## **Green Standard Schools**

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# ENVIRONMENTAL HANDBOOK FOR LANGUAGE SCHOOL MANAGERS AND TEACHERS

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## 1. Introduction

The context of the Green Standard Schools project is both clear and dramatic: the world is racing towards an environmental catastrophe that can only be halted by immediate and persistent action. Not just action on a global, geo-political scale, but action by everyone in their every-day habits and behaviours. The more people learn about the many threats to our environment, the more likely they are to modify their behaviours and persuade those around them to modify theirs. Of course learning can take place in many different contexts. Mainstream education is key, as are social networks and the more traditional media channels. But we need to take every opportunity to communicate the clear and present dangers to our environment, and language teaching organisations, whether private or public, can play an important role.

Language schools across the EU and beyond teach millions of students every year. Of course these students attend language schools primarily in order to improve their language skills, rather than learn about environmental issues, but our contention is that we can achieve both goals simultaneously. In other words, we can improve students' language skills while, at the same time, focusing their attention on environmental issues. Given the number of language students the sector has access to, the overall impact of the project over time could be significant.

The idea of including environmental themes in language classes is not new. Most course book writers and publishers now include at least one unit in their text books that focuses on the environment in one way or another. However, typically, this is only one unit out of ten or twelve, so the environment is effectively side-lined for at least 90% of the course. But the demand for more study material that focuses on the environment clearly exists. According to a survey of English language students untaken by the British Council in 2020, more than 70% of respondents said they would like their English language classes to contain more environmental topics. Similarly, our own surveys strongly suggest that a large majority of language teachers would like access to a greater volume of study materials that focus on environmental issues.

The principle objective of this project, therefore, is to develop a series of study materials designed for adult learners of English, Spanish and French, that focuses on environmental issues, while ensuring that students also make excellent progress with their language aims and objectives.

Of course it is not enough for language schools to encourage their students to lessen their impact on the environment; schools also need to practice what they preach. So we also want to persuade language school owners and managers to work towards a more environmentally sustainable future. We aim to achieve this by describing a range of policies and practices that language schools can adopt and adhere to – both inside the classroom and with regard to all their other business practices. Again, our surveys indicate that schools want to become more sustainable, and the vast majority readily acknowledge that they need help and guidance with this process.

Our project is therefore designed to overcome what behavioural economists describe as the *bystander effect,* which is the tendency to wait for others to act rather than act ourselves. We simply don't have time to wait. The environment needs all of us to act now and this project provides language schools with a lot of the knowledge, skills, and resources they need to do so.

By encouraging language school managers to modify the way they operate their institutions; by encouraging teachers to adopt more sustainable practices in their classes, and by providing teachers with a range of digital study materials designed to encourage and facilitate the systematic integration of environmental issues into adult language classes, we believe we can make a difference. This handbook, which is designed for language school managers and teachers, will explain how they can adopt more environmentally sustainable policies and practices in their schools, and suggest ways in which language learning outcomes can be achieved while focusing on environmental issues.

To begin, we will summarise some of the many environmental problems the world is currently facing. This should help reinforce the idea that action is needed now and prevarication could be extremely costly. The summary should also provide teachers with plenty of material which they can develop into their own classroom projects or lesson plans.

Environmental themes, their causes, and some possible solutions.

## 1.1. Global warming

If you haven't been in a coma for the last 10-15 years, you will have heard that global temperatures are rising and that the consequences could be catastrophic for a large proportion of life on our planet.

Just to clarify, global warming and climate change aren't exactly the same, although they are of course very closely related.

Global warming is normally defined as an increase in combined air and sea surface temperatures averaged across the globe, and over a 30-year period. Predictably enough, most land regions are experiencing greater warming than the global average, while most ocean regions are warming at a slightly slower rate.

Of course there is natural variation in global temperatures and there have been several major ice ages in the history of the earth. As recently as 12,000 years ago, huge ice sheets covered much of northern Europe and North America and sea levels were significantly lower than they are today. The key point is that these natural temperature fluctuations occurred over thousands of years, giving a least a proportion of life on the planet time to adapt to the changing conditions. Current increases in global temperatures are happening at unprecedented speed.

This increase in the pace of global warming over the last hundred years is largely due to the burning of fossil fuels. Fossil fuels include coal, oil, and natural gas, and burning them causes what is known as the "greenhouse effect" in the Earth's atmosphere.

The greenhouse effect works as follows: the sun's rays penetrate the atmosphere, but gases produced by the burning of fossil fuels prevent the heat from leaving the atmosphere. The most common greenhouse gases are carbon dioxide, methane, and nitrous oxide.

Human-induced warming reached approximately 1°C above pre-industrial levels in 2017, increasing at around 0.2°C per decade

The chart on the next page gives a clear correlation between the increase in carbon dioxide emissions and global temperatures.

These days there is an overwhelming consensus in the scientific community about global warming and its causes, although there are still some sceptics. See for example: <u>https://bit.ly/372Uw3P</u>



In December 2015 world leaders attending the UN Climate Change Conference in Paris (COP21) agreed to establish the following key goals:

- substantially reduce global greenhouse gas emissions to limit the global temperature increase in this century to 2.0 degrees Celsius, while pursuing efforts to limit the increase even further to 1.5 degrees
- review countries' commitments every five years
- provide financing to developing countries to mitigate climate change, strengthen resilience and enhance abilities to adapt to climate impacts.

The Paris agreement, which entered into force in November 2016, was supposed to be a legally binding international treatythat would oblige all signatories (over 190 countries plus the EU) to abide by its terms. Donald Trump famously announced that the USA would withdraw from the agreement, almost as soon as he was installed in the White House. Fortunately for all of us, Trump lost the 2020 election and his successor, Joe Biden, moved to reinstate the US to the Paris agreement just hours after being sworn in as president.

In November 2021, world leaders (with a few notable exceptions) met in Glasgow, Scotland, for the COP26 meeting. The prime goal of this conference was to agree a reduction of greenhouse gases, with the aim of limiting global warming to 1.5 degrees Celsius. (Most scientists agree that limiting warming to 1.5C will prevent the most dangerous impacts of global warming from happening.)

Some significant progress was made at COP26. For example, more than 140 countries, accounting for around 90% of global carbon emissions, announced a mid-century neutrality

target (China's is 2060 and India's 2070). Similarly, more than 40 countries committed to moving away from burning coal, but the world's biggest users, like China and the US didn't sign up.

At the start of the conference, the UN Environment Programme was predicting a global temperature rise of 2.7C by the end of the century. According to the International Energy Agency, the new net zero goals adopted at COP26 could reduce the prospective temperature rise this century down to 1.8C. But this assumes that all signatories will implement their reduction plans in an effective and timely manner. A study by an organisation called Climate Action Tracker predicts that an increase in global temperature of between 2.1C and 2.4C by the end of the century is a much more likely scenario. See <a href="https://climateactiontracker.org/">https://climateactiontracker.org/</a> That would be catastrophic.

## 1.2. Climate change

Climate is the average weather that occurs in a place or region over a number of years. Climate change is a shift in those average weather conditions.

As everyone knows, rapid global warming has led to a massive change in weather patterns in many parts of the world, including an increase in the frequency and scale of extreme weather events such as:

- Hotter and longer heat waves
- More persistent droughts
- More extreme rainfall events

In 2021 there were plenty of examples of each of these phenomena.

In June, a heat dome formed over northwest America causing temperatures in Lytton, Western Canada, to hit 49.6C, breaking the previous record by almost 5C. The next day most of the town was destroyed in a ferocious wildfire, fed by the extreme heat.

But exceptional heat wasn't limited to North America. In Russia, a heatwave sent temperatures soaring, matching a 120-year record. Northern Ireland broke its temperature record three times in the same week, while a new high was also set in the Antarctic continent. And on July 9<sup>th</sup> the temperature in Death Valley National Park's Furnace Creek in California hit an astonishing 54.4°C, beating the previous all-time world record for hottest reliably measured temperature set at the same location in August 2020.

As heatwaves become longer and more intense, droughts can also worsen. Less rain falls, so ground moisture and water supplies run dry more quickly. This in turn makes the ground heat up more quickly, warming the air above and leading to yet more intense heat.

By mid-July 2021, following the early summer heatwaves, more than a quarter of all US land was experiencing exceptional drought conditions.

Similarly the Mexican meteorological service reported that the country experienced around 20 percent less rainfall than normal during its dry season (from October to April). By April 2021 nearly 85 percent of the country was facing drought conditions, with most large reservoirs standing at exceptionally low levels. The mayor of Mexico City called it the worst drought in 30 years.

Meanwhile 2021 saw historic flooding in China, Germany, Belgium and the Netherlands.

Peter Gleick, a water specialist from the US National Academy of Sciences commented. "When areas of drought grow, like in Siberia and the western US, that water falls elsewhere, in a smaller area, worsening flooding, as in Germany and Belgium."

Between 12th and 18th July a stalled low pressure system dumped torrential rain on eastern Belgium and western Germany, killing 240 people and causing billions of euros worth of damage. The flood ranks as the costliest weather disaster in European history.

Then, on 20th July, over 25 inches of rain fell on the Chinese city of Zhengzhou in just 24 hours. That was more than the city's average annual rainfall. At least 347 people were killed and around 1.4 million homes or businesses damaged or destroyed.

#### 1.2.1. Some of the other consequences of climate change

Apart from the death and destruction caused by floods and forest fires, climate change is already having a major impact in many other ways.

The combination of high temperatures and prolonged drought conditions is having a devastating effect on **agriculture** in many regions of the world. Higher temperatures eventually reduce yields of certain essential crops like corn (maize), while encouraging the proliferation of pests and weeds. Changes in rainfall patterns also increase the likelihood of short-run crop failures and long-run production declines. In extreme cases, prolonged droughts can lead to the desertification of previously productive agricultural land. The United Nations Convention to Combat Desertification (UNCCD) estimates that around 12m hectares of productive land are lost to desertification and drought each year. This is an area that could produce 20m tonnes of grain annually.

Although there will be gains in some crops in some regions of the world, the overall impacts of climate change on agriculture are expected to be negative, and could threaten global food security.

According to the summary of the report of the Intergovernmental Panel on Climate Change (IPCC), published in February 2022:

Climate change will increasingly put pressure on food production and access, especially in vulnerable regions, undermining food security and nutrition. Increases in frequency, intensity and severity of droughts, floods and heatwaves, and continued sea level rise will increase risks to food security in vulnerable regions from moderate to high between 1.5°C and 2°C global warming level, with no or low levels of adaptation. At 2°C or higher global warming level in the mid-term, food security risks due to climate change will be more severe, leading to malnutrition and micro-nutrient deficiencies, concentrated in Sub-Saharan Africa, South Asia, Central and South America and Small Islands. Global warming will progressively weaken soil health and ecosystem services such as pollination, increase pressure from pests and diseases, and reduce marine animal biomass, undermining food productivity in many regions on land and in the ocean.

As agriculture becomes less viable in many regions of the world, it is extremely likely that more and more people will migrate into cities and across borders, seeking a better life for themselves and their families. **Human migration** could increase even more rapidly if sea levels continue to rise. Currently, around 900 million people (approximately 11% of the world's population) live in coastal regions and cities categorised as the Low Elevation Coastal Zone – meaning coastal areas below 10m of elevation above sea level that are hydrologically connected to the sea. This number is expected to rise to over 1 billion people by 2050.

Globally, the **sea level** has risen about eight inches since the beginning of the 20th century and more than two inches in the last 20 years alone. All the signs suggest that this rise is accelerating. There are two reasons why sea levels are rising. The first is due to the fact that water expands as it heats up and, as we've already seen, the world's oceans are absorbing heat trapped by greenhouse gases. The second, more familiar reason, is that the world's glaciers and ice sheets, located in places like Greenland and Antarctica, are experiencing a disproportionate amount of melting at an accelerated rate. The Greenland ice sheet, the world's largest, is melting four times faster than it did in 2003 and is responsible for around 20 percent of current sea level rise. The IPCC projects that by 2100, Greenland could contribute 3.1 to 10.6 inches (8 to 27 cm) to global sea level, and the melting of Antarctic ice may add another 1.2 to 11 inches (3 to 28 cm). Many coastal regions and low-lying islands will simply disappear under the waves, consuming even more agricultural land and provoking new waves of mass migration.

Increased temperatures are also bad for **human health.** In 2003 a heatwave killed around 35,000 Europeans (including 14,000 French) at a rate of 2,000 per day. In 2010 55,000 died from a heatwave in Russia, with around 700 people dying each day in Moscow.

In a startling book entitled 'The Unhabitable Earth' first published in 2019, author David Wallace-Wells cites a research paper that claims that a third of the world's population is already subject to deadly heat waves at least 20 days each year. By 2100, that third is expected to become a half, even if we manage to keep global warming below a two degree increase on pre-industrial levels.

While at least a proportion of the world's population can mitigate the effect of higher temperatures by turning on an electric fan or air conditioning unit (and most frequently

consuming yet more carbon-generated electricity) most of the rest of the world's fauna and flora have to resort to other tactics. In some cases, this means migrating to cooler regions. According to the Feb. 2022 IPCC report:

Approximately half of the species assessed globally have shifted polewards or, on land, also to higher elevations. Hundreds of local losses of species have been driven by increases in the magnitude of heat extremes as well as mass mortality events on land and in the ocean. Some losses are already irreversible, such as the first **species extinctions** driven by climate change. Other impacts are approaching irreversibility such as the impacts of hydrological changes resulting from the retreat of glaciers, or the changes in some mountain and Arctic ecosystems driven by permafrost thaw.

Ecosystems can be both remarkably fragile and remarkably resilient. But where they are fragile, the loss of a single species can have a domino effect that can wipe out a whole series of other life forms.

#### 1.2.2. What is responsible?

As we've already seen, the pace of global warming has increased rapidly over the last hundred years, largely due to the burning of fossil fuels such as coal, oil, and natural gas. Burning these fuels (as well as other carbon based fuels such as wood and rubbish) produces greenhouse gases including carbon dioxide, methane, and nitrous oxide that trap heat from the sun in the atmosphere.

The process is clearly explained on the US National Oceanic and Atmospheric Administration (NOAA) website:

Like other gases in the atmosphere, including oxygen and nitrogen, greenhouse gases are largely transparent to incoming sunlight. But unlike those gases, greenhouse gases are not transparent to outgoing heat (longwave infrared radiation), which radiates from the sunwarmed surface of the Earth day and night. Some heat escapes freely to space, but some is absorbed by greenhouse gas molecules in the atmosphere. These molecules radiate heat back into their surroundings, including back toward the Earth's surface, like the bricks in a chimney radiate heat into a room even after the fire goes out.

The mixture of greenhouse gases produced varies from year to year and from country to country, but the percentages are always broadly in line with the graph below.



Source: Global monitoring laboratory

For each greenhouse gas, a Global Warming Potential (GWP) has been calculated to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy.

Carbon dioxide, which lasts in the atmosphere for thousands of years, is used as the point of reference and has a GWP of 1.

Methane only lasts about a decade, on average, so much less time than CO2. But it absorbs much more energy than CO2, so the net effect is that its GWP is about 30 times higher than CO2

Nitrous Oxide remains in the atmosphere for around 120 years, on average, but has a GWP nearly 300 times that of CO2.

As for the CFCs or Fluorinated gases, let's just say that they are sometimes referred to as the 'high-GWP' gases.

A measure called carbon dioxide equivalent (CO2e) is used to calculate total emissions of greenhouse gases. The world currently emits around 50 billion tonnes of CO2e each year.

The following graph illustrates the source of these gases by sector (with data from 2016)



Most of this data will be familiar, but perhaps not all of it. How many people knew, for example, that traditional rice cultivation generates 1.3% of total global greenhouse gasses? This is because vegetation in the flooded fields produces methane as it rots and methane, as we have seen, is a very potent greenhouse gas.

Vast amounts of methane have been stored in the permafrost in regions like the Arctic and Siberia over millennia. One of the seriously nightmarish scenarios scientists have come up with is that global warming will lead to a melting of susceptible regions of permafrost, which will release billions of tons of methane, which will then make global warming race away uncontrollably.

Before concluding this section, we should mention that water vapour also acts as a greenhouse gas. A warmer planet means more water vapour in the atmosphere, which leads to still higher temperatures and therefore more water vapour. This leads to an increase in the number and ferocity of storms.

#### 1.2.3. Who is responsible?

The amount of greenhouse gases produced by different countries varies enormously, and can be explained by each country's population, GDP, energy mix, and so on.

The top five countries in terms of total volume are China, the United States, India, Russia, and Japan. The chart below illustrates the annual CO2 emissions of these five countries, together with those of Germany, Mexico and the United Kingdom which we have added for reference.



China's phenomenal economic growth has primarily been powered by coal, which produces around twice as much carbon dioxide as other fossil fuels.

