



## Lesson Plan Secondary School ages 11-16:

We have put together some notes and facts on chewing gum, recycling, and Gumdrop in order to help get you started when teaching about chewing gum recycling. Please feel free to use and adapt any of the information provided to suit your teaching needs. Next to some of the facts there is an indication to use a visual aid/picture please find these in the separate folder 'lesson plan images', which are downloadable from the educational downloads section on our website please [click here](#)... if you so wish. If you need any more information or have any questions we would love to hear from you, contact us at [friends@gumdrop ltd.com](mailto:friends@gumdrop ltd.com)

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### Lesson Objectives:

- To understand what chewing gum is, where it came from and why it is so popular.
- To understand the problems chewing gum waste is causing.
- To understand what can now be done with waste chewing gum and why everyone should start recycling.

### What is chewing gum?

- A flavoured gum intended for chewing. It is the world's most common habit, with 100,000 tons of chewing gum being consumed every year, this is about the weight of 72,833 cars.

### History of chewing gum, where did it come from?:

- Humans have used chewing gum for about 9,000 years.
- Stone Age chewing gum was made from birch bark- this has been found in Kierikki, Finland where students were holding excavations in the summer of 2007. (pictures 1 & 2)
- Ancient Greeks also used to chew gum. The Greeks chewed a gum called mastic gum which was made from the resin from the mastic tree. Greek gum was used as a remedy for snake bites, to clean their teeth and to freshen their breath. (picture 3)
- The Indians of New England (American Indians) chewed on resin from the sap of the spruce trees to help quench their thirst. (picture 4)
- In 1848, John B. Curtis made and sold the first commercial chewing gum called the State of Maine Pure Spruce Gum. (picture 5)
- Thomas Adams however was the first man to create chewing gum as we know it when Chicle was bought over from Mexico to America in 1871. (picture 6)
- o Chicle is a natural gum that is extracted from trees and then boiled until it reaches its correct thickness.
- o Adams attempted to make many things from the Chicle for example toys, masks, rain boots, and bicycle tires, however all of these designs were unsuccessful.
- o Instead Thomas Adams put the Chicle in his mouth. Finding that he liked the taste, he added flavouring and created the first chewing gum as we would know it called Adams New York Chewing Gum= (picture 7 & 8)

- In the 1920's the popularity of chewing gum spread as people tried to mask the smell of alcohol on their breath during the prohibition (picture) /ban of alcohol.
- In America by the 1940s chewing gum was so popular that it was included in the ration kits for U.S soldiers (picture 9)
- During WWII- chewing gum was given to soldiers to relive tension and dry throats on long marches.
- It was during WWII that the popularity of chewing gum spread further than America as American soldiers traded it and gave it as presents to people in Asia, Africa and Europe. (picture 10)
- By the 1960s, chicle was replaced by butadiene-based synthetic rubber which is cheaper to manufacture and more sustainable., this is what is in our chewing gums today.

## Chewing Gum Today:

### Worldwide chewing gum:

### Chewing gum today is popular world wide...

- Chewing gum is still most popular in America, with the average American chewing around 300 sticks of gum in 1 year.  
The energy Americans expend every day when chewing gum is enough to light a city of ten million people.  
Many children consider chewing gum and bubble gum a sweet and they have a very strange choice of flavours available, for example raspberry vanilla cupcake and roast beef. (picture 11)
- In Singapore however since 2004 it has been illegal to chew gum, due to people constantly discarding of it in the wrong places, there are now large fines in place for those that chose not to conform to regulations. It can be bought from a doctor but only if the chewing gum has been prescribed, you are also made to give your details and sign for the chewing gum in a special chewing gum log book. (picture 12)
- The country with the most manufacturers for chewing gum is Turkey, there are 60 gum manufacturers there.
- In Africa various tribes accepted large quantities of bubble gum instead of sheep & oxen as payment for a wife.
- Chewing gum has even been to space, in 1964, NASA gave sugarless gum to astronauts on the Gemini space missions to help keep their teeth and gums healthy.
- In the UK we currently consume around 7.5 billion pieces of chewing gum per year that's about 935 million packs, that's a lot of chewing gum.

### So why do we chew chewing gum:

- Tastes nice
- Freshens your breath
- Improves your memory
- Reduces stress
- Improves digestion
- Booster of mental performance
- Fun

## Not intended for swallowing-what happens if you swallow it?

- It is clear that chewing gum is a worldwide wonder but that also makes it a worldwide problem, because the problem with chewing gum is that you cannot swallow it.
- There is an old wives tale that says it will take seven years for a piece of chewing gum to digest through your body if it is swallowed, however there is little truth in this, generally gum will take as much time to pass through your body as other non digestible foods.
- That does not make it good for your insides, chewing gum is non-digestible and so cannot be broken down in your body, it also has the potential on an unfortunate occasion to get stuck.

