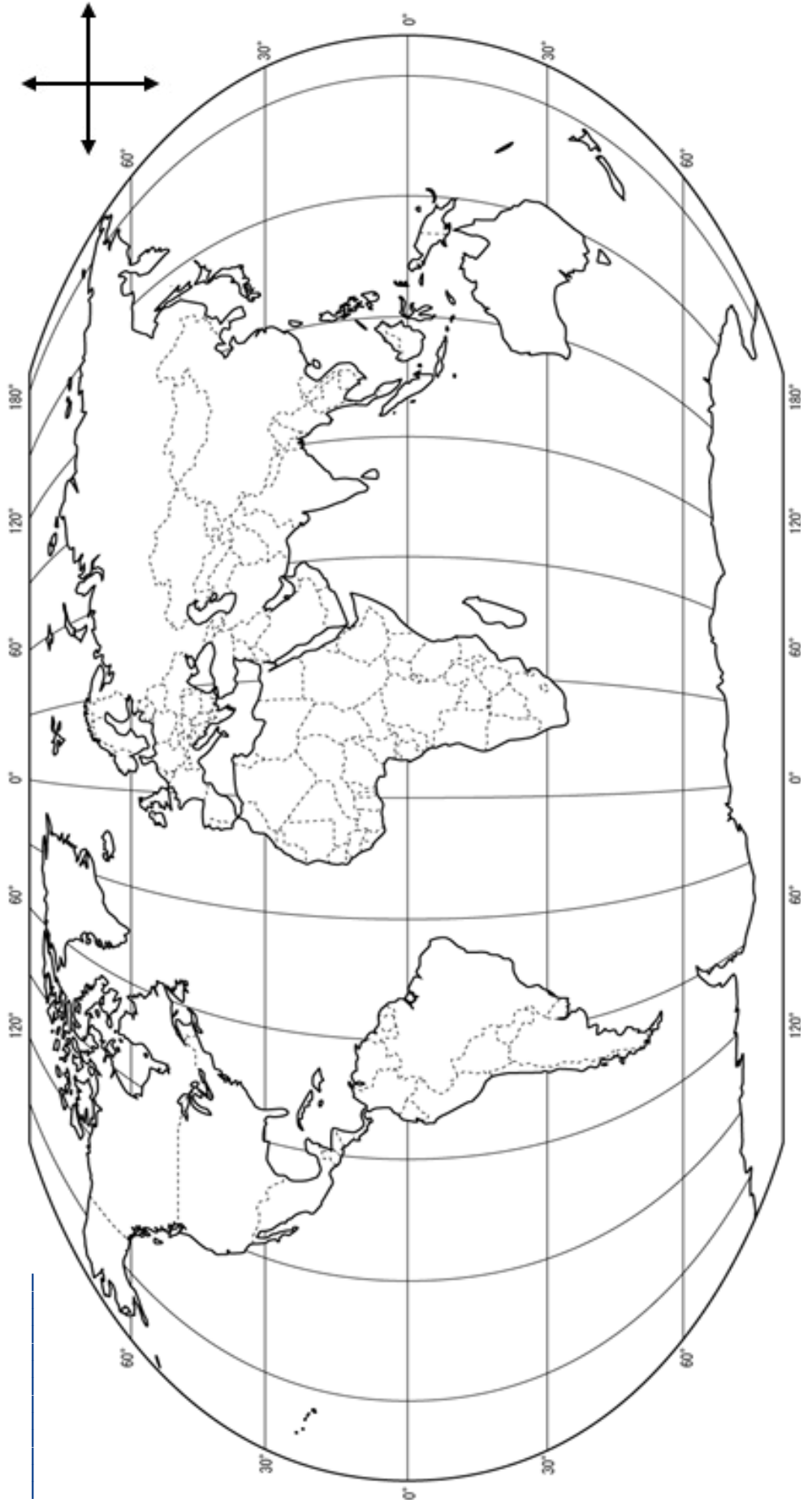
STOP AND CHECK – What does BOLTSS stand for?



Add the missing BOLTSS to the map below.

B = _____
O = _____
L = _____
T = _____
S = _____
S = _____

1 centimetre represents: _____ **I got this information from:** _____



STAGE 3: Distribution

INTERCONNECTIONS: THE SUPPLY CHAIN

Explanation

FOOD MILES

“Food miles” are the distance food travels from where it is grown to where it is ultimately purchased or consumed by the end user.



The more food miles attached to a given food, the less sustainable and less environmentally desirable that good is.

For example: For every calorie of carrot flown in from South Africa to Europe, 66 calories of fuel is spent – this contributes significantly to CO2 emissions.