However, if we look at CO2 emissions of the same countries per capita, the picture changes dramatically:



China is now the fifth highest producer on the list, with the United States way out in front. Similar data for all other countries is available from https://ourworldin data.org

#### 1.2.4. Climate Justice

The concept of Climate Justice defines the climate crisis as a social and political problem, as well as an environmental one. It recognises that different countries feel the effects of the climate crisis differently, and that the responsibility for the crisis rests with some countries and companies (mostly in the long-industrialised north) more than others.

Central to climate justice is an understanding that those people who have contributed least to climate breakdown are often the ones who suffer the worst of its effects, such as flooding, drought, rising sea levels and heatwaves. As the UN's website explains:

The 38 member states and 22 associate members that the UN has designated as Small Island Developing States or SIDS are caught in a cruel paradox: they are collectively responsible for less than one per cent of global carbon emissions, but they are suffering severely from the effects of climate change, to the extent that they could become uninhabitable.

The following chart indicates the total volume of CO2 produced over the last 170 years by the same eight countries that featured on the two previous charts. On this chart, the United Kingdom is fifth on the list, above both Japan and India.



#### 1.2.5. What can we do?

The number of steps we can take to reduce the greenhouse gases we are responsible for, as individual consumers, as employees and as employers, is almost endless, and it would be far beyond the scope of this document to try to list them all. But we can identify some of the key items that we can and should be working on.

#### 1.2.6. Energy consumption in our buildings

As we saw from the chart on page 11, around 17.5% of all greenhouses gas emissions are caused by using energy to heat and light our homes and workplaces. We can all do something to reduce this amount. Simple steps like replacing traditional, incandescent light bulbs with low energy LED bulbs is an obvious one. LED (which stands for light emitting diode) technology uses around 75% less energy than incandescent light bulbs, and LED bulbs also last approximately 25 times longer.

Another obvious step we can all take is to turn the thermostat in our homes and offices down one degree in the winter, then turn the air conditioning thermostat (if we have a/c) up one degree in the summer. Of course saving energy also saves money, and with the steadily rising cost of our energy bills, we should notice the difference.

One of the steps we strongly recommend is to **monitor and record your energy consumption** over time. This is a very easy to do, simply enter the consumption that appears on your bills on an Excel sheet, then add up the half yearly or annual totals. Once you know how much energy you are consuming, you can then set a target to reduce it. The target doesn't have to

be massive, a reduction for 4-5% per year is perfectly acceptable; the important point is to have a target, and to make sure that everyone in your house or workplace is both aware of it and working towards it.

There are of course innumerable other steps we can take to reduce the energy consumption in our buildings. Improving thermal insulation is an important one. Installing motion sensitive lighting in bathrooms and corridors in work places is another.

And we should also look at the energy efficiency of any electrical goods we purchase. The difference between a washing machine that rates as 'B' on the EU's energy rating system, compared to one that rates 'E', over time, will be significant. And the cost savings will also add up. (For more information on the EU's rating system visit: <u>Energy label and ecodesign |</u> <u>European Commission (europa.eu)</u>

We should also investigate what percentage of the electricity we purchase comes from renewable sources (such as wind, solar and hydro). In some countries, it's now possible to find companies that generate 100% of the electricity they sell from renewables. If this isn't the case with your electricity supplier, perhaps you should consider moving your business elsewhere. If that's not an option, you could at least try pressurising your current supplier into investing more in renewables.

In 2020, renewable energy sources made up 37.5 % of electricity consumption in the EU, up from 34.1 % in 2019. As you'll see from the chart below, there was, however, significant variation between countries. Where is your country on the chart?



There is a strong lobby supporting an increase in the amount of power generation by means of nuclear fission (and perhaps one day in the future, nuclear fusion). The arguments in favour of **nuclear power** plants are well known: once up and running they are capable of generating

large amounts of electricity without emitting any greenhouse gases. But the arguments against an increase in nuclear power are similarly well known: the sites are very expensive to build; the fuel rods they use, once spent, are highly radioactive and need to be stored very securely for thousands of years; and the plants themselves can transform the surrounding area into a highly toxic wasteland if accidents occur either as a result of human error, as in Chernobyl, Ukraine, in 1986, or through natural causes such as the earthquake and tsunami that very nearly caused the meltdown of the nuclear power plant in Fukushima, Japan, in 2011. The Fukushima accident encouraged the German government to close down its nuclear power plants, but that made the county much more reliant on imported gas from Russia.

#### 1.2.7. Energy consumption in transport.

As we've seen, in 2016 transport was responsible for over 16% of global greenhouse gas emissions, with road transport nearing 12%, and aviation nearing 2%. Perhaps unsurprisingly, the total of greenhouse gas emissions that came from the transport sector in the EU, was even higher. In 2017 it was around 27 %. So where possible, we all need to get out of our cars and use more public transport, or get on a bike. The following graph (from visualcapitalist.com) illustrates the carbon footprint of the most common forms of (long-distance) transport.

As it says on the chart, taking a train instead of a short flight could reduce your greenhouse gas emissions by around 84%. And having two passengers in a petrol driven car (instead of one) reduces the footprint per passenger by half.

As we all know, many language schools rely on students flying to their country to study with them, and benefiting from the experience of living in the county where the language is spoken. Some of these 'study abroad' schools may be able to persuade their students to use ground transport – it is relatively easy to travel by train from Paris to London (for example) if a resident from the capital of France wanted to take an intensive English course in the capital of the UK. But it's almost inconceivable that a student from Saudi Arabia (for example) would be able to get to London by any means other than flying. And it would be even more difficult if their destination of choice was Ireland, Canada, or New Zealand. The only conceivable option in very many cases, therefore to investigate ways to **offset** the greenhouse gases that are generated by flying around the world in order to study.

Fortunately, most airlines are aware of the damage they're doing to the environment and now offer passengers the opportunity to offset some or allofthe greenhouse gases generated. Some schools are also including an optional offsetting fee on their application forms, giving students the opportunity to both recognise the impact that flying has, and to do something about it.

Again, we would encourage schools to monitor and record the number of flights they are responsible for, and to calculate the volume of greenhouse gases these flights produce. They will then be able to investigate how to offset the greenhouse gas emissions that their students have not already covered.

There are several websites that have been set up specifically to hep calculate greenhouse gas emissions from flights.

There are also innumerable projects which schools can support in order to ensure that the greenhouse gases they are responsible for are offset effectively. See for example: carbonfootprint.com - Carbon Offset Projects



#### 1.2.8. Reduce, reuse, repair and source locally

It should be obvious that almost everything we purchase – both goods and services generates a carbon footprint of some description. This may not amount to very much if you're buying fruit or vegetables from your local farmer's market; or it may amount to a great deal if you're buying out-of-season strawberries that have been grown in an artificially heated greenhouse, then flown or trucked across Europe in order to reach your local supermarket before they go mouldy. So we all need to be conscious of what we're buying and where it comes from. And we also need to ask ourselves whether or not we really need whatever it is in the first place.

Reducing our consumption and sourcing locally, where possible, is important. Then we also need to consider whether we can extend the life span of certain items by repairing them rather than throwing them away, and/or giving or selling them to someone else to use when we no longer have a use for them. For example, in most counties it is obligatory for young children travelling by car to be fastened into a special car seat, designed to protect them from injury in case of accident. But children grow up and eventually they will outgrow their need for the car seat. There should then be a huge supply of second-hand child car seats on websites such as eBay. But the shops are still full of them. Perhaps this reflects the fact that we only want the very best (which generally means something brand new) for our young children. But is this sort of thinking always in the best interests of our kids?

A final note on energy generation and consumption:

One of the very few potentially positive consequences of the Russian invasion of Ukraine, could be that there is renewed impetus to move away from using fossil fuels (especially Russian fossil fuels) for our energy needs. The spike in the wholesale cost of gas and oil that followed the Russian invasion should mean that renewable energies become even more competitive, and if there is a clear financial incentive to add to the existing incentive to lower greenhouse gas emissions and slow global warming, the environmental battle will undoubtedly become easier to win. It's tragic that it took an unspeakably horrific war to speed up the transition to renewable sources of energy, but as we all know, money talks. Or rather, it shouts.

#### 1.2.9. Other ways to combat global warming

As is obvious from the chart on page 11, lessening the impact that our energy usage has on global warming is the most important undertaking we need to advance. But there are other ways that we can also make a difference.

As the chart shows, in 2016 nearly 6% of global greenhouse gases were caused by livestock and manure, both responsible for large quantities of methane which, as we've seen, is a very powerful greenhouse gas.

Grazing animals like cattle or sheep also require a lot of land (which is often cleared by burning forests), as well as huge areas of additional land to grow their feed.

According to a paper published in Nature Food in 2021, the difference in emissions between meat and plant production is huge. To produce 1kg of wheat, 2.5kg of greenhouse gases are emitted. Meanwhile a single kilo of beef creates 70kg of emissions.

So if everyone could be persuaded to **eat less meat**, the impact could be significant. We're not suggesting that everyone needs to become vegan or vegetarian, but one or two meat free days per week wouldn't hurt us, and it would make a difference.

Apart from doing our best to reduce greenhouse gas emissions, we can also take steps to help absorb the amount of carbon there is in the atmosphere.

Technology to **capture carbon** in the atmosphere then lock it away underground is developing, but we're still decades away from being able to rely on such technology to stop global warming, or even slow it down significantly. In the meantime, the best carbon capture system we have available is one nature has already provided; trees,

Through photosynthesis trees absorb carbon dioxide to produce both oxygen and wood. On average, a mature tree will absorb around 25kg of CO2 each year. For details, have a look at this website: <u>https://ecotree.green/en/how-much-co2-does-a-tree-absorb</u>

If you don't have space to plant your own trees, there are dozens of reliable projects that will do the job for you, both locally and in other parts of the world. See for example <a href="https://www.treedom.net/">https://www.treedom.net/</a> or <a href="https://www.trilliontreecampaign.org/">https://www.trilliontreecampaign.org/</a>

Alternatively you could support a Blue Carbon project. Mangrove forests, salt marshes and beds of seagrass are all highly efficient at carbon sequestration and conservation efforts are becoming more extensive. For an overview of the importance of Blue Carbon see <a href="https://www.thebluecarboninitiative.org/">https://www.thebluecarboninitiative.org/</a> or <a href="https://sustainabletravel.org/what-is-blue-carbon">https://sustainabletravel.org/what-is-blue-carbon</a>

Last but not least, lobby your political representatives to take more action faster. The window of time we have to prevent the worst consequences of global warming is closing fast. Governments need to act much faster and much more radically than they have done until now.

#### 1.2.10. Hydrogen

One reason to feel slightly more optimistic about the impact our future energy needs will have on the planet comes from the current development of energy from a hitherto unexploited source – hydrogen, which just happens to be the oldest and most abundant element in the universe. What's more, the only emission that comes from burning hydrogen is water!

Hydrogen is labelled in one of two colours: green and blue. This has nothing to do with the colour of the final product which is always the same, and always colourless. Rather the labelling comes from the ways in which hydrogen is produced. Green hydrogen comes from the process of using electricity (ideally from renewable sources) to split water (H2O) into hydrogen and oxygen – a process known as water electrolysis. Blue hydrogen comes from the chemical process of splitting natural gas into carbon and hydrogen (a process called methane pyrolysis), with the carbon being captured and stored, rather than released into the atmosphere.

The cost of producing hydrogen is still relatively high, but is expected to fall dramatically and fast and investment in production increases.

You may have noticed that hydrogen-powered cars and buses already exist. Hydrogen powered lorries, ships and planes are also being developed.

The main advantage of using hydrogen rather than batteries to power electric vehicles is that batteries are heavy and costly to produce. Refilling a vehicle with hydrogen is also as quick as refilling with diesel or petrol, and much faster than waiting for a battery to recharge. The

disadvantage is that the infrastructure needed to refuel vehicles with hydrogen is still relatively undeveloped in most countries, and certainly some way behind the roll out of electrical charging stations.

When the necessary infrastructure is in place, hydrogen powered boilers will also be able to replace oil and gas powered boilers as a source of heat and hot water; they also offer a low (or zero) carbon alternative to electrical heat pumps.

Hydrogen will also provide a solution for decarbonising many of the most energy demanding industries such as those manufacturing steel, glass, chemicals, and cars.

Alongside energy from renewable sources such as wind, solar and hydro power, hydrogen really could supply a high proportion of the world's future energy needs without increasing the volume of greenhouse gases. An interesting question to ask is: why has it taken until now to start the development of hydrogen as a clean energy source? Possible answers include: a lack of investment in the infrastructure required for development and distribution; vested interests from the fossil fuel producing countries and companies; a lack of motivation, based on an under appreciation of the impact of greenhouse gases. Or a combination of such factors. Discuss.

## 1.3. Pollution

Given the real threat to much of life as we know it that is posed by global warming and climate change, it isn't surprising that this is the issue that grabs most of the headlines. But there are plenty of other ways that humanity is damaging the environment, and chief among them is the way we are polluting the vast majority of our fragile ecosystems. In this section we will outline some of the major problems caused by pollution, and suggest ways that can all do something to help.

### 1.3.1. Air Pollution

The very air we (and every other living creature on the planet) depend on for our survival is often very toxic. According to the World Health Organization (WHO) almost all of the global population (99%) is exposed to air pollution levels that put them at increased risk for diseases including heart disease, stroke, chronic obstructive pulmonary disease, cancer, and pneumonia. The WHO estimates that the number of people who die from air pollution **each year** is around 7 million. To put this in perspective, the WHO also estimates that the total number of deaths from Covid 19 from March 2020 to March 2022 was just over 6 million. So in any one year, the total number of people who died from air pollution was almost certainly double the number of people who died from Covid-19 in that same year. And there is no vaccine against air pollution.

Among the chief air pollutants are gases such as carbon dioxide (CO2) which is emitted principally by burning fossil fuels; carbon monoxide (CO) which is primarily produced by vehicle exhausts; nitrogen dioxide (NO2) which is a product of high temperature fossil fuel combustion; and ground level ozone (O3) which is also a product of fossil fuel combustion. In

addition to the gases, microparticles (also referred to as particulate matter or PM) are tiny particles of solid or liquid suspended in the air. Sources include smoke from fires or tobacco, cement dust, and fumes from diesel motors. These microparticles are the most harmful form of pollutants due to their ability to penetrate deep into the lungs, bloodstream and brain, causing a wide range of health problems including heart attacks and respiratory diseases. The WHO designate airborne particulates as a Group 1 carcinogen. Leaving aside all the misery such diseases inflict on their victims, the cost to the world's health care system of all the illnesses caused by air pollution must be astronomical.

Air pollution is generally categorised as either ambient (i.e. outdoor) or household (indoor).

#### 1.3.2. Ambient air pollution

Outdoor air pollution is estimated to be responsible for around 4.2 million deaths per year. Some air pollution is natural and is caused by phenomena such as dust from natural sources, volcanic activity, which produces sulphur and ash particles, or smoke and ash from wild fires (which, as we've seen, are now happening much more frequently, thanks to global warming). But the biggest contribution to air pollution by far comes from man-made sources such as the burning of fossil fuels for energy production or transport, waste incineration and agricultural emissions. Even aerosols, paints and other solvents can have a significant effect.

Chlorofluorocarbons (CFCs) which are gases that were once used in and released from air conditioners, refrigerators, and aerosol sprays, mix with other gases in the stratosphere and damage the **ozone layer** which protects the earth's surface from the sun's very harmful ultra violet rays. Depleting the ozone layer can lead to skin cancer, eye disease, and can even cause damage to plants. Fortunately, CFC production was banned in developed countries in 1995 and it is estimated that the ozone layer will recover to 1980 levels by around the middle of the 21st century.

#### 1.3.3. Indoor air pollution

According to the WHO exposure to smoke from cooking fires causes around 3.8 million premature deaths each year, mostly in low- and middle-income countries. Burning fuels such as wood, coal, and dung in inefficient stoves or in open hearths produces a range of health-damaging pollutants including particulate matter, methane, and carbon monoxide. Burning kerosene in lamps also produces significant emissions of fine particles and other pollutants. Premature death can also be the result of using pesticides and other chemical sprays indoors, without proper ventilation.

#### 1.3.4. Who suffers most?

The following chart from the Our World in Data website, illustrates the total number of deaths attributed to air pollution (both outdoor and indoor) by country, in 2019.



As we might expect, countries with the large populations like Nigeria, Indonesia, India, and China, also have the highest number of deaths.

The next chart shows the death rates per 100,000 inhabitants and clearly illustrates the impact that air pollution has on populations from many of the world's least developed countries.



The good news is that the number of deaths attributable to air pollution has fallen almost everywhere in the last two decades. As the chart on the next page shows, deaths attributable to indoor air pollution have seen an impressive decline since 1990, while improvements in outdoor pollution have been rather more modest.