## So what do we do with it if we can't swallow it?

- Put it under a table /on a tree/ under a bar stool/on a wall ?
- But doesn't that look and feel disgusting, irresponsible chewing gum waste is ruining the places we work and live. It is also very costly for businesses and schools to try and remove. It is also very irritating for your peers, no one wants to stick in some one else's used gum.
- Throw it on the floor?
- Throwing chewing gum on the floor has serious repercussions
- It can have a serious effect on our environment, white splodges are taking over our beautiful landscapes, it looks like someone has had a terrible game of dot-to-dot all over our streets. 9 out of 10 paving stones in the UK have gum stuck on them.
- However not only does it look disgusting but it is also really bad for our environment, and wildlife that attempt to eat it, for example birds.
- It also costs our councils lots of money in their attempts to try and clean it up. The British Government spend £150 million each year cleaning gum off the UK's streets, that's the equivalent of 300 million chocolate bars or packs of chewing gum, 43,00000 tickets to Alton Towers or 33,00000 pairs of Nike trainers.
- Have you ever tried to get chewing gum off your clothes? Well it's even more difficult to get it off the streets.
- It takes chewing gum up to 5 years to biodegrade.
- On average it costs about 3p for a piece of chewing gum however it costs about 10p to clean up the average piece of chewing gum.
- And it doesn't stop there, when attempting to clean chewing gum off the streets we commonly use a combination of water and chemicals, this use of large amounts of water is unsustainable and the chemicals are bad for the environment.
- Even when councils have managed to clear gum from the street there is always an oily permanent grubby stain left behind.
- o Bins?
- o We can however, put our used chewing gum in the bin which will aid in cleaning up chewing gum litter from our streets, but this will mean it will end up in a landfill and will not be recycled.
- o Landfills are a popular way of disposing waste in the UK .
- o At landfills rubbish is simply tipped into a giant hole in the ground and buried, which is a very costly act of disposal.
- o There are over 4,000 landfills in the UK, that's approximately 111 million tons of waste.
- o Landfills however are not very good for our environment they can cause pollution to the surrounding areas and the rubbish does not decompose quickly it is simply buried and left.

## Recycling:

- Luckily for us we live in a world where it is getting easier with new technologies to recycle all sorts of things, we do this to stop it from ending up in landfills and damaging our environment.
- Recycling means taking a material that is considered waste and making it into something else. This can mean turning the old material into a new version of the same thing, or making something completely different and new from the old material.
- There are 3 main factors to think about when recycling, we call these the three R's, reduce, reuse recycle.
- In the UK recycle all sorts of things from books to bottles, clothes to cardboard we are now recycling more and more.
- The most commonly recycled materials in the UK are glass and cardboard.
- In the past ten years in the UK alone have recycled 50 billion plastic drinks bottles, that is enough, if the bottles are laid end-to-end, to stretch to the moon and back more than 10 times over.
- Recycling is an excellent way of saving energy and conserving the environment. Did you know that:
  - 1 recycled tin can would save enough energy to power a television for 3 hours.
  - 1 recycled glass bottle would save enough energy to power a computer for 25 minutes.
  - 1 recycled plastic bottle would save enough energy to power a 60-watt light bulb for 3 hours.
  - 70% less energy is required to recycle paper compared with making it from raw materials.

## Gumdrop recycling

Have you ever thought about recycling your chewing gum, now you can with Gumdrop's new technology?

- Gumdrop have designed a new bright pink bubble gum bin for you to put your chewing gum in once you have finished with it.
- Once it is full it will be collected by Gumdrop and taken back to their factory.
- There they recycle the chewing gum into a material which can then be used to make new bins.
- 1 Gumdrop full of disposed chewing gum can make up to 3 new Gumdrops.
- The process is effortless you simply need to pop your chewing gum in a Gumdrop, but the effects are enormous. Not only will you be helping the environment making your surroundings a nicer place to live and play, but you will also be saving lots of people money that they can then spend on things like parks, and schools.
- At Gumdrop they cover all 3 of the important R's, the reduce gum litter, reuse chewing to make new materials, and recycle during the process.
- You chew it Gumdrop takes it... it's as simple as that.

## Gum-tec-what will your gum become?

- It is not just more bins that can be made from the recycled chewing gum.
- Gumdrop have found a way of recycling chewing gum into various different compounds which they call Gum-tec.
- Gum-tec comes in the form of little pellets that can then be sent to manufacturers to be used in processes such as injection and blow moulding.
- These Gum-tec compounds can be used in the plastics and rubber industry as a greener alternative to plastic and rubber used in the industry today.
- Gumtec uses less oil in its manufacturing process and so is more sustainable than other products.
- It can be used to make Frisbees, sports cones, dog bowls, rulers, cookie cutters and even mobile phone covers.
- The possibilities are endless, what would you most like your chewing gum to become?

If you do not already have Gumdrops at your school and you are interested in getting involved with Gumdrop then we do offer a special schools pack for the Gumdrop bins. Please get in touch with us on [sales@gumdropltd.com](mailto:sales@gumdropltd.com) or visit the website for more information at [www.gumdropltd.com](http://www.gumdropltd.com)