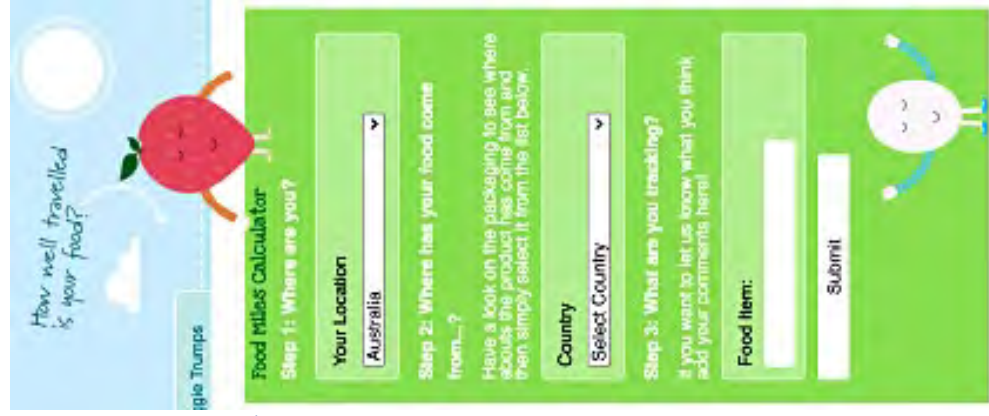
HOW WELL TRAVELLED IS YOUR FOOD?

TASK: Help Barry determine how well travelled each item on his shopping list is!



Access the “Food Miles” calculator at: <http://www.foodmiles.com/> to determine the distance each of Barry’s groceries travelled.

GROCERY ITEM	DISTANCE (KM)
Tomatoes	
Chocolate	
Maple syrup	
Salmon	
Paprika	
Rice	



STAGE 4: Consumption

Explanation

POPULATION TRENDS

WATCH: The Economist's *Mapping global population and the future of the world* at: <https://www.youtube.com/watch?v=Ur77lDetl9Q> to help you answer the following questions.

1. The world's population has doubled in four decades. How many people were there in: a) 1970? _____ b) 2017? _____
2. How many people will there be in 2030? _____
3. Describe the expected population changes for Africa and Asia by 2050.

4. On average, how many children do women in Africa have?
How does this compare to the global average?

5. "Populations are rising because people are ageing". Support this statement with quantitative data.

6. The top 10 countries with the fastest shrinking populations are all in eastern Europe. Identify three reasons for this.
i. _____ ii. _____
iii. _____
7. In 2100 it is projected that one-third of the world's total population will live in what continent? _____
8. A bigger population is a burden for three primary reasons. What are these reasons?
i. _____ ii. _____
iii. _____
9. Outline how a bigger population can also be an opportunity. _____

MOVING OUT OF POVERTY – AN EMERGING MIDDLE CLASS

Read, highlight and annotate the KEY POINTS from the passage of text below.

In 1851, Britain hosted the Great Exhibition of the Works of Industry of All Nations showcasing the art, industry, and science resulting from the fastest expansion of wealth and the largest increase in economic opportunity that the world had ever seen. This was the Industrial Revolution, a time when new technologies increased productivity in ways previously unknown.

Just as revolutionary was another change in the functioning of British society. The old world of aristocrats, craftsmen, and laborers was not suited to 19th-century business. Contracts and invoices were needed, bank loans had to be written, and lawsuits adjudicated. Government services, such as railways and post offices to serve industry, were expanded. A new occupation arose – the clerks who could pen the needed papers; their numbers skyrocketing in England from 44,000 in 1851 to over 119,000 20 years later. And since the new breed of worker needed to read, write, and understand arithmetic, as well as stay healthy enough to work regularly, teachers and nurses were needed – thereby fuelling further professional growth.

These new occupations changed economic and social structures. Neither elite nor working class, clerks and others were referred to as “the middling sort.” They saved and invested for the future, educated their children, and took responsibility for improving their lives and those of their families. As their numbers grew, they used their discretionary income to indulge in entertainment, vacations, and travel, and consumed goods of higher quality and greater variety. The Harrods store opened in 1849 selling tea and groceries to this new middle class.

And so the middle class became a consumer class, driving the economies of countries that embraced the Industrial Revolution. It ushered in an age of mass development that swept the Western world in the 20th century and is now spreading to emerging economies, especially in Asia and Latin America.

Today, this spread of the middle class across the world is one of the primary forces sustaining the global economy. In 2015, the global middle class numbered about 3 billion people who spent \$33 trillion, amounting to two-thirds of the world’s consumer spending.

Sourced from: <https://www.pewtrusts.org/en/trend/archive/summer-2016/how-a-growing-global-middle-class-could-save-the-worlds-economy>

What is the Industrial Revolution?

Describe the changing hierarchical structure of British society.

How did the “middling sort” use their discretionary income?