#### 1.3.5. What can we do?

Many of the causes of ambient air pollution such as the burning of fossil fuels for energy and transport are, as we know, also major sources of greenhouse gas emissions. Steps to reduce global warming, such as using public transport more often, or switching to a green energy provider, will therefore both contribute towards the mitigation of climate change and benefit people's health.

Monitoring the quality of the air we breathe is also something we can all do very easily these days. Websites such as the World Air Quality Index project (waqi.info) provide real-time air quality from more than 10,000 monitoring stations located all over the world.

As you can see from the screenshot below, at 2pm on 22<sup>nd</sup> March 2022, the air quality in Chiswick, UK, was categorised as moderate, with a relatively high level of very fine particulate matter; probably a consequence of being a short distance away from one of the world's busiest airports.



This is just the sort of data we need in order to pressure our politicians into introducing stricter air pollution controls.

#### 1.3.6. Water pollution

Access to clean water is essential for all life on earth. It's a major concern, therefore, that humanity is doing an excellent job of polluting water wherever it exists, whether that be as ground water, in streams, rivers, reservoirs, lakes, seas, or in oceans.

Water pollution can take various forms. It can consist of the presence of toxic substances such as oil, metals, plastics, pesticides, or industrial waste products.

It can also take the form of a change in water conditions, such as a change to the pH, increased salinity, or hypoxia (i.e. a lack of oxygen in the water).

Heat can also be a pollutant, causing stressful conditions for organisms living in the water.

Last but not least, water can also be polluted by the presence of disease-causing microorganisms (such as salmonella, cholera, or norovirus) and macro parasites (such as parasitic worms), which are collectively known as pathogens. A study published in 2017 stated that gastrointestinal diseases and parasitic infections caused by polluted water killed around 1.8 million people in 2015.

There is an almost endless variety of ways in which humanity is polluting the world's water systems. Some of the most significant are outlined below.

#### 1.3.7. Sewage

The number of humans living on our planet is fast approaching 8 billion. Little wonder, then, that human waste is the principle cause of global water pollution. Ideally, waste water from our toilets, sinks and showers is piped to special treatment facilities that reduce the amount of pollutants such as pathogens, pharmaceuticals, and other chemicals in the sewage, before discharging the treated waters back into waterways. But this doesn't always happen. According to the WHO, in 2020, 45% of the household wastewater generated globally was discharged without safe treatment and at least 10% of the world's population is thought to consume food irrigated by wastewater.

And the problem of waste water treatment isn't limited to developing countries. According to a report published by UK campaign group Surfers against Sewage, in the 12-monthy period up to 30<sup>th</sup> September 2021, water companies issued an astonishing 5,517 sewage discharge notifications, warning of pollution impacting designated bathing waters in England and Wales.

Sewerage networks are usually designed as a combined system where surface water is mixed with sewage effluent before entering treatment plants. Sewer overflows are a standard feature of sewerage networks and are there to prevent water from backing up into people's homes in the event of exceptionally heavy rainfall. Two current areas of concern are firstly, that water companies often open overflows even during normal rainfall events (to save money); and secondly, that sewage infrastructure, which is often old, can't cope with the more extreme weather events, more frequently occurring as a result of global warming.

#### 1.3.8. Industrial waste

Any industrial process that uses water produces wastewater which, if not treated properly, can contaminate local water sources with a range of harmful pollutants. Wastewater from oil refineries, paper mills, steel mills, food processing companies, chemical companies, and others, may contain harmful substances such as petrochemical compounds, heavy metals, disinfectants, or solvents.

The textile industry, which uses huge quantities of water in washing, bleaching, and dyeing processes, is said to be responsible for around one-fifth of global water pollution. According to the European Parliament's Research System (ERPS) around 2,700 litres of water is needed to make a single t-shirt. How much of this waste water ends up untreated in local streams and

rivers will depend on local standards of regulation and enforcement, but there's a reason why clothing produced in some of the world's least developed countries is so inexpensive.

#### 1.3.9. Oil spills

The largest accidental marine oil spill in the history of the petroleum industry occurred in April 2010 when the Deepwater Horizon oil rig blew up in the Gulf of Mexico. The US federal government estimated the total discharge to be around 4.9 million barrels of crude oil, which is enough to fill around 312 Olympic size swimming pools. This may however be an underestimate as reports in 2012 indicated that the well was still leaking.

Marine oil spills can also occur through ruptured pipelines or oil tanker accidents. Fortunately these are becoming less frequent, partly as a result of modifications to the International Convention for the Prevention of Pollution from Ships, introduced in 1992, that made it mandatory for large tankers to be fitted with double hulls.

The impact of oil spills on marine animals is well known through images of oil-covered sea birds, sea otters and seals. The impact on other marine life is less apparent, both from the spills themselves, and from the subsequent clean-up operations that invariably rely on chemical dispersants.

#### 1.3.10. Agriculture

Fertilisers, insecticides, pesticides, and farm animal waste are all significant contributors to water pollution. Some of the chemicals and pathogens in these substances will seep into ground water; they may also run off into local water channels during heavy rainfall. Sediments from fields can also be washed into local water channels smothering aquatic plant life and reducing the amount of oxygen in the water.

Pollution from agricultural runoff often can't be traced to a single pipe or source, and these non-specific or "nonpoint" sources of water pollution are often weakly regulated compared to specific point sources, but the results can be equally devastating. And it's often developed countries that suffer most. In March 2022 water experts from the USA announced that they had evaluated over 700,000 miles of rivers and streams across the country. Their conclusion was that half of these waters were too polluted to fish or swim in, and that agriculture was often to blame.

#### 1.3.11. Landfills

Rainwater that falls or seeps into a landfill results in the extraction of water-soluble compounds or particulate matter found in the waste, and the formation of something called leachate or "garbage soup". This presents a major threat both to the quality of groundwater, and to the wider environment if the leachate-contaminated groundwater finds its way into local wetlands or streams.

The composition of the soup varies according to the type of waste being dumped, the age and moisture content of the landfill, seasonal weather variations and so on, but it will typically contain large amounts of contaminants such as heavy metals and salts.

#### 1.3.12. What can we do?

Unless we own or manage a farm, factory or sewage works, our options are limited but that doesn't mean there is nothing we can do. We can for example:

- Ensure no toxic waste goes down our drains, e.g. by purchasing cleaning products that meet modern environmental standards.
- Ensure that we reduce the amount of waste we produce that might end up in landfills and avoid throwing toxic items like batteries into our general waste.
- Ask our water suppliers what they are doing to ensure that waste water isn't being dumped into rivers or seas.
- Lobby our political representatives to tighten legislation regarding the treatment of waste water and agricultural runoff.
- Encourage the development and protection of wetlands and marshes that both prevent flooding and act as natural water filters.
- Treat water as the very precious resource it obviously is.

#### 1.3.13. Land pollution

Land and its soils are often the final destination for all sorts of pollutants which accumulate over time. The environmental threats of these contaminants and the combinations of them are not always fully known. For example, detailed information only exists for a fraction of the several million sites estimated to carry out potentially polluting activities in the EU. But based on studies from sample sites, it is clear that land and soil pollution can have significant impacts on soil biodiversity and the health of the ecosystem, as well as on human health. Soils can also be degraded and eroded to such an extent that they leave the land virtually infertile.

Some of the main causes of land pollution include:

#### 1.3.14. Landfills and littering

In many counties solid wastes are still collected and placed in uncontrolled, open dumps. As we've seen, leachate from dumps can contaminate groundwater, and pollute nearby streams and lakes. Dumps can also produce methane, a potent greenhouse gas, which is generated by the decomposition of organic waste material.

A modern technique for land disposal of solid waste involves the construction and monitoring of sanitary landfills that are prepared with impermeable bottom liners to collect leachate and prevent the contamination of groundwater. Methane may also be collected in the landfill and recovered for use as a biofuel

Littering is still all too common. Every cigarette butt or food wrapper that ends up on the ground causes pollution by releasing chemicals and microparticles as it degrades. And, as discussed more fully below, certain plastics can remain in the environment for millennia.

#### 1.3.15. Industrial pollution and mining

Since the industrial revolution in the mid-19<sup>th</sup> century, factories have been churning out waste products of all descriptions, hazardous and non-hazardous, solid, and liquid. In 2017 an estimated 7.6 billion tons of industrial waste was produced in the USA alone. These days most

countries have legislation to regulate the disposal of industrial waste, but strictness and compliance regimes vary enormously, and enforcement of the rules is always an issue.

Clean ups of previously contaminated sites can also be problematic. The clean up of a toxic waste site nicknamed the 'Valley of the Drums' in Kentucky, USA, started in 1983 and ended officially ended in 1990. But an environmental audit of the site conducted in 2003 found high levels of Polychlorinated biphenyls (PCBs) in the surrounding soil. These compounds are so toxic that their production was banned in the US in 1978.

Mining can also have a major impact on the environment through loss of habitat, soil and water contamination, subsidence, and so on. In India is has been estimated that around 175 million hectares of land has been degraded to various degrees by mining operations. Waste material extracted from mines and piled up in unstable heaps can also be hazardous, although most countries have enacted legislation that should prevent a repetition of the Aberfan disaster of 1966, when heavy rain caused a colliery spoil tip in Wales to slide downhill engulfing a primary school and killing 109 of the children inside.

#### 1.3.16. Agriculture

Pesticides and herbicides, that are widely used to control animal and plant pests that reduce crop yields, can accumulate in the soil and are often toxic to soil organisms. Predictably, the same toxic chemicals can also accumulate in animals that eat the plants or pests that have been sprayed. According to some studies, pesticides are sometimes more harmful to the natural enemies of pests (e.g. the insects that prey on the pests), or to beneficial insects such as pollinators, than they are to the target pests themselves.

Fertilizers that contain chemicals such as nitrogen or phosphate, that are designed to boost crop growth and yields, can also have a negative impact on soil health and the microorganisms it contains. Phosphate rocks (the main source of phosphate fertilizers) also contain high levels of fluoride, which accumulates in the soil. Its effect on microorganisms or even livestock that ingests contaminated soil is not fully understood.

Inappropriate management of agricultural land (such as over-grazing or excessive ploughing) is a further source of soil degradation. According to a report by the IPCC published in 2019, soil erosion (by wind and rain) from agricultural fields is estimated to be currently 10 to 20 times (no-tillage) to more than 100 times (conventional tillage) higher than the rate of soil formation.

Number 15 of the United Nations Sustainable Development Goals has a target to restore degraded land and soil and achieve a land degradation-neutral world by 2030.

#### 1.3.17. Nuclear waste

As we have previously noted, greenhouse gas emissions from nuclear power are much smaller than those associated with burning fossil fuels. However, the consequences of accidents in nuclear power stations can be catastrophic. The Chernobyl disaster in 1986 sent large amounts of radioactive material across Europe and contaminated agricultural products, livestock and soil. Due to the accumulation of cesium-137, some mushrooms, as well as wild animals such as boar and deer that eat them, may have levels which are not considered safe for human consumption, even in countries as far away as Germany and Austria. An exclusion zone of around 490 square kilometres was set up around Chernobyl for an indefinite period. The city of Pripyat (population 48,500) was abandoned permanently.

#### 1.3.18. What can we do?

Again, unless we own or manage a farm, factory or mine, our options are rather limited, but we can for example:

- Reduce, reuse and recycle (in that order) and take special care over recycling products that include toxic compounds.
- Buy food from producers (preferably local producers) that take sustainability seriously. More and more food products feature eco-labelling and some certifications promote the use of reduced or no-tillage farming to prevent soil erosion, and aim to protect soil fertility and the environment by prohibiting the use of synthetic pesticides and fertilizers.
- Lobby local and other politicians to ensure that waste is managed properly and not simply exported to developing countries where it could be either burnt or dumped in non-sanitary landfills.
- Avoid littering and, if necessary, pick up other people's litter.

#### 1.3.19. Plastic pollution

Take a look around you. Unless you happen to be naked in the middle of a desert or tropical rain forest, you'll almost certainly be able to spot something that is either made of plastic or has a number of plastic component parts. Plastic is everywhere because it is so extraordinarily useful. Sadly, most plastics are also extraordinarily difficult to breakdown and are piling up all around us, even on remote mountains (such as Everest) and there are now huge islands of plastic floating in our oceans.

#### 1.3.20. Volume

According to the United Nations Environmental Programme website (<u>www.unep.org</u>) the scale of the problem is very large indeed. We currently produce around 400 million tonnes of plastic every year and around 300 million tonnes is dumped, 11 million tonnes into our oceans. That's the equivalent of one garbage truck of plastic dumped into our oceans every minute of every day.

The Great Pacific Garbage Patch is estimated to contain more than 2.7 million metric tons of plastic. It is also estimated to be around double the size of Texas.

A report by the Ellen MacArthur foundation predicts that if plastic pollution continues at the current rate, by 2050 the amount of plastic in the ocean could outweigh the amount of fish.

Even crustaceans tested at the ocean's deepest point, the Mariana Trench, were found to have ingested plastic.

The Marine Conservancy has predicted the decomposition rates of several plastic products in a marine environment. They estimate that a foam plastic cup will take 50 years, a plastic

beverage holder will take 400 years, a disposable nappy will take 450 years, and fishing line will take 600 years to degrade.

The amount of plastic waste on land is even greater and more concentrated than that in the water (estimates vary from between four and twenty three times as much). What's more, mismanaged plastic waste is estimated to be as high as 60% in certain regions, such as East Asia and the Pacific.

Although many countries have introduced legislation designed to phase out the ubiquity of single use plastics, there is still a long way to go. For example, we currently consume around 5 trillion plastic bags per year. That's 160,000 a second and over 700 a year for every single person on the planet. For details on how many plastic bags are being used each day, week, month and year, see <u>https://www.theworldcounts.com/challenges/planet-earth/waste/plastic-bags-used-per-year/story</u>

#### 1.3.21. Impact

Plastic and microplastic pollution in soils can have adverse impacts on microorganisms which can in turn affect soil fertility.

A study published in 2021 argues that microplastics in the soil can even alter a plant's growth. It may influence the number of leaves the plant produces, as well as its stem diameter and chlorophyll contents. It can also lead to a decrease in seed germination.

We have all seen images of sea birds and other marine animals ensnared in plastic material. In the Canadian Arctic, 87% of birds tested were found to have ingested plastics of some sort.

But did you know that you could be eating 70,000 microplastics every year?



A 2022 study published in Environment International found microplastic in the blood of 80% of people tested, and this microplastic has the potential to accumulate in human organs.

Other research has found that 95% of adults in the United States have had detectable levels of bisphenol A (BPA) in their urine. Exposure to chemicals such as BPA, have been correlated with disruptions in human fertility, sexual maturation, as well as other health effects.

BPA is just one of several potentially harmful compounds that are commonly used in the manufacturing of food packaging, bottles, perfumes, cosmetics, and many more consumer items. How severely humans are physically affected by exposure to this cocktail of chemicals is still unclear. But at least BPA has now been banned from being incorporated in the production of baby bottles in North America and the European Union.

#### 1.3.22. Solutions

The Greenpeace website lists a number of false solutions to the problem of plastic pollution including so-called **bioplastics**, which are not always as green as they seem. Many of these plastics (made from biopolymers) need to be sent to industrial composting facilities to degrade properly, and even where such facilities exist, systems to ensure that these bioplastics reach them are not always in place.

Unlike conventional petroleum-based plastics, biodegradable plastics made from Polylactic acid, or PLA, which is produced from corn starch, wheat starch, or sugarcane, do however have one major advantage. Since PLA is made from plants that absorb carbon dioxide as they grow, there's no net increase in carbon dioxide from its raw materials. A 2017 study found that switching from conventional plastic to PLA would cut U.S. greenhouse gas emissions by 25 percent.

Alternatives to plastic of all types include materials such as:

Glass – While not biodegradable, glass is inert, inexpensive, and infinitely recyclable.

Stainless steel – Durable and easy to clean, stainless steel containers can be used to store food and drink any number of times, and can even be branded with your school logo or motto.

Bamboo – a fast growing, renewable resource, bamboo can replace plastic in many household items such as drinking straws, picnic cutlery, toothbrushes, pens, and so on.


A Green Standard Schools pen made from bamboo and stainless steel (by greengiving.eu).

There are literally dozens of websites that provide suggestions on how to replace plastic items with products made from other materials. See for example:

https://www.wwf.org.au/news/blogs/10-worst-single-use-plastics-and-eco-friendlyalternatives

or

https://www.ecofriendlyhabits.com/plastic-alternatives/

## 1.3.23. Progress

On 2<sup>nd</sup> March 2022, representatives from UN Member States endorsed a resolution at the UN Environment Assembly in Nairobi to end plastic pollution and work towards establishing an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design, and disposal, and is meant to become a framework that is both international, and comprehensive.

Achieving universal approval for a resolution of this description is no mean feat; ensuring its implementation will be even harder. But sustainable models that could help reduce the volume of plastic waste are emerging. For example, the Ellen MacArthur foundation website outlines a circular economy approach to plastic pollution based on the following three actions:

• Eliminate all problematic and unnecessary plastic items

- Innovate to ensure that the plastics we need are reusable, recyclable, or compostable.
- Circulate all the plastic items we use to keep them in the economy and out of the environment

Again, this is easier said than done, but at least it provides a road map. For details see <a href="https://ellenmacarthurfoundation.org/topics/plastics/overview">https://ellenmacarthurfoundation.org/topics/plastics/overview</a>

## 1.3.24. What can we do?

Stating the obvious, we can all do our best to eliminate plastic from our lives, especially single use or purposeless plastics. And if we can't eliminate it, we can at least try to reuse the plastic items we acquire, and then recycle them effectively.

We can also lobby companies to take the necessary steps to deal with the problem. A number of huge supermarket chains have already responded to such pressure and are now selling fresh fruit and vegetables without plastic wrapping. Iceland, a UK-based supermarket, has undertaken to eliminate all plastic packaging from its own label food range by the end of 2023.

So we can provide positive feedback to companies that are moving in the right direction, and encourage the laggards to get with the game. Just imagine (for example) how many million small plastic bottles of shampoo, conditioner, and hand cream are manufactured every day to supply the world's countless hotels?. These could all be eliminated if hotels chose to replace them with soap and shampoo dispensers. It may even be a less expensive option for the hotels. And do we really want to take all those little plastic bottles home with us?

## 1.4. Biodiversity and conservation

## 1.4.1. Mass extinctions

Scientists tell us that over geological time there have been six mass extinctions on our planet. The earliest, known as the Ordovician Extinction, took place around 440 million years ago, at a time when most of the life on Earth lived in its seas. The major casualties were mostly marine invertebrates including trilobites, bivalves, and corals. The probable cause of this first mass extinction was the movement of the supercontinent Gondwana into Earth's southern hemisphere, which caused sea levels to rise and fall repeatedly over a period of millions of years, eliminating habitats and species. Changes in water chemistry may also have been a factor.

We are now living through the latest mass extinction and the cause, ladies and gentlemen, is us. The Anthropocene extinction, as it is commonly known, is happening at truly alarming speed; probably a thousand times the normal rate, according to some biologists. The main factors are habit loss, the introduction of invasive species (wittingly or unwittingly) by humans, climate change, pollution, and yes, changes in water chemistry.

The scale of the crisis becomes clear when analysing extinction rates on places such as the Hawaiian Islands and French Polynesia. For example, it is estimated that as many as 2,000 bird

species went extinct on the Pacific islands after human colonisation began a few thousand years ago. That is equivalent to almost 1/6 of the current number of bird species worldwide.

The International Union for the Conservation of Nature publishes a Red List of Threatened Species that is one of the world's most comprehensive sources of information on the current extinction risk status of animal, fungus, and plant species. According to this list, more than 40,000 species are currently threatened with extinction worldwide. That amounts to around 28% of all species assessed (nearly 143,000). The breakdown of species in danger of extinction per class is as follows:

41% of amphibians	26% of mammals
21% of reptiles	13% of birds
37% of sharks and rays	28% of selected crustaceans
33% of reef corals	34% of conifers
63% of cycads	

As dramatic as these numbers are, they are almost certainly a considerable underestimate. Scientists have estimated that there are around 8,7 million species of plants and animals in existence, of which only around 1,2 million species have been identified and described (most of which are insects). So the proportion of the Earth's species that have been assessed so far by the IUCN is very small indeed.

In a study published in *Biological Reviews* in January 2022, scientists from Hawaii and France suggested that in the last 500 years, the Earth has lost between 150,000 and 260,000 species of invertebrates. Many of these lived in single island habitats. For example, 19 species of mollusc (mostly land snails) once lived on a single island of French Polynesia called Rurutu. Despite extensive searches in the native vegetation that remains on the island, scientists have only managed to find empty shells. All 19 species are now listed as extinct.

Partly as a result of global warming and partly as a result of pollution, the amount of ocean water with little or no oxygen has increased dramatically over the last 50 years. These "dead zones" now total millions of square kilometres, roughly equivalent to the total size of Europe.

Ocean warming and acidification also threaten around 90% of the world's coral reefs, which are thought to support roughly a quarter of all marine life. Fish populations off the coast of Australia are estimated to have declined by more than 30% in the last 10 years.

According to a report published in 2019 by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, nearly one million plant and animal species are now at risk of extinction due to human activity.

In the slightly technical language of the Intergovernmental Panel on Climate Change's 2022 report (Summary for Policymakers):

Biodiversity loss, and degradation, damages to and transformation of ecosystems are already key risks for every region due to past global warming and will continue to escalate with every increment of global warming.

In terrestrial ecosystems, 3 to 14% of species assessed will likely face very high risk of extinction at global warming levels of 1.5°C, increasing up to 3 to 18% at 2°C, and 3 to 29% at 3°C.

In ocean and coastal ecosystems, risk of biodiversity loss ranges between moderate and very high by 1.5°C global warming level, and is moderate to very high by 2°C but with more ecosystems at high and very high risk, and increases to high to very high across most ocean and coastal ecosystems by 3°C.

Risk for endemic species in biodiversity hotspots is projected to at least double from 2% between 1.5°C and 2°C global warming levels, and to increase at least **tenfold** if warming rises from 1.5°C to 3°C.

## 1.4.2. Conservation

The 2022 IPCC report underlines the need to conserve 30% to 50% of the Earth's land, freshwater, and ocean areas, which is broadly in line with the 30% goal of the U.N.'s Convention on Biodiversity.

Currently, we're rather a long way from achieving that goal. Less than 15% of the world's land, 21% of its freshwater and just 8% of oceans are under some form of protection, often with "insufficient stewardship", as the IPCC report says.

This comment is echoed by the entry on Conservation in Wikipedia which says:

Protected areas in developing countries, where probably as many as 70–80 percent of the species of the world live, still enjoy very little effective management and protection.

## 1.4.3. What can we do to help?

In addition to all the points outlined in sections 1 and 2 above, suggesting ways we can help prevent further increases in global warming and pollution, there are several things we can do to help preserve the extraordinary diversity of species that share this planet with us. For example, if we have a garden, or control over any other outside space, we could rewild at least a proportion of it.

**Rewilding** is the practice of helping nature restore ecosystems back to a more natural state. It can take place on a large scale, such as when nature reserves are established, complete with a full range of autochthonous species (including predators). It can also take place on a smaller scale, such as when gardeners create wildlife friendly zones, or create bridges between gardens, allowing wildlife to move and disperse more easily.

'No-mow May' is a good example of something gardeners who have a lawn can do without any effort. In fact, the campaign specifically asks you to do nothing; just lock up your lawnmower on May 1st and let the wild flowers in your lawn bloom, providing nectar for pollinators and a refuge for wildlife of all kinds. Local councils could even save money if they could be persuaded to leave areas in parks or roadside verges to go wild. See <a href="https://www.plantlife.org.uk/uk/discover-wild-plants-nature/no-mow-may">https://www.plantlife.org.uk/uk/discover-wild-plants-nature/no-mow-may</a>

We could also consider providing financial support (e.g. by organising a jumble sale that will ensure items are recycled rather than dumped) for an organisation dedicated to conservation. Some of these organisations are well known and have a multinational reach. They include:

World Wildlife Fund for Nature (WWF) - https://wwf.panda.org/

The Nature Conservancy - https://www.nature.org/

Ocean Conservancy - https://oceanconservancy.org/

There are also dozens of other organisations that concentrate on conservation at a more local or regional level.

WWF has an impressive short video on YouTube that explains why biodiversity is important. This could be a good starting point for a lesson based on the subject. See

https://www.youtube.com/watch?v=KM0EZP5ijbA

## 1.5. Conclusion

As the opening sentence of 'The Unhabitable Earth' by David Wallace-Wells says (in capital letters):

"IT'S WORSE. MUCH WORSE THAN YOU THINK."

This may also be the impression that the previous 30 or so pages have given you. If that's the case, then we have at least given you some food for thought.

But all is not lost. The final sentence of the Afterward to the paperback edition of 'The Unhabitable Earth' reads:

"Call me crazy, or better yet naïve, I still think we can win."

So do we. We remain stubbornly optimistic that humanity will demonstrate the will to avoid the worst case scenarios that scientists are predicting. But to have any chance of restoring a sense of balance to our natural world, of putting a stop to global warming, to pollution, and to the sixth mass extinction of species, we all need to do our bit.

Which is why we decided to set up Green Standard Schools, which aims to encourage the adoption of rigorous environmental standards across the language teaching sector.

Collectively, we can make a difference. Especially if we introduce environmental themes into our language classes more frequently and more systematically.

As a motto, we could do worse than adopt the '5 Rs' of environmental sustainability:

Rethink, Reduce, Repair, Reuse, Recycle

We might also like to investigate concepts like the 'circular economy', which claims to be a systems solution framework designed to tackle global challenges like climate change, biodiversity loss, waste, and pollution.

The concept of a circular economy offers an alternative to our traditional, 'linear' economic system which has a "Take, Make, Use, Dispose" paradigm.

For further information on the idea of the circular economy see:

https://ec.europa.eu/environment/topics/circular-economy\_en

or

https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview/

We can start by thinking about how we might apply some of these ideas in our own homes and businesses. And by encouraging our students to do likewise.

## 2. Teaching environmental topics in ELT classrooms

## 2.1. Introduction

Humans impact the environment in many different ways: people keep burning fossil fuels, trees are cut down on a daily basis, consumerism has become a way of life, many species are dying out – the list is endless. Overexploitation and overpopulation, accumulation of waste and deforestation have all had a detrimental effect on our climate, soil and water quality and overall well-being of the planet, as well as human health. Consequently, there has also been a significant increase in flooding, heatwaves and other natural disasters. These calamities greatly contribute to a noticeable disparity between developed and undeveloped countries, which cannot battle the environmental crisis unaided and are usually affected the most.

Protecting the environment starts with each individual person, but unfortunately, many people are not aware of the fact. For example, there has been a lot of talk nowadays about the three r's – reduce, reuse, recycle – but how many people actually live by these rules? Furthering our education, helping others understand the importance of natural resources, biodiversity and its conservation, should be one of the primary goals of teachers who want their students to become responsible global citizens. Planting trees, conserving water and shopping wisely are just some of the examples of environmental goals anyone could achieve.

This section can be used as a guide for teachers who are willing to implement more environmentally friendly topics in their curriculum. It is divided into three parts, in which it tackles topics of global warming, pollution and biodiversity, and is accompanied by a table consisting of words and phrases that might be used at different levels. The vocabulary suggested in this table serves as a starting point for educators who are willing to be researchers and eco-warriors, and are ready to explore and dive into the array of topics that might interest and inform their students.

It should also be mentioned that the chapters on global warming and pollution offer insight into language abilities students should possess at levels A1-C2 with regard to these environmental topics. For the topic of biodiversity you can follow the same 'can do' statements for different levels described in these two chapters, but try to include words and phrases suggested under the heading mass extinctions and biodiversity conservation as well. Furthermore, each chapter consists of suggestions of sub-topics that might be covered in class at different levels, even though the majority of topics could be adapted to the level of the students you teach, depending on your choice of topic and the aim of the lesson.

Finally, the onus is on each individual teacher: you can choose an environmental day every month in order to organize activities, or one environmental week per semester, or you can simply set good examples in the classroom by recycling, talking about waste and consumerism and using long-lasting light bulbs. Everyone is advised to do their best in order to protect the planet and the classroom is definitely a good starting point for providing students with the means to achieve that. We hope the handbook will help expand the current curriculum in order to address today's global challenges and ways to deal with them.

# 2.2. Useful words and phrases

	A1 – A2	B1 – B2 low	B2 high – C1	C2
Extreme weather	too cold / too hot, a lot of rain, clouds, dry, windy, ice storm, hurricane, tornado, monsoon	freezing, boiling, damp, lightning, thunder, flood, drought, melting of glaciers	hail, blizzard, downpour, showers, scorching, humid, cyclone, dust storm, harsh heatwaves	sleet, flurries, precipitation, hurricane rips through,wreak havoc on, in the grip of severe drought, bush fires wipe out entire cities
Fossil fuels and deforestation	coal, oil, natural gas, burn fossil fuels, emissions are going up and not down, sun, wind and water are natural resources; cutting trees, plant new trees, the lungs of the planet	non-renewable resources, extract fossil fuels, combustion, add extra carbon dioxide in the atmosphere, exhaust gases, carbon dioxide concentration, solar panels, harness the power of sun and wind; removing trees from natural landscape, trees absorb carbon dioxide and release oxygen, forests play essential role in supporting life on earth, logging	reduce our dependence on fossil fuels, lessen the impact of the burning of fuels on the environment, acid rain, human- induced climate change, the planet is warming at an alarming rate, deforestation is a significant contributor to climate change	natural blanket of insulating gas, we are putting our planet in a sweatbox, agriculture and urban sprawl are the biggest driver of deforestation, eradicate emissions, increase the severity of global warming and diminish biodiversity
Food production and waste	grow food, humans keep a lot of animals for food (cows, sheep, pigs), throw away a lot of food, shops sell too much food that ends up in trash, people buy all the time	carbon footprint, methane, meat is an inefficient way of feeding people, livestock, ship – process – produce food, solve food waste problem, expiration dates, spoiled goods, low and	a lot of food remains unharvested, the illusion of abundance – grocery stores overbuy food which goes to waste, purchase in bulk, fertilizer, grasslands, reduce	cosmetically – challenged products, tangible solutions, food sustainability index, creating circular economy, provision of solution, extend

		high emissions, food decomposes and releases gases, food rots and produces methane	meat intake, food rescue, classification system	agricultural frontier, from plow to plate
wildlife	animals are losing their homes, nature is different: dry summers, warm winters, numbers of animals are going down, plants need bees and bees need plants	face extinction, habitat loss, ensure long-term survival, less pollinators means less food, plants might be available but bees aren't active, plant bee- friendly gardens	on the verge of extinction, reduced access to food and decrease in health, bee decline threatens entire eco-systems	meet environmental requirements, quickly diminishing areas, higher temperatures are changing the makeup of entire eco-systems, alter phenology
Air pollution	many people die because air is not clean, modern world uses a lot of energy that creates a lot of pollution, smoking cigarettes and driving cars make the air dirty, smog makes the air hard to breathe, choose better options for the environment	air is contaminated, biofuel is a possible solution, coal should give way to plants, fungi, insects and bacteria, inhale toxic pollutants, decrease the use of fossil fuels, exposure to the bad quality of the air we breathe, traffic related pollution, limit the use of cars, regulate pollutants in the air, laws to regulate air quality, shop with intention	particles in the atmosphere pose serious environmental and health threats, smog reduces visibility and has adverse effects on health, cause damage to your cells, combined efforts of governments, industry and individuals are necessary for the reduction of air pollution, reduce reliance on fossil fuels	smog causes respiratory distress, waste incineration, volatile organic compounds, noxious gases, dissipate in the air, energy efficient housing, greenwashing, churn out new models of products
Land and water pollution	people throw away a lot of trash from homes, schools, companies in the wrong place, farmers use too many chemicals when they grow	lessen the quality and productivity of the land, urbanization makes a significant change to the landscape, adequate garbage	the degradation of land, deforestation and soil erosion, pave the way for modern fertilizers and chemicals, sewage treatment and littering,	increasing numbers of barren land plots, landfills hamper the beauty of the city and trash mars the landscape, pollutants leech into the soil, disposal of

	plants, composting, people need to make new things from old things, dirty and unsafe water, access to clean water, save water, take short showers, pick up trash on beaches, buy a lot of clothes	collection, overuse of fertilizer chemicals, pesticides affect marine life, invisible chemicals and germs in water, oil spill, conserve water, diminish pollution, groundwater, recycled products	trash incinerators, nutrients and substances from polluted land seep into groundwater and reach lakes and rivers before getting into the ocean, residue from storms and floods	hazardous waste, oil slick, gyres
Plastic pollution	plastic is cheap to use and make, clear the ocean of plastic, fish eat plastic – humans eat fish, plastic straws and cups in fast food restaurants, throw away culture, plastic moves from rivers into the ocean	single-use plastic, disposable, decompose, large items take time to crumble into microplastics, refillable water bottle, micro-beads in cosmetics, Great Pacific Garbage Patch, vast amounts of plastic all around the planet, consumer society	plastic debris, animals get entangled in plastic waste, discarded fishing nets in the oceans and seas, a crisis with global stakes, pressing environmental issue, rivers are conveyor belts for plastic, better legislation, less consumption, minimalism	tote bags, the perks of using plastic is that it is versatile and useful in a range of amenities, oceans are no longer a pristine environment, plastic became an entrenched part of our lives, it became ubiquitous after having revolutionized our world
Mass extinctions and biodiversity conservation	all forms of life, nature helps us to be healthy and feel good, drive less, walk more, save animals, too much farming, need for food, clean water, shelter and clothes, recycle, reuse things, learn	five major extinctions, endangered species, conditions that lead to mass extinction, signs of human impact, survival of species, threaten biodiversity, climate stabilization, invasive species, maintain functioning ecosystems and a steady food supply	wipe out, anthropocene, environmental and human drivers of extinction, vulnerable species, biomes (tundra, aquatic, forest, desert, grassland), ecosystems and habitats, species' endangerment, loss in genetic diversity, environmental advocates, fundamental for the provision of ecosystem services	amphibious lifestyle, mitigate habitat loss, get to grips with environmental stressors, viability of a species, exacerbate health disparities.