How much does the world’s middle class contribute to the economy every year?

WATCH: Harrods History at: <https://www.youtube.com/watch?v=Qvo5CNaRoZA>



WATCH an extract of *Confessions of a Shopaholic* (2009) via ClickView at: <https://online.clickview.com.au/exchange/videos/34360893/confessions-of-a-shopaholic> to help you complete the table



Outline the economic consequences of over-consumption for individuals	Outline the social consequences of over-consumption	Predict the environmental consequences of over-consumption
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



BLACK FRIDAY SALES VS. BUY NOTHING DAY

WATCH: The Salt Lake Tribune's Shoppers go crazy on Black Friday at: <https://www.youtube.com/watch?v=2zBWjlkKDpA>

Australian's spend \$10.5 billion on goods and services that are never or hardly ever used each year!

INVESTIGATE –

What is Black Friday?

Visit Days of the Year at: <https://www.daysoftheyear.com/days/buy-nothing-day/> to answer the following questions.

- What is it? _____
- When is it? _____
- How did it come about? _____

1. How much water is used to make:

- 1 cotton T-shirt? _____
- 1 pair of denim jeans? _____
- 1 hamburger? _____
- 1 loaf of bread? _____

2. Why has the Aral sea declined in size?

STAGE 5: Waste

Explanation

DID YOU KNOW?

Australians produce 540kg of household waste per person, each year. That's more than 10kg for every single person, every single week. Of the estimated 67 million tonnes of waste Australians generated in 2017, just 37 was recycled, leaving 21.7 disposed of in landfill. It's estimated about 130,000 tonnes of Australian plastic ends up in our waterways and oceans each year.

THROWAWAY CULTURE

INVESTIGATE – What is meant by the term “throwaway culture”?

BRAINSTORM – Sustainable alternatives for the following goods.

- a) Plastic food wrap: _____
- b) Throwaway straws: _____
- c) Disposable water bottles: _____
- d) Take-away coffee cups: _____
- e) Plastic bags: _____
- f) Paper towels: _____

PEE POWER – Recharge your mobile phone with urine.

What is in our urine that makes it worthwhile to recycle?

What is urine converted into? How is it used?

DUMPSTER DIVING

WATCH: TLC Australia's *Extreme Cheapskate's Dumpster-diving and fine dining buffets* at: <https://www.youtube.com/watch?v=eXa1Lc6Xnv8>

Would you dumpster dive? Why/why not?



WATCH: <https://www.youtube.com/watch?v=buJhuJIACx0>

Smarties becomes the first global confectionery brand to switch to recyclable paper packaging



On 26th January, 2021 Nestle announced that its popular Smarties brand is now using recyclable paper packaging for its confectionery products worldwide. This represents a transition of 90% of the Smarties range, as 10% was previously already packed in recyclable paper packaging.

Smarties is the first global confectionery brand to switch to recyclable paper packaging, removing approximately 250 million plastic packs sold globally every year. The new Smarties paper packaging is sourced sustainably and is made of a coated paper, paper labels or carton board.

Sourced from: <https://www.nestle.com/media/news/smarties-first-global-confectionery-brand-recyclable-paper-packaging>

WATCH: Nestle's Smarties in Recyclable Paper Packaging at: https://www.youtube.com/watch?v=9_KqwnftHBM

BLUEPRINTS FOR A MORE SUSTAINABLE FUTURE

Kinder Surprise is a special treat that creates little moments of surprise and delight for kids with three happy experiences in one little egg: the delicious milky taste of quality Kinder chocolate, a little toy and a big moment of surprise!



TASK: Kinder turns 50!
To celebrate, design a blueprint to make Kinder Surprise chocolate toy's more sustainable.

Blueprint:

IMAGINE A WORLD WITHOUT PLASTICS

ADVANTAGES

DISADVANTAGES

INTRODUCING GUCCI'S SUSTAINABLE PACKAGING...

What material are the shopping bag handles made out of?