## 2.3. Global warming

Human activity affects global surface temperatures by changing the Earth's radiative balance—the "give and take" between what comes in during the day and what Earth emits at night. Increases in greenhouse gases—i.e., trace gases such as carbon dioxide and methane that absorb heat energy emitted from the Earth's surface and reradiate it back—generated by industry and transportation, cause the atmosphere to retain more heat, which increases temperatures and alters precipitation patterns.

Continued global warming is expected to impact everything, from energy use to water availability to crop productivity throughout the world. Poor countries and communities with limited abilities to adapt to these changes are expected to suffer disproportionately. Global warming is already being associated with increases in the incidence of severe and extreme weather, heavy flooding, and wildfires—phenomena that threaten homes, dams, transportation networks, and other facets of human infrastructure.<sup>1</sup>

The sub-topics that are normally associated with the concept of global warming are:

- 1. extreme weather
- 2. burning of fossil fuels
- 3. food production and waste
- 4. wildlife protection

The words and phrases related to these topics can be found in the table 2.2.

Since the topic of global warming is usually only hinted at in English textbooks, we believe it should be given more prominence in light of current issues present in the world, which are direct consequences of human-induced climate change.

## CEFR levels: describing language ability

The CEFR (Common European Framework of Reference for languages) is a guideline used to describe language ability from A1 for beginners to C2 for those who have mastered a language. In this chapter we have taken the topic of global warming and explained what abilities students should possess regarding the language connected to the topic.

### At A1 and A2 level students can:

- understand and use some basic vocabulary, suggested in the table 2.2
- describe in simple terms how the environment has changed in their lifetime (*it is* warmer, there is a lot of rain, summers are very hot, people cut down a lot of trees to make products and keep animals, animals are losing their homes and similar...), talk about the food they eat and throw away on a weekly basis

<sup>&</sup>lt;sup>1</sup> <u>https://www.britannica.com/science/global-warming</u>

- respond to short audio and written texts about the consequences of extreme weather and burning of fossil fuels, about the accumulation of waste and spending habits in today's society
- make simple predictions about the future while using will / going to and comparative forms of adjectives (*The planet is going to get warmer, some parts are going to become drier, people and animals will lose their homes, it will rain more often.*)

### Lesson ideas:

### Boat schools in Bangladesh

This topic is not complicated for A2 level and it offers opportunities to revise some basic vocabulary, such as: *hot, cold, boat, transport, a lot of rain, river, blackboard, chair and similar,* as well as grammar (present simple: *During the monsoon season in Bangladesh there is a lot of rain and people cannot have a normal life. They don't go to school, but school comes to them. They study on a boat which looks like a classroom...*)

### Freeganism or dumpster diving

Similar to boat schools, this topic can reinforce a lot of vocabulary, as well as the use of quantifiers. There are many videos on YouTube that show trash tours in which you can see packaged food and revise food vocabulary, while introducing new words as well.

### At B1 level students can:

- use vocabulary suggested in the table 2.2
- understand audio or written texts about natural disasters around the world, destruction of cities and rebuilding them by using new models, food waste, carbon footprints and animal extinction
- describe their experience regarding the topics (for example, talk about how often they drive to work, how much electricity they use, if they eat too much meat, how often they go shopping, etc.)
- give reasons and explanations for their opinions and plans on how to proceed in the future

### Lesson ideas:

### Rising temperatures in the world

At this level, students might feel more comfortable while using the language so they can talk more about global warming and its consequences. While focusing on changes in temperatures, students can learn words and phrases like: *desertification, heatwaves,* 

rivers washing away people's homes, lacking the means to adapt to current situations, etc. At this level they can do simple research into areas that are afflicted the most.

### How does food waste make climate change worse?

It is always a good idea to use personal experience in order to consolidate the knowledge of language gained so far. For this purpose, students can be provided with written or audio texts on the basis of which they can work on their writing and speaking skills. Useful activities might be:

- keeping a diary: what kind of food do you eat? How much food do you waste per week?
- brainstorming: ways to have healthier habits (pairwork as an introduction into a writing or speaking activity)

### Can wildlife adapt to climate change?

Point out that it is not just humans who are affected by the changes in the weather but animals as well. Show videos of animals which have become extinct or altered their appearance in order to adapt to changes in their habitats. Make students become more independent learners and ask them to do research into animals that are typical of their region in order to discover how they have reacted to global warming.

### At B2 level, students can:

- understand the main ideas of complex texts on different areas affected by global warming and food waste
- interact with a degree of fluency and spontaneity
- explain a viewpoint on a topical issue giving the advantages and disadvantages of various options, for example do more research into climate change throughout history and analyse opposing views on how serious this topic actually is

At B2 level students are usually more fluent, which is why the focus can be on more complex spoken and written texts to which they can respond critically.

### Lesson ideas:

### George Carlin: global warming (YouTube video)

The video is appropriate only for adults since there are some swear words included. Nonetheless, it is thought-provoking and might engage students in debating different points of view.

### The diet that helps fight climate change

This topic helps students:

- learn about the ways in which we produce food which creates greenhouses gases
- become more aware of the process of preparing food
- get acquainted with the topic of vegetarianism and veganism, which, according to some, is a valid response to climate change.

Overall, it might give students the opportunity to do more research into the topic and present different sides of the argument.

### Food rescue

Nowadays, many people talk about the lack of food while a lot of food is being wasted at the same time. Two topics can be discussed in this case:

- how to live off dumpsters
- how to help the homeless, provide shelters with food and avoid food waste

When it comes to this topic, there are engaging talks and experiments provided by Tristram Stuart, campaigner and expert on the environmental and social impacts of food.

### Effects of global warming on wildlife

An interesting topic would cover reports of wild animals coming into cities, for example bears in Vancouver parks, leopards on the streets of Mumbai and wild pigs in gardens in Berlin. It offers opportunity to talk about animals that might enter students' cities in search for food, for example, wolves in Croatia. What would the repercussions be and how should we deal with them? At this level, students could also try to present their solutions to such problems after completing extensive research into animals' nature, their habitats and food habits.

### At C1 and C2 level students can:

- understand a wide range of demanding, longer texts, and recognize implicit meaning
- express ideas fluently and spontaneously without much obvious searching for expressions
- produce clear, well-structured, detailed texts showing controlled use of organizational patterns, connectors and cohesive devices
- summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation

### Lesson ideas:

All aforementioned topics can be adapted to C1 and C2 level, with greater focus on vocabulary and complex structures in speaking and writing assignments. For example, if students are talking about the topic of environmental refugees, the vocabulary they use could be to *inflict damage* instead of cause damage, *coastal communities* instead of people living on the coast, *desolate cities and uninhabitable areas* instead of abandoned cities, *cities vulnerable to flooding* instead of cities that will be drowned and similar.

At this level, students should also watch documentaries (for example, about Japan's town with no waste or David Attenborough's stories about our life on the planet). It could function well with a flipped classroom approach in which they do basic research at home and then focus on more practical activities in class, or with task-based learning. In both cases students are given the opportunity to improve their language skills, as well as become more environmentally conscious and cautious of their actions.

## 2.4. Pollution

Environmental pollution refers to the addition of any substance (solid, liquid, or gas) or any form of energy (such as heat, sound, or radioactivity) to the environment at a rate faster than it can be dispersed, diluted, decomposed, recycled, or stored in some harmless form. The major kinds of pollution are air pollution, water pollution and land pollution. Modern society is also concerned about specific types of pollutants, such as plastic pollution.

Although environmental pollution can be caused by natural events such as forest fires and active volcanoes, use of the word *pollution* generally implies that the contaminants have an anthropogenic source—that is, a source created by human activities. Pollution has accompanied humankind ever since groups of people first congregated and remained for a long time in any one place. Indeed, ancient human settlements are frequently recognized by their wastes— shell mounds and rubble heaps, for instance. Pollution was not a serious problem as long as there was enough space available for each individual or group. However, with the establishment of permanent settlements by greater numbers of people, pollution became a problem, and it has remained one ever since.<sup>2</sup>

<sup>&</sup>lt;sup>2</sup> <u>https://www.britannica.com/science/pollution-environment</u>



The major kinds of pollution, usually classified by environment, are air pollution, water pollution and land pollution. Modern society is also concerned about specific types of pollutants, such as noise pollution, thermal pollution, light pollution and plastic pollution.

## Encyclopedia Britannica, Inc./Patrick O'Neill Riley

All the major kinds of pollution (air, water, land and plastic) have catastrophic effects on the environment and human health in general. According to G. Shaddick, M. L. Thomas, P. Mudu, G. Ruggeri & S. Gumy<sup>3</sup> half the world's population is exposed to increasing air pollution, which is referred to as the silent killer, especially in Africa, where it is the second leading cause of death across the continent.

As consumerism spreads across the globe, people become increasingly reliant on cars and other forms of transportation, which leads to the depletion of natural resources. Another issue is also the accumulation of waste on land and in water due to constant production and the need to discard the old and buy new gadgets, appliances and clothes. Becoming more aware of increased consumption is the first step on this path to a more sustainable future. However, when it comes to this topic, the materials and textbooks used in schools once again prove to be quite obsolete.

Vocabulary regarding these topics is suggested in the table 2.2 – air, water and plastic pollution, but can also be combined with the vocabulary from the fossil fuels and deforestation section. The words that can be typically used across levels only serve as guidelines. They might be adapted to different levels, depending on the teacher who is preparing the lesson.

<sup>&</sup>lt;sup>3</sup> Air pollution (article ; Climate and atmosheric science), <u>https://www.nature.com/articles/s41612-020-0124-2</u>, 17 June 2020.

### CEFR levels: describing language ability

### At A1 and A2 level students can:

- understand and use some basic vocabulary, which is suggested in the table 2.2 (it is not necessary to stick exclusively to vocabulary regarding pollution; you can combine it with words related to food waste, burning of fossil fuels and wildlife, since these topics are closely connected)
- describe in simple terms what causes pollution and suggest ways to deal with this problem (in this way they reinforce the usage of present simple and present continuous and improve their vocabulary)
- respond to short audio and written texts about the consequences of polluting the environment on the planet and human health, and different ways of dealing with it (for example, composting)
- make simple predictions about the future while using will / going to

### At B1 level students can:

- use the vocabulary suggested in table 2.2
- understand audio or written texts about polluting the environment and using alternatives to plastic
- describe their experiences regarding the topics (for example, talk about the materials they use on a daily basis that are made of plastic and suggest alternatives, discuss their approach to recycling and reusing materials and similar issues)
- give reasons and explanations for their opinions and plans on how to proceed in the future

### At B2 level, students can:

- understand the main ideas of complex audio and written texts on different topics relating to pollution, recycling, the future of the oceans
- interact with a degree of fluency and spontaneity in group discussions
- explain a viewpoint on a topical issue giving the advantages and disadvantages of various options, for example do more research into greenwashing and analyse companies' advertising practices

### At C1 and C2 level students can:

- understand a wide range of demanding, longer texts, and recognize implicit meaning
- express ideas fluently and spontaneously without much obvious searching for expressions
- produce clear, well-structured, detailed texts showing controlled use of organizational patterns, connectors and cohesive devices
- summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation

#### Lesson ideas:

#### Guide to composting (A1-B1)

Composting can be quite useful if we want to reduce pollution and fertilize the ground in a natural way. The lesson on techniques of composting can be theoretically based, which means students can just watch videos or read articles, or it can also be practical, depending on the location of the school and resources.

At lower levels students can learn some basic words and instructions, such as: *mix the browns (leaves and paper) with the greens (fruit and vegetables), cut them, water them, but not too much, and put the top of the box on it and similar.* At higher levels you can introduce words such as *cardboard, straws and twigs*, and alongside *fruit and vegetables* you can introduce more complex words such as *kitchen scraps*. The word *cut* can be replaced with the word *shred* and you can use phrases like: *start with the layer of browns, then add greens, add water if needed and keep the materials damp* and similar. The topic is important and useful both for language learning and increasing awareness of natural fertilizers that do not harm the environment.

#### Reducing indoor air pollution with houseplants (B1-B2)

When we talk about air pollution, the focus is usually on outdoor pollution, but indoor pollution can be equally dangerous. It is important to make people aware of their personal space and how to prevent its contamination. Since students feel more comfortable using the language at this level, they can do research into natural remedies against air pollution and find out about plants that might improve air quality in their homes.

### Plastic pollution – search your home (A1-B2)

Give your students an assignment to think of all the products they have and use that are made from plastic. In this way, they can become more aware of the prevalence of plastic (tell them to focus on their home, school / workplace, restaurants, cinemas etc). The activity can be used to reinforce and introduce new vocabulary, which can be basic or more complex depending on the level. After the brainstorming session, students can come up with alternatives (for example, using soap instead of shower gel, beeswax wraps instead of plastic wrap and similar).

#### The life cycle of a plastic bottle, Ted Talk (B2-C2)

This Ted Talk describes the process of creating plastic bottles and three ways in which people can get rid of them. There is a lot of useful vocabulary in it, such as: *resilient material, discarded, landfill, take up space, poison eco-system, harm the wildlife, decompose, accumulation of trash in the ocean, Great Pacific Garbage Patch, animals get entangled, plastic makes animals feel full so they starve to death, non-biodegradable, microplastics* etc. It is informative and easy to understand and follow, but has to be covered in higher level classes because it uses more complex vocabulary.

Since students feel more comfortable speaking at this level, they can brainstorm ideas on how to make people more aware of the relevance of recycling, after watching the video.

## Greenwashing (A2-C2)

This topic can be explored across different levels. Greenwashing refers to advertising and public messaging certain companies use in order to appear more environmentally sustainable, while their activities actually do more environmental harm than good. At lower levels students could describe pictures of adverts in simple terms, and at higher levels they could be given the opportunity to do more research into the topic in order to unearth other examples of greenwashing. A good example (B1+ and higher) is the YouTube video *Greenwashing: A Fiji Water Story*, which presents the topic in a clear and engaging way.

## Products made from recycled plastic (B2-C2)

Students can be presented with examples of recycled products such as Bureo skateboards that are made from fishing nets discarded in the oceans and along the coast of Chile. They could do research into other similar products and present them to the rest of the class in order to improve their reading comprehension skills and their speaking skills.

## Ocean threats (B1-C1)

There are many different articles regarding the topic on the National Geographic website, where teachers can find inspiration for their lessons.

## How to pollute less: zero waste lifestyle, capsule wardrobe, a no-buy year (A2-C2)

Not many people would like to admit that consumerism and impulse buying are destroying the planet. The negative effects of consumer society include the depletion of natural resources and pollution of the Earth. Constant production, transportation, consumption and accumulation of things people don't need has started taking its toll on humanity. The suggestions below refer to ways in which compulsive shopping could be reduced and the planet preserved.

## Capsule wardrobe (A2-B2):

- refers to a selection of interchangeable clothing pieces that complement each other (37 in total)
- students could go through their clothes and accessories at home and take pictures of different combinations they could stick to, which would mean giving up on buying anything else, or you could give them pictures of clothes with the task of choosing 30 items for themselves
- in this way they can reinforce vocabulary regarding clothes and learn something new from the fashion world that helps the environment

### A no-buy year (B1-C2)

- there are many interesting videos on this topic that can be suitable for different levels and useful for reinforcing vocabulary (clothes, household appliances, commuting, groceries etc.) and improving listening comprehension skills
- being engaging and thought-provoking, they might entice students to discuss the topic more openly and improve their speaking skills while doing so

#### Why I live a zero waste life, Ted Talk (B2-C2)

• can be used as a starting point for a debate or an essay for and against

## 2.5. Biodiversity

Biodiversity refers to the variety of life on Earth – every living thing, including plants, animals, bacteria and humans. All species have evolved their distinct traits which separate them from one another and help them maintain their ecosystems. They all contribute to the overall stability of the planet. Humans are dependent on many species for their food, clothing and medicine. Biodiversity is also crucial for pollination, climate regulation, water purification and nutrient cycling. However, much of Earth's biodiversity is in jeopardy due to the human factor, such as pollution, climate change and population growth. Many species have become extinct and their habitats destroyed due to overexploitation.

Recently there has been a lot of talk on conservation and the protection of endangered species. It is argued that people will no longer be able to live on Earth without their collaboration with nature. This is why it is paramount to preserve biodiversity and take action to maintain a diverse and healthy planet.

All the aforementioned environmental problems in the handbook are threating biodiversity. Even though the Earth has always experienced changes and extinctions, today they are occurring at an alarming speed. Nonetheless, by understanding these threats to biodiversity, humans can learn about and find ways in which to manage conservation challenges. Loss of biodiversity is a serious issue and has to be tackled in the classroom if teachers want to prepare their students for the real world. People aren't always aware of the damage they are causing simply because they lack knowledge or they believe one person cannot make much of a difference. That is where the value of community comes in. Educators should teach their students to do the right thing, provide them with the means to do it, and encourage them to follow in each other's footsteps.

#### Lesson ideas:

### Animal habitats (A2-B1)

The topic can be presented as a game: students have to match animals and their habitats (mountains, grasslands, polar regions, wetlands, rainforest, desert, marine) and explain why these areas suit them. It can be used to learn and reinforce animal words and vocabulary related to their life cycle.

### Coming: The Sixth Mass Extinction?, Commonlit article (B1 high)

The article explains how humans rely on diverse species of plants and animals. The grammar is fairly simple (present simple and continuous / past simple), whereas vocabulary fluctuates between simple and more complex, but contains useful phrases and expressions such as: within a short period of time, mark the boundaries, fossils and rock layers, provide oxygen for us to breathe, diverse range of species, highlight the potential, lessen the risks and similar. It also includes reading comprehension questions, as well as discussion questions, and might inspire teachers to adapt the article to lower and higher levels.

### YouTube: Google Earth Hero – Chief Almir and the Surui tribe of the Amazon (B1-B2)

The video shows the importance of knowledge and collaboration, while emphasizing the benefits of using technology in order to alert the authorities of illegal logging. It can encourage students to start believing that everyone can do something for the well-being of the planet, if they find the right means. Teachers can use the video on this topic, or they could create an article about Google Earth and the indigenous tribes in order to make students aware of the problem of deforestation, while introducing collocations and grammar points they see fit in a particular unit they introduce the topic in.

### Ted Talk: What the people of the Amazon know that you don't (C1-C2)

The talk is given by ethnobotanist Mark Plotkin, who shifts the focus from the endangered species in the rainforest to the isolated and uncontacted tribes of the Amazon who possess the knowledge of plants, animals and drugs that Western medicine doesn't have access to. While doing so, he outlines the perils that are endangering them and urges us to protect them and their knowledge. It can lead to a discussion regarding bringing 'civilisation' to these uncontacted peoples, and debate on the ever-present desire people have to conquer the planet and impose one way of living on everyone. It can also be combined with studying phrasal verbs (die out, wipe out, crack down on, cut down, come up against...) and word formation (deplete – depletion, legislate – legislation, rehabilitate – rehabilitation and so on).

## 2.6. Conclusion

The chapter is divided into five parts. In the introduction we have explained the importance of environmental topics in the context of this global human-induced crisis. The second section deals with the topic of global warming; the third section delves into

the problem of pollution; and the fourth section talks about biodiversity and conservation of the planet. Useful vocabulary regarding these topics and sub-topics is suggested in the table following the introduction, and each section offers subject matter that might be covered in class.

It is important to emphasize that the chapter has only touched upon some of the major issues that should be included, explained, discussed and investigated in today's lesson plans. No one can deny the fact that the planet is falling apart and that each individual is accountable for their actions that cause damage to the only home humans have for now. That is why it is crucial to inform and educate both children and adults, who ought to be responsible citizens of the world with a strong sense of community and initiative.

Finally, we would like to accentuate that the chapter (and this Handbook in general) can only serve as a guide and source of inspiration to teachers and educators, who should feel free to do their own research into the topics that might interest their students and make them more environmentally friendly.

## 3. Methodology in GSS classrooms

## 3.1. Introduction

A knowledge of the different teaching methodologies and approaches most frequently associated with second language learning, together with a knowledge of the principled ideas behind the techniques and types of materials associated with each methodology and approach, will help us develop the project's study materials and lessons plans in order to best meet the pedagogical needs of our learners. It should also enable our teachers to consider how they can best help their students both to learn most effectively and develop a range of essential study skills.

It is worth investigating the different methodologies and approaches which have been popular over the years to examine the types of procedures, rationales, and influences they have on language teaching methodology today. There are methods that take the position that languages have to be learned through instruction while, at the other extreme, there are methods that take the view that languages can only be acquired in the same way a person's first language is acquired. There are also other methodologies which lie somewhere along the cline between learning and acquisition. For the purpose of the project we will start by examining the different language teaching and learning methodologies and approaches which have been popular at different times, and then select the ideas and techniques from these methodologies and approaches which may be of most relevance to the development of our study materials and lesson plans.

Even a brief examination of different second language teaching methodologies and approaches will help us make informed decisions on ways to:

- Decide what kind of materials are most appropriate and useful
- Plan lessons appropriately
- Select the most relevant materials and resources, e.g. reading, listening and video texts
- Decide how best to exploit reading and listening and video texts to help learners develop essential receptive subskills
- Decide how best to exploit materials to help learners develop essential speaking and writing sub-skills
- Focus on ways to help learners practice essential areas of grammar, lexis and phonology
- Consider effective teacher interaction techniques
- Help learners develop effective learning strategies.

Nunan (1991) talks about what he calls the pendulum effect in language learning, where different methodologies of language learning come into and go out of fashion. However, many of the ideas behind different methodologies, as well as the techniques and

materials used, do not necessarily go out of fashion, but continue to be used to design study materials and plan and teach lessons in a principled way.

While we may take inspiration and ideas from several of the most famous language teaching methodologies and approaches, we will focus particularly on the following:

- Communicative approach
- Task Based/Project Based approach
- Content and Language Integrated Instruction

These approaches are based on the concept that communication, collaboration, and content take priority over the study of discrete language forms, focusing on the use of authentic materials, communicative tasks, and the type of functional language needed in order to complete different tasks.

We will then look at approaches to developing writing skills, examining the product and process-based approaches, developing an argument for a process-genre approach to writing (following Badger and White, 2000). We will also examine research into classroom interaction and focus on the sort of effective classroom interaction that will help promote learning opportunities for our learners. We will also look at the use of technology in the classroom to enhance the learning experience, which will, at the same time, support the environmental and sustainability themes of our project.

Finally, as our project involves the use of both pre-produced and our own produced videos, we will focus on the use of video and short films in the classroom.

## 3.2. Teaching methodologies and approaches

We start by examining various methodologies and approaches which have been popular at different times, and selecting some of the ideas from these approaches which we can most readily incorporate into our project's outcomes.

## 3.2.1. Grammar-translation Method

This method originated in the nineteenth century and its main focus is on the analysis of formal, literary texts and individual sentences, with a detailed analysis of the grammar of the language in the texts. The primary skills to be developed are reading and writing, with very little focus on speaking or listening. There is some focus on lexis and a little on pronunciation. With this method, the main purpose of learning a language is to be able to read literature written in the given language, and to translate each language into the first language of the learners. There is a deductive approach taken to the study of grammar, that is, the teacher explains the rules to the students and students then practise the language using these rules. The teacher's role is that of leader and the role of the students is primarily a passive one. In other words, they take knowledge from the teacher and do not produce any language themselves which is not already in the lesson. Memorisation is used to focus on grammar and lexis.

This method was used in schools in Europe until recently and it is still widely used in different parts of the world. Strong influences are still in evidence today. For example, many of the course books used in schools and language centres around the world are based around a grammar-heavy syllabus

Some ideas from the Grammar-Translation Method for our project:

- Memorisation
- Translation
- Practice with synonyms/antonyms
- Composition writing
- Lexis lists

## 3.2.2. Direct Method

This method was first adopted by Berlitz schools in the 1970s. With the Direct Method, no translation is allowed and meaning is conveyed directly in the target language through the use of demonstration and visual aids. The focus is on the spoken language and the importance of correct language production. Associations are established between language items and their referents, and visuals and realia are employed to avoid use of the learners' first language (L1). Although the teacher directs the class activities, the student role is somewhat less passive than with the Grammar-Translation Method. The teacher and the students are partners in the teaching–learning process. Teachers who use the Direct Method believe students need to associate meaning with the target language directly. In order to do this, when teachers introduce a new target language word or phrase, they demonstrate its meaning through the use of aids such as realia, pictures, or mime. Students speak in the target language a great deal, for example by practicing the language used in different situations. There is an inductive approach to the teaching of grammar. In other words, students are presented with examples, and they work out the rule or generalisation from the examples given.

Some ideas from the Direct Method for our project:

- Inductive approach to grammar and lexis focus
- Student-teacher partnership in the learning process
- Students self-correct
- Conversation practice
- Fill-in-the-blanks tasks
- Dictation
- Map drawing

### 3.2.3. Audio-lingual Method

The Audio-Lingual Method is also an oral-based approach where the use of L1 is generally avoided. However, it is different from the Direct Method in that the Audio-Lingual Method drills students in the use of grammatical sentence patterns. This method has a strong theoretical base in linguistics and psychology. Charles Fries developed this method in the 1940s by applying principles from structural linguistics. Principles from

behavioural psychology (Skinner 1957) were also incorporated at a later stage. With this method, it is thought that the best way to acquire the sentence patterns of the target language is through conditioning. Learners are trained to respond correctly to stimuli through repetition and reinforcement, so that they can overcome the habits of their L1 and form the new habits required to be speakers of the target language. This method was popular in the 1950s and it is now becoming popular again with applications such as *Duolingo*.

Elements of the Audio-Lingual method have continued to influence language learning research. As Thornbury, (2015) notes:

"...developments in corpus linguistics have reinforced the view that language is both intricately patterned and remarkably formulaic. This suggests that the memorisation of prototypical examples of patterns and also of commonly-occurring formulaic 'chunks' may benefit both fluency and the acquisition of grammar."

Some ideas from the Audio-Lingual Method for our project

- Dialogue memorization
- Types of drills, e.g. chain drills, substitution drills, backward build up drills
- Minimal pair practice
- Dialogue completion
- Grammar Games

## 3.2.4. The Silent Way

This method was developed by Caleb Gattegno in the 1960s. Gattegno examined the idea that "Teaching should be subordinated to learning", that is, teaching serves the learning process rather than dominating it. Gattegno studied the way babies and young children learn their L1 and concluded that learning is a process which we initiate ourselves, by mobilising our inner resources, such as our perception, awareness, cognition, imagination, intuition, and creativity, etc. With this approach, the teacher gives as much help as is necessary and then is silent. For example, they model a language structure and then leave students to practice the structure themselves. Even in error correction, the teacher will only supply a verbal answer as a last resort.

Some ideas from The Silent Way for our project:

- Peer correction
- Self-correction
- The use of Cuisenaire rods to practice language or develop situations
- Peripheral learning charts and posters on the wall
- Language feedback
- Students learn how to take responsibility for their own learning

## 3.2.5. The Natural Approach

This approach was developed by Krashen and Terrell in the 1980s and it shares certain features with the Direct Method. Emphasis is placed on how students can develop

communication skills through exposure to 'comprehensible input', that is, language which is placed slightly above a student's current level (i+1). Meaning is given priority over form and vocabulary acquisition is important. Students listen to their teacher using the target language communicatively. They do not speak at first, but only when they are ready to communicate. The teacher helps students to understand through the use of pictures and occasional words in the students' native language and by being expressive. It is thought that if the teacher uses language that is just in advance of the students' current level of proficiency, acquisition will proceed 'naturally.' Creating a low affective filter, i.e. lowering psychological barriers caused by the fear of failure, e.g. with a relaxed classroom atmosphere, helps to lower anxiety and increase the students' self-confidence. As Thornbury (2015) notes, the grammar of first language acquisition emerges from conversations between children and carers:

"Therefore, an approach to second language learning that foregrounds conversation might provide a fertile environment for the emergence of the second language grammar – especially if the conversations are 'enhanced' with explicit attention to the formal features of the language".

Some ideas from the Natural Approach for our project:

- Relaxed atmosphere in classrooms
- Comprehensible input
- Students contribute when they are ready

#### 3.2.6. Desuggostopedia

The originator of the method was Georgi Lozanov in the 1970s. He believed that language learning can occur at a much faster rate than had previously been thought. The reason we learn languages slowly is because we set up an affective filter, and as a result, we do not use our full mental powers. According to Lozanov, we may be using only five to ten percent of our mental capacity and, in order to make learning better, our limitations need to be 'desuggested.' Learning is facilitated in a cheerful and supportive environment, with attractive and different resources, such as art, to stimulate mental powers. The idea is that we can learn from what is around us, so-called 'peripheral learning', even if there is no explicit focus. Posters, called peripheral learning posters, with information about or examples of the target language are placed on classroom walls to maximise learning opportunities, and these are changed regularly. There are two phases, the receptive phase, and the active phase. During the receptive phase, the teacher presents a dialogue during two 'concerts.' In the first concert the teacher reads the dialogue, matching their voice to the rhythm and pitch of the music. In this way, both the left and the right hemispheres of the students' brain are activated. The students follow the dialogue and also look at the translation into their L1. During the second concert, the teacher reads the dialogue at normal speed. For homework, the students read over the dialogue just before they go to sleep, and again when they get up the next morning. In the second phase, the active phase, students practise the language with different activities such as dramatisations, games and songs.

Some ideas from Desuggestopedia for our project:

- Attractive classroom layout
- Peripheral learning posters
- Positive indirect suggestion to appeal to the student's subconscious
- Role-play
- Creative adaptation: songs, dramatisation, games

### 3.2.7. Community Language Learning

This method evolved from the Counselling-Learning approach developed by Charles A. Curran in the 1970s. With this method, building a relationship with students is emphasised, in order to help them learn how to use the target language communicatively. Teachers consider their students as 'whole persons', with consideration of their students' intellect as well as their feelings, reactions, and willingness to learn. Students learn about how learning takes place and how to take responsibility for their own learning. Teacher and learners treat each other as whole persons, valuing both thoughts and feelings. The teacher's initial role is that of a counsellor supporting students in their learning process. Learners are very dependent upon the teacher initially and both teacher and learners then become mutually inter-independent. There are five stages in this movement from dependency to mutual interdependency. In Stages I, II, and III, the teacher focuses on the language in a supportive way and accuracy is less important than fluency. In Stages IV and V, as the students become more secure in their learning, the teacher focuses more on accuracy.

Some ideas from Community Language Learning for our project:

- Analysis of student conversations
- Use of student transcriptions for activities
- Reflections on the learning experience
- 'Human Computer' the student 'controls' the teacher, who acts as a recording
- Small group tasks

## 3.2.8. The Lexical Approach

This approach was developed by Michael Lewis in the 1990s. It was influenced by the development of corpus linguistics, mainly with the work of Sinclair and Coulthard (1975). Lewis looked at the relationship between meaning and patterns and examined word groups, collocations, and formulaic language. The Lexical Approach is based on the concept of comprehension of input based around multi-word lexical items. Teachers talk extensively to their students in the target language, while requiring little or no verbal response from them, particularly at lower levels. Students are also given exercises and activities that raise their awareness of multi-word lexical items, or 'chunks' such as 'I see what you mean,' and 'Take your time.' Lewis emphasises acquisition over learning,

assuming that 'It is exposure to enough suitable input, not formal teaching, which is key to increasing the learner's lexicon (Lewis 1997: 197).

Some ideas from the Lexical Approach for our project:

- Use of language corpora
- lexical chunks
- Collocation focus
- Formulaic language

We will now look in more detail at some of the approaches which are likely to influence our project in a more structured way. We examine these approaches and conclude by describing the teaching approach which is known as 'principled eclecticism', that is, the selection of ideas from different approaches in a principled way, taking learners' needs into account.

First, we will examine the type of syllabus that may be best suited for our project. Wilkins (1976) made a distinction between what he called the 'synthetic' syllabus and the 'analytic' syllabus. The synthetic syllabus focuses on discrete language items, which are presented to learners ranging from more simple to more complex. On the other hand, Wilkins describes an analytic syllabus as one where language items

"... are organised in terms of the purposes for which people are learning language and the kinds of language performance that are necessary to meet those purposes." (Wilkins 1976:13).

Research into second language acquisition (SLA) strongly supports the use of an analytic syllabus, concluding that language learning does not occur in the linear way that language is presented in a synthetic syllabus. Rather, language is acquired when learners are ready to use it, in a similar way to how a child learns their first language.

## 3.3. Essential approaches for our project

We will now look at the approaches which are most likely to have the strongest influence on our project outcomes.