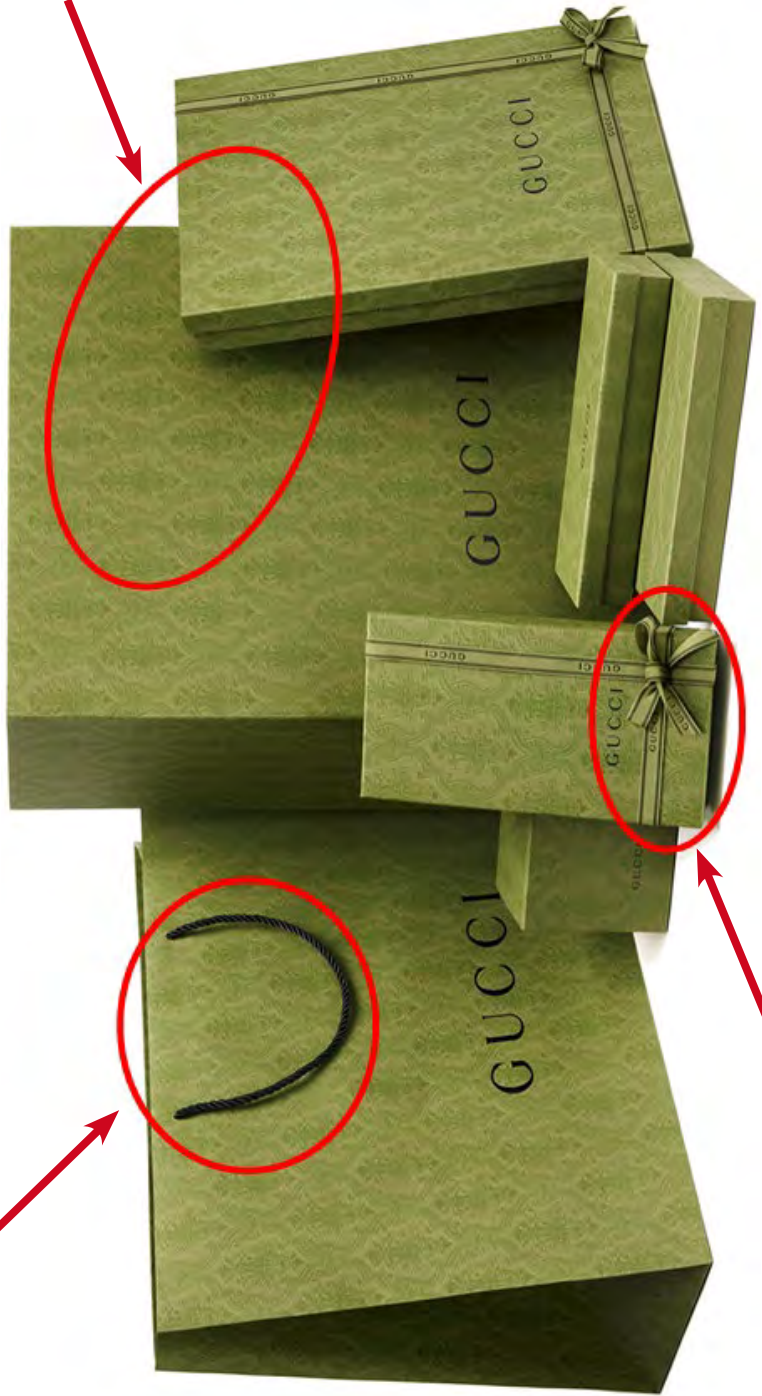
Glue is not used. How is this avoided?

Describe the packaging pattern and materials used.

Why is this sustainable?

WATCH: Gucci new packaging
at: <https://www.youtube.com/watch?v=6O2Xr2IBGAs&t=2s>

READ: Introducing Gucci's sustainable packaging at: <https://equilibrium.gucci.com/introducing-guccis-new-sustainable-packaging/>



What are the ribbons made from?

SUSTAINABLE FASHION – HIDING IN YOUR FRUIT BOWL!

WATCH: *Turning orange peels into clothes - a unique way to confront food waste at:* <https://www.youtube.com/watch?v=6yFQ2ahN8mk>

ORANGES

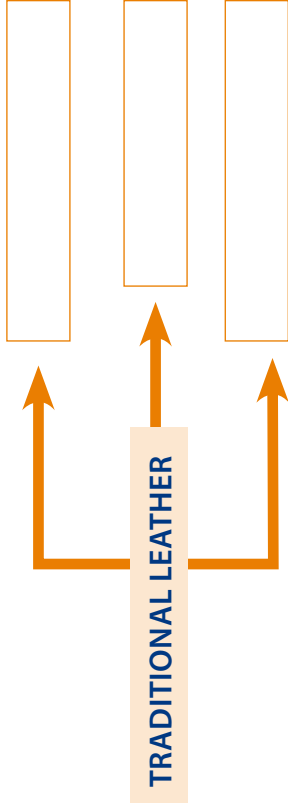
When all of the juice has been squeezed out of an orange, cellulose fibres are extracted from the peel and pulp.

The cellulose is then spun into a biodegradable yarn – it has a soft silk-like feel.

Orange Fiber in Italy, prevents 700,000 tonnes of citrus juice by-products ending up as waste!



H&M PRESENTS: *The Small Things with Ava Claire* (Episode 11) accessible at: <https://www.youtube.com/watch?v=XAWLxC-DRv4>



Make brief notes in the boxes below to explain how these fruits can be made into clothing.

GRAPES



PINEAPPLES



BANANAS