## 3.3.1. Communicative Language Teaching

This approach developed in the 1970s, with the idea that while learners may know language rules, they are unable to use the language to communicate effectively (Widdowson, 1978). Communication skills require more than linguistic competence - they require communicative competence, that is, knowing what to say in given situations (Hymes, 1971) Speakers need to learn to perform functions, such as promising and inviting (Wilkins 1976). These considerations caused a shift away from a language-centred approach to the Communicative Approach, which aims to make communicative competence the goal of language learning. There are no prescribed classroom

techniques, and this flexibility has helped this approach to remain relevant since the 1970s. However, this degree of flexibility also means that classroom practices can greatly differ. As Larsen-Freeman (2011) states:

"It is probably fair to say that there is no one single agreed upon version of CLT."

In the CLT classroom, teachers encourage the promotion of communicative and interactional competence. Pair and group work, role plays, information gaps and discussions are commonly used, and fluency is considered more important than accuracy. Errors are tolerated and considered a natural part of the learning process. The presentation, practice and production (PPP) model, used to describe typical stages in the presentation of new target language, included more practice with the Communicative Approach. The PPP model is still very popular in course books, where communicative activities are still used extensively. However, a 'soft' communicative approach is more often taken, where an explicit focus on form is also included.

Authentic language use is encouraged in the CLT classroom and students' opinions are highly valued as this is thought to foment communicative competence. The target language is a vehicle for classroom communication, not just the object of study, thus increasing the authenticity of the learning experience. As functional language is more important than a focus on linguistic forms, and different functions can have different linguistic forms, these may be focused on together. The emphasis is on the process of communication rather than just mastery of language forms. Games are important because they have features in common with authentic communication, in that there is a purpose involved. Students work with language at a discoursal level and learn about discoursal features such as cohesion and coherence. Errors are tolerated and seen as a natural progression in language learning. Delayed error correction follows speaking and writing tasks, and it is during this stage that language input can help learners to notice areas of language form.

Some ideas from the Communicative Approach for our project:

- Strip stories
- Situations
- Scrambled sentences
- Pair and group work
- Role plays
- Games
- Problem solving activities
- Information gap activities
- Use of authentic materials
- Delayed error correction
- Delayed language input (post task as needed)

## 3.3.2. Content and Language Integrated Learning (CLIL)

Howatt (1984) describes two versions of the Communicative Approach: a strong version and a weak version. The weak version involves the provision of opportunities for learners to practice English for communicative purposes. According to Howatt (ibid), the weak version of the Communicative Approach is 'learning to use' English, while the strong version is 'using English to learn it'. Content and Language Integrated Learning, or CLIL, is a strong version of the Communicative Approach, where priority is given to communicating over linguistic forms.

Using content from other disciplines in language courses is often done on specialised courses, such as English for Academic Purposes. With the CLIL approach, language focus is integrated with a focus on content in an academic subject. Both the content and the language are forms of learning and teachers build on students' previous experience in both cases.

Coyle, Hood and March (2010) describe the interrelationship between language and content learning objectives and describe a triptych, where linguistic progression of language learning and language using is placed at the centre of a triangle and the following three types of language learning support this:



Language for learning: the language needed to manage in a second language environment.

Language of learning: the language needed for learners to access basic concepts and skills relating to the subject theme or topic.

Language through learning: effective learning can take place with the active involvement of language and thinking together.

Therefore, in CLIL, "teachers need to make explicit the interrelationship between content objectives and language objectives." (Coyle et al, 2010: 51)

The teacher scaffolds essential linguistic content, and learners learn that the language used in the classroom leads to the achievement of an objective, rather than being the objective in itself. Lexis is looked at in context and items are focused on using contextual clues in texts.

All four skills and systems are focused on by using authentic materials, and discourse analysis is an important part of the study of language. It is also important, according to Coyle et al (ibid) to help learners learn about essential language:

"Developing a repertoire of speech acts which relate to the content, such as describing, evaluating and drawing conclusions, is essential for tasks to be carried out effectively."

A number of European countries, including the Netherlands and Spain, have widely implemented CLIL in curricula at both primary and secondary school levels.

Teachers use visuals and realia, as well as texts, to help learners engage with the lesson content and activities which focus on language, as well as discourse, are used. There is focus on specific lexis used in a particular learning context, e.g. geography. Vocabulary is a key part of language acquisition with the CLIL approach. As Fisher and Frey (2014) note:

"Vocabulary lies at the heart of content learning, as it serves as a proxy for students' understanding of concepts. In other words, it is part of a complex network of knowledge that draws on students' understanding of the alphabetics, syntax, and semantics of language."

The assumption is that vocabulary learning is more enhanced when there is collaboration between teacher and students, and among students themselves. Fisher and Frey (ibid) continue:

"All learning is social; vocabulary instruction should leverage interactions between teacher, student, and text, such that students are continually growing in their ability to describe, explain, and query."

Social interaction between teacher and students, and among students, is therefore a key part of learning, and according to Vygotsky (1978), higher order thinking emerges through this social interaction, and it is in the 'zone of proximal development' (ZPD) where this learning is more likely to happen. Vygotsky describes this area as:

"... the distance between the actual developmental level [of the learner] as determined by independent problem-solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers." (Vygotsky 1978: 86)

Some ideas from CLIL for our project:

• Dictogloss

Developed by Wajnryb (1990), dictogloss activities help learners focus on how a text is formed, and they examine areas of language and discourse by recreating a text. They

listen twice to a short text, the first time for the main idea and the second time for details. They may take notes while listening. Following this, they write down what they can remember about the text, reformulating the language. They then work with a partner or in a small group to reconstruct the text together.

• Graphic Organisers

These are visual displays that help students to organise and remember new information. Learners draw or write ideas they learn about, combining words, chunks, and phrases, together with some symbols, diagrams, tables and spidergrams to describe different ideas and processes. This helps learners to understand text organisation, which helps them learn to read and write academic texts. A key rationale for the use of graphic organisers is to help learners remember cognitively demanding content and then to reproduce similar content.

• Language Experience Approach

Students dictate a story about their life experiences to the teacher, who reformulates the language in written form. Students practice reading their story with the teacher's help.

Journals

Learners may write in their journals following class, and may address the journal to themselves or to their teacher, who writes a response to the written text, focusing on content rather than form.

## 3.3.3. Task Based Learning

This approach, which is another example of a strong communicative approach, has been an important influence on language teaching methodology and continues to have support from second language acquisition researchers. Task Based Learning (TBL) was first developed by Willis and Willis in the 1990s. In this approach, the focus is on the completion of a given task, such as planning a weekend trip for a group of friends. The focus is on fluency rather than accuracy, tasks are communicative and learner-centred, with the teacher acting as facilitator. Form may be focused on pre-task, based on what the teacher supposes learners will need. This is known as the 'soft' version of TBL. In the 'hard' version, form is focused on post-task, and is based on emerging learner needs. Therefore, there is no pre-set language aim but rather it is based on what learners need in order to complete a given task. Language is seen as a way to interact with others, in a similar way to a learner's L1.

With this approach, the syllabus is made up of a series of meaningful tasks rather than linguistic items. The learning outcome is the successful completion of the task and language is acquired during or post task, with some possible pre-task input. Language can be focused on post-task in an explicit way with language exercises, or with a focus on what Long (1991) calls a focus on forms, where the teacher may reformulate a learner's production. According to Long (2009), a focus on form which is brief and reactive to learner issues can have a positive effect.

Tasks are meaningful for learners, who can often relate them to their own lives. Learners therefore engage in the task and work collaboratively with each other. Teachers monitor and help where needed, also monitoring for post-task language input. Language is understood as a mode of communication and used to complete the task.

Prabhu (1987) identified three types of tasks: information-gap, opinion-gap, and reasoning-gap tasks:

- **Information-gap task**: this involves the exchange of different information to complete a task;
- **Opinion-gap task**: this involves the expression of personal preferences in order to complete the task;
- **Reasoning-gap task**: this involves learners getting some new information by inferring it from information they have already been given in order to complete the task.

Prabhu (1987) feels that reasoning-gap tasks work most successfully as they involve a deeper engagement with meaning than the other two types of tasks.

According to Ellis (2009), a task-based approach challenges mainstream language teaching views as the principle is that language learning is based on the creation of a context where natural language learning is fomented holistically rather than based on discrete language items. However, as mentioned above, some versions of TBL may focus on specific areas of language, and it is this 'soft' version of TBL which will most likely be of relevance to our project.

## 3.3.4. Project Based Learning (PBL)

Similar to Task Based Learning, with Project Based Learning the focus is on completion of a given project, rather than on specific language items. The language practiced in the classroom is not preselected, but is determined by the decisions made by learners on what project topic they choose. According to Fried-Booth (2002), projects take three stages. During the first stage, learners plan the content and scope of the project and together the group decides on the language they will need and the different roles members of the group will take. In the second stage, the group gathers the information they need and in the third stage, they review the project outcomes. They monitor their own work and the teacher's role is that of consultant, monitoring and providing feedback on the group's work.

Project work helps to bring the outside world into the classroom and includes the social and cognitive aspects of learning. According to Orlando, (2016), PBL is also similar to gamification in learning. When students take part in a project, they have to navigate different pathways of information, with some short-term failures in their results, just like in a game, leading them to take other information pathways towards successful completion of their project. Orlando (ibid) also notes that PBL is similar to a real-life activity, where students have to analyse which information is relevant for their project, and which questions need to be asked in order to access the information they need. Some ideas from TBL and PBL for our project:

- Information gap tasks
- Opinion gap tasks
- Reasoning gap tasks
- Authentic tasks, such as information-gathering and consideration of what questions to ask
- Post-task language input based on delayed error correction

## 3.4. Approaches to writing

We will now examine different approaches to writing in the second language classroom, concluding that a process-genre approach is one effective option for our project.

## 3.4.1. Product-based approach

With this approach, writing is closely connected to structures and is mostly the result of following models of different types of texts, e.g. informal emails to friends. While there may be some brainstorming, the learner writes full texts, which are then evaluated by the teacher. There is no specific consideration of the reader, as learners write a text similar to the model they are presented with and follow that structure, using the language which is typical for the specific genre of text. With this approach, Badger and White (2000) argue, processing skills, such as planning, play a relatively small role, and learner knowledge and skills are undervalued. However, the need for knowledge of linguistic forms and the benefits of imitation are acknowledged as valid.

## 3.4.2. Process-based approach

With this approach, writing is more closely connected to skills such as planning and drafting, with less focus on purely linguistic knowledge.

The typical process model identifies four stages: prewriting; composing/drafting; revising; and editing (Tribble, 1996). The process can be cyclical, however, as learners may decide to go back to the pre-writing or composing stages following some revision. A typical prewriting activity is a brainstorming task. During the composing, or drafting stage, they form a plan and then compose the first draft. Following discussion with the teacher and peers, the first draft is revised, and the final stage is the editing stage, where learners check their own and their colleagues' text. Writing skills are developed during these stages and the teacher's role is to monitor and facilitate.

With this approach, there is not much focus on the type of texts needed, the linguistic knowledge needed to produce texts, or the target reader. However, there is a clear focus on the writing skill in itself, which is a useful way to help learners develop competent writing skills.

## 3.4.3. Genre approach

The genre approach is an extension of the product approach in that writing is perceived in linguistic terms, but it goes beyond this to focus on the social context, communicative purpose, and audience.

Swales (1990) describes genres:

"... as a class of communicative events, the members of which share some set of communicative purposes."

Hedge (1988) identifies four pre-writing foci: the audience, the generation of ideas, the organisation of the text, and its purpose. These are also seen in the genre approach, where the topic, organisation and the relationship between the writer and the reader form part of the approach.

Dudley-Evans (1997) identifies three stages in the genre approach to writing:

- 1. Analysis of a specific genre/type of text
- 2. Focus on relevant language for this genre
- 3. Production of a text

This approach is similar to the product approach as described above. However, the social context and purpose of the task also form part of the genre approach, along with language knowledge.

### 3.4.4. Process-genre approach

According to Badger and White (ibid), the weakness of genre approaches is that they undervalue the skills needed to produce a text and see learners as largely passive. However, they also state that with this approach, learners learn how to approach writing in a social context and with a specific purpose, and also how to analyse texts.

While some teachers favour one approach over another, Badger and White (ibid) argue that "the three approaches are largely complementary."

Therefore, an effective methodology should include elements of all three – this is what they call the process-genre approach. Badger and White (ibid) suggest with their approach that writing involves "...knowledge about language (as in product and genre approaches), knowledge of the context in which writing happens and especially the purpose for the writing (as in genre approaches), and skills in using language (as in process approaches)."

By including all three elements, they argue, a student can learn to be an effective writer, considering the purpose, the social context, the target audience, and the linguistic forms needed.
# 3.5. Classroom interaction

An area of language teaching and learning which we will consider as part of the development of our project materials is interaction in the second language classroom, and the role of both the teacher and the learner. In the typical language classroom, the roles of the teacher and learners are not equal; rather they are asymmetrical. The teacher is in a position of authority and is in control of the communication, directing and managing the interaction, while students take their cues from the teacher.

Breen and Candlin (1980) look at the classroom as a specific social context:

"The classroom is a unique social environment with its own human activities and its own conventions governing these conventions."

The language classroom is a particular unique social environment as, unlike other types of classrooms, e.g. mathematics, in the language classroom, the language being used is not only the means of acquiring new knowledge, it is also the goal of study, or, as Long (1983) states, the language is both "the vehicle and object of study."

This means that there is a potential opportunity for teachers to maximise learning in the classroom through their own speech, often referred to as 'teacher talk'. However, teacher talk is usually identified, both on pre-service teacher training courses and in professional development sessions, as something unhelpful for learners, with a focus on the quantity, rather than on the quality, of teacher talk. Richards and Schmidt (2002) define teacher talk as follows

"That variety of language sometimes used by teachers when they are in the process of teaching. In trying to communicate with learners, teachers often simplify their speech, giving it many of the characteristics of 'foreigner talk' and other simplified types of speech addressed to language learners."

'Foreigner talk' is identified as an unhelpful form of teacher talk by Richards and Schmidt, where teachers speak unnaturally to learners. Scrivener (2015) identifies different types of unhelpful teacher talk. Some are listed below, along with some examples from language classrooms:

Echoing student answers:

- T: What did you do last night?
- L: I went for dinner
- T: You went for dinner, right.

By repeating what the learner has said, the teacher may appear to be correcting the learner's output. The addition of 'right' may also increase the learner's perception of teacher evaluation.

Complicated and unclear instructions and not checking understanding of instructions:

T: Ok, so what I want you to do now, let me see, um, yeah, I would like you all to stand up, show your cards to all the other students and see if you can find the student who will be your partner. Then I want you to go back to your seats with your new partner and discuss the differences between your card and their card. Then I want you to fill in the information, up here on the board, like, whenever you're finished, take your time. Is that all right?

The teacher has not thought about what the students need to know and how much language is needed to give the instructions clearly and concisely.

Checking instructions or meaning in an unhelpful way:

*T: Please speak with your partner about these topics on the card. One of you starts and you select your topic, then your partner takes another topic. Do you understand?* 

Students may be embarrassed to say that they do not understand so they may answer 'yes'.

Insufficient wait-time, i.e., the time a teacher waits between asking a student a question and answering it themselves. According to Nunan (1991), the typical wait-time is one second.

Responding to the language and not the message:

- T: What did you do at the weekend, Mohammed?
- L: My grandmother died and I went to her house
- T: Good! And what about you, Youssef? What did you do?

However, researchers have looked at how teachers can use their teacher talk more effectively in the classroom to provide students with learning opportunities. As Cullen (1998) states:

"The primary function of teacher talk (is) to support and enhance learning."

Walsh (2013) puts forward that teachers and learners must make use of a range of appropriate interactional and linguistic resources in order to promote learning, in what he calls "classroom interactional competence" if they are to work effectively together. Elements of effective classroom interactional competence are as follows:

- Suitable teacher grading
- Use of pause, emphasis, tone, gestures and facial expressions
- Requests for clarification, compelling learners to reformulate or rephrase
- Negotiating of meaning
- Use of questions: initiation, response, feedback/evaluation (Sinclair and Coulthard, 1975)
- Display (teaching) versus referential (real) questions and the relationship between a teacher's pedagogic goal and type of question chosen (Walsh, 2013).

For example, if the teacher's aim is to check understanding, a display question can be effectively used, while if the aim of the teacher is to promote discussion, referential questions may be more suitable.

- Effective wait time (3-4 seconds, ideally)
- Use of different ways to correct errors appropriately, depending on the teacher's aim: direct repair, reformulation, peer correction, self-correction, ignoring the error
- Scaffolding: modelling
- Use of content and language feedback

According to Walsh (2013), all classroom discourse is goal-oriented and the teacher is responsible for setting these pedagogic goals. The aim is to match the pedagogic goals and the language used to achieve these goals. When developing the GSS project outcomes, we will consider how best to enable teachers to plan to match pedagogic goals and the language they use in order to maximise learning opportunities for learners.

# 3.6. Technology in language teaching

Technology has long been used in different ways in language teaching in the classroom. A language laboratory was considered cutting edge technology in the 1980s, for example, while the interactive whiteboard was considered very innovative when it emerged in the 2000s. However, technology in language learning today is no longer only about enhancing the language learning experience in the classroom. Today, learners have much greater access to technology to learn outside the classroom, and to be more in control of their own learning in the classroom. This has had a great effect on how languages are learned and practised by learners and we can greatly enhance the language learning experience for learners by introducing elements of technology into the classroom. We can also help learners to develop independent learning strategies outside the classroom, e.g. by using electronic dictionaries, pronunciation apps and other digital material.

Learners can work alone or with classmates on their computers or mobile phones, and thus be more independent of the teacher, who can act as monitor or facilitator. The use of apps such as WhatsApp has elements of both written and oral language, and teachers can help learners to become proficient in this type of discourse. Teaching can be more differentiated as learners can work at their own pace on their devices, therefore making learning more customised to each individual learner's needs. Furthermore, the outside world can easily be brought into the classroom for learners, with access to authentic content, as well as authentic, emergent language. Finally, using technology in the classroom will have a positive impact on the environment, as there will be no need for paper based materials. Elements of technology which can be incorporated into our project include:

- Blogs
- Digital portfolios
- European Language Portfolio
- WhatsApp
- Presentations, e.g. Prezi
- Electronic Text Corpora
- Podcasts
- Social media sites, e.g., Instagram, LinkedIn
- Digital Escape Rooms

# 3.7. Video and short films in the second language classroom

Many of the materials developed and used in our project will be videos and short films, which is another way to reduce the carbon footprint in the classroom. Below are some reasons why short films and videos are a useful teaching and learning tool in the classroom:

#### Motivation

Films, TV series and YouTube videos are an integral part of learners' daily lives and many of these videos are in the learners' target language (L2). Film can also make the language learning process more enjoyable.

# **Collaborative learning**

Learners enjoy making their own videos and very positive results can be achieved in the process. In a world where the moving image is rapidly becoming the dominant mode of communication, producing their own media as a group project is intrinsically motivating to many students.

# Authentic and varied language

Videos provide a source of authentic and varied language, helping learners see the target language used in real-life situations. Film exposes students both to natural expressions, and to the natural flow of speech. When learners watch films with text, whether in subtitles in L1 or L2, or with other text incorporated, e.g., in graphics, they receive information from three different channels, film, sound and text, and are therefore exposed to high quantities of multi-modal input, which may lead to greater vocabulary acquisition.

# Visual support

Learners can understand more about the context in which the language is used because of the visual support. They listen to exchanges and see a range of visual supports such

as facial expressions and gestures simultaneously, thus supporting the verbal message and providing a focus of attention. This support may also contribute to the development of learning strategies such as activation of schemata, predicting or guessing meaning from the context, and inferring.

# Variety

Video can bring greater variety to the language classroom experience. Donaghy (2022) identifies four main roles of moving images in language teaching:

- as a language focus: new or recently introduced words are seen and heard in context
- as a skills focus: listening and reading practice, and models for speaking and writing practice
- as a stimulus for communicative follow-up opportunities, such as discussions, debates, roleplays and projects
- as a resource for a video project made by learners
- as a study in itself: learners identify techniques used and types of messages conveyed in moving images, e.g., advertisements

# Cultural awareness

Video is an effective way to communicate the values, customs, attitudes, and beliefs of the target-language culture. It can bring a wide range of cultural concepts into the language classroom and help learners develop intercultural communicative skills and competence.

# The skills of viewing and visual representation

The ubiquity of the Internet and mobile devices, video-sharing platforms such as YouTube and Vimeo, and the emergence of social media networks such as Instagram and TikTok, have all contributed to the huge growth in visual communication, and increasingly the moving image, globally. According to Donaghy (ibid):

"The fact that communication nowadays is largely multimodal changes the construct of communicative competence."

He notes that this growth has meant the increasing use of film and video in the classroom and two new skills, the skill of 'viewing' and 'visually representing', have been added to the other skills of listening, reading, writing and speaking in the language curricula in countries such as Singapore, Canada and Australia.

Donaghy borrows from the definition in the Canadian Common Curriculum Framework to define viewing as:

"an active process of attending and comprehending visual media, such as television, advertising images, films, diagrams, symbols, photographs, videos, drama, drawings, sculpture and paintings."

He observes that viewing is similar to reading in that it involves analysing, evaluating, and appreciating visual texts. As learners are interacting with mainly multimodal texts, they need to learn how to become effective viewers, and to learn how to interpret and evaluate visual and multimodal texts.

Viewing also helps students acquire information and appreciate ideas and experiences visually communicated by others.

#### Active viewing

It is important to help learners become aware of the process of viewing and Donaghy (ibid) identifies three stages in the process:

- Pre-viewing: learners prepare to view by activating their schemata, anticipating, predicting, speculating, questioning, and setting a purpose for viewing.
- While viewing: learners view and check understanding by making connections, confirming predictions, interpreting, summarising, pausing, reviewing, and analysing and evaluating.
- After viewing: learners respond personally, critically, and creatively to visual texts by reflecting, analysing and evaluating the message, and then by following with an activity.

# 3.7.1. Viewing frameworks

We're now going to explore some frameworks which have been developed to help students become better viewers. These models, which have been tried and tested with thousands of students at schools and universities around the world with great success, help to systematise viewing effectively in the language classroom.

#### Viewing frameworks: the 3Cs and 3Ss

Viewing frameworks help learners to focus on aspects of video and film. The 3Cs (Colour, Camera, Character) and 3Ss (Story, Setting, Sound) framework was developed by the registered charity *Into Film* and is used in schools and universities to help learners discuss and analyse video text. These headings are accompanied by discussion questions related to each one, which teachers can use as a way to help learners explore the video.

# Moving images and teacher training

According to Donaghy (ibid), viewing as a skill will soon become part of all English language programmes and it is our role to help learners become more effective viewers. This, he says, needs to be reflected in teacher education:

"there needs to be specific multimodality and visual literacy training on pre-service and in-service training courses."

# 3.8. Conclusion

An examination of some of the better-known language methodologies and approaches has helped us focus on various ideas that we can incorporate into our project outcomes. It has also helped us to select and examine more closely those approaches that we will focus on most for our project outcomes, to help students learn through the selection of engaging, authentic materials, which are relevant to their own interests and needs. The planning of real-life tasks which help learners to develop essential life skills, the focus on communicative activities which help learners practice essential language skills, and the social relationship between the teacher and the learners, have also been identified as areas of importance and relevance. A brief examination of approaches to writing has helped us see the relevance of the process genre approach for our project, and we have also looked at the use and potential impact of technology, film and video in the classroom. Our brief review of the maximisation of learning opportunities that can be achieved through the planning of effective classroom interaction should also help teachers to plan and focus on the role of quality teacher talking time.

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# 4. Revision of existing teaching materials

# 4.1. The context

How many people are studying languages worldwide? It is of course impossible to know with any degree of certainty, but we can be certain of one thing: the total number must be huge. According to the British Council, there are around 1.5 billion learners of English worldwide. Add Spanish, French, German, Italian, Chinese, Arabic, and all the other languages that are studied as a second or third language, and the global total of language learners could easily exceed 2 billion, which is more than 25% of the entire human race. Even if we limit the count to adult language learners in Europe, the total will certainly be in the millions. This provides language teaching organisations with the opportunity to discuss environmental issues with an enormous number of learners.

Of course the primary objective of language learners is to improve their language skills, rather than study issues relating to environmental sustainability. But our contention - and the basis of the Green Standard Schools project - is that we can achieve both outcomes at the same time. In other words, we believe that we can ensure that our learners achieve their goals in their target language while, at the same time, we can increase their awareness of some of the many environmental problems we're facing, and we can also discuss what we, as responsible global citizens, can do to help mitigate some of these problems.

Needless to say, we're not proposing that every lesson of every language course should focus on environmental issues. We are simply suggesting that we should discuss these issues with our students more frequently and more systematically than we do at present.

So what is happening in most language schools at present?

# 4.2. The extraordinary endurance of text books

There are all sorts of reasons why printed course books should no longer be in use. To begin with, there is the environmental cost. It takes around 20 litres of water to manufacture one A4 sheet of paper. That means well over 2,000 litres are needed to manufacture the paper required for the average course book. A similarly large amount of energy is needed to produce the paper, print all the pages, stick them together, and then ship them around the world. And predictably enough, not all the energy required will have been generated from renewable resources, meaning that every course book produced also generates a carbon footprint.

Then there are the limitations of the medium itself. Printed words just lay there on the page, as inanimate as carvings on a rock. Of course they can still be instructive; students can read the words, look at the pictures, and tackle a variety of different exercises, but none of these paper-based activities can talk back to the students; they don't indicate

what students have learnt, or what they might have missed; they offer nothing approaching genuine, real-time interaction.

What's more, course books are impossible to update or improve quickly and easily, and are often on their way to becoming out of date before they arrive in our schools.

Despite these fairly obvious limitations, the simple truth is that the vast majority of teachers and learners still rely on paper-based textbooks to guide them through their language course. There are probably various reasons why this is the case. The most obvious ones are:

- course book publishers can make a very good return on their investment and are reluctant to let this lucrative business fade away;
- both teachers and students still like to have something tangible to hold, to keep, and to refer to.

These are the same basic reasons that explain why paper-based books of any description still exist, when it is clearly both cheaper and more environmentally friendly to publish everything in a digital format. (There are still some parts of the world where people don't have access to digital devices and/or the Internet, but as far as the majority of language learners is concerned, especially adult language learners in Europe, this hasn't been an issue for decades.)

These days almost every printed text book is accompanied by a range of supplementary digital resources, including interactive activities, video and audio files, etc. and in some cases, the entire text book is also available in digital format. But access to these digital resources is invariably dependent on having first purchased the printed version of the course book.

Organisations that only provide Web-based study materials for language learners have been around for decades while the number of apps designed specifically for language learners has exploded in the last 5-6 years. Despite all these developments, the vast majority of language learners attending a course at a recognised language teaching institution (whether public or private) will still follow a published, paper-based course book. So a key question to ask ourselves is this: how do all these course books deal with the subject of environmental sustainability?

# 4.3. Current published materials

Predictably enough, most modern course books will have a least one chapter or unit that discusses environmental issues. To illustrate this point, we have listed a number of examples below:

- TWIST 1 (OUP) the lesson Culture Zones, speaks about environmental problems and how to take part in some activities aimed at environmental protection.
- Blueprint Upper-Intermediate (Longman) lesson 26 focuses on terminology such as environment, overpopulation, nuclear waste, famine, natural resources, & endangered species.

- Progress to First Certificate (CUP) Unit 3 relates to nature and the environment.
- First Certificate Gold (Longman) Unit 11 focuses on how an entire culture was destroyed due to environmental changes.
- Think First Certificate (Longman) Unit 7 includes ecological terms & talks about Greenpeace.
- Prepare B2 (CUP) Unit 4, Forces of Nature, provides lexis needed to talk about natural disasters.
- Open World B2 (CUP) Unit 6, Closer to Nature, provides content and lexis related to the animal kingdom and provides lexis to talk about our natural world. Unit 8 'Living made easy', talks about smart homes.
- Campus sur B1 (Difusión) Unit 3 includes a section on 'Consumo y Medio Ambiente'
- Aula 3 B1.1 (Difusión) Unit 7 has a section called 'La Tierra en Peligro'
- Aula 4 B2 (Difusió) Unit 6 has an activity entitled 'Consejos para proteger el medioambiente a lo largo del día

Some of the activities included in these examples are illustrated here:

	00		D	
1	Loi and to	ok at the words in b emone. Match the w form compound not	old in the vords (1-3) uns.	text about the sea with the words (A–C)
	1	natural	A	species
	2	coastal	В	habitat
	3	endangered	C	path
		Contraction of the second second		







So far so good. A lot of this content is well designed and should help raise awareness of the sort of environmental problems our fragile planet is currently facing.

However, most coursebooks contain a minimum of 8 units, and more frequently 10 or 12. If or when environmental themes are included in course books, they tend to be limited to just one unit, which means that the environment is entirely side-lined for the majority of the course; often 80% or 90% of the time. A survey of the textbooks published by CUP at B2 level clearly illustrates this point.



As stated throughout this handbook, our contention is that environmental sustainability is too important a topic to relegate to just 10% or 12% of a language course. If we follow the path determined by course book writers and their publishers, the potential we have for raising awareness, and for discussing how we can lessen the impact we have on the environment in our everyday habits and behaviours, will be minimal. And 'minimal' is not good enough.

Another important point to note is that course books rarely discuss environmental issues at all, until learners have reached at least a B1 level. We can speculate why this is. Perhaps the thinking is that environmental themes require language that is too complex to be dealt with at lower levels. Or perhaps it's a reflection of the fact that the CEFR doesn't mention environmental issues in their 'Can-do' statements until this intermediate level. Our contention is that we are missing an opportunity. We propose that environmental issues should be integrated into to all courses, and at all levels. We see no reason why students at even an A1 level can't use environmental issues to develop their language skills.

We haven't recommended a specific percentage of course time that teachers and learners should focus on environmental issues, as that will depend on all sorts of variables such as the language aims of the course, the length of the course, the intensity of the timetable, the profile of the students, and so on. But any increase on the 10-12% of the course that is covered by the course book will be welcome.

#### 4.4. Expanding on published materials

Teachers are very busy people and don't often have time to develop their own study materials. That's one reason why the Green Standard Schools project includes the

development of a range of digital study materials, as well as lesson plans to use alongside these materials. But our project materials will not be able to feature all the world's environmental problems; there are simply too many issues that need to be addressed. Teachers may well feel the need to fill in some of the gaps, or mention an environmental issue that is especially pertinent in their local context. If they can't find anything suitable in their school's resources, or through an Internet search, one option would be to take the content from their existing course books and expand this to include whatever environmental issue they would like to address. The following three examples illustrate how this might be done.

Unit 3 of 'Cutting Edge' 3rd edition, a Pearson publication, relates to the world of work. It provides students with vocabulary to talk about their daily routines and jobs. Grammar found in this unit focuses on useful language for giving advice. Here are some ideas to expand the content the book offers, and give students the opportunity to talk about real life scenarios related to sustainability in the workplace:

- Ask students where they work and if they travel to work, how they do so. What are the most sustainable forms of transport for short journeys?
- Conduct a survey in the class e.g. How many students commute using more sustainable methods?
- Many cities in Europe are introducing more bicycle lanes. What are the advantages and disadvantages of travelling by bike? Would your students consider commuting to work or school by bike? If not, why not?
- Get students to discuss how green their work place or school is. Use the grammar from the course book unit to give advice on how to make these places greener.

'Speak Out' 2nd edition (also by Pearson) has a unit called 'Issues'. There are many global issues that could be addressed in this unit. Unfortunately, there is only one reference to our planet's environmental problems - pollution.

# ISSUES

**1** A What are the major news stories in your country now?

**B** 2.1 Listen and match the news headlines to the topics below. pollution disease unemployment hunger poverty street crime

Pollution is a topic we can most certainly expand on. We could for example categorise pollution into air, water and land pollution, then talk about causes, and the impact these different forms of pollution have on populations of people and wildlife. We could focus on local pollution issues and / or talk about pollution problems elsewhere. Have you heard of the Great Pacific Garbage Patch?

'Outcomes' by National Geographic Learning has a unit called 'Nature and nurture' that provides language to talk about landscapes and geographical features such as glaciers, dunes, rivers, and coastal areas.

			onsing o	sonory
Lab	el the	picture with	these word	s.
ran	ge	plains	crater	river mouth
cliff	f.	dunes	cove	glacier
nos	ak	ridae	dorde	waterfall

Again, we can take this material and expand on it to provide additional content that focuses on the environment.

- Yes, glaciers are beautiful, as the books mentions, but let's address the fact that they are melting at an astonishingly rapid pace. Why are they melting? How fast? What are the likely consequences?
- Dunes are undoubtedly impressive. We might also consider how they need to be conserved and protected. Learners could perhaps do some research and present their findings to their classmates.
- Many coves suffer from pollution. Maya Bay is a beautiful cove that featured in the movie 'The Beach'. Tourists wanted to visit this idyllic cove and arrived in droves. Pollution from sunscreen and other products began to impact local corals and marine life, which forced the Thai government to close this bay to tourists for a number of years. It has since reopened. Students can do a Web quest to investigate the story and find out more information.
- Debates in class are a fun way of helping students see different sides of an argument. Learners could debate whether reopening Maya Bay to tourists was a good idea or not.

All these ideas and materials can be shared among staff members and kept on file for easy access and use. Materials can also be adapted and recycled to suit various levels of the CEFR.

# 5. Integrating environmental topics in your course programme

# 5.1. Introduction

Our project is based on the premise that education is essential for any meaningful response to take place to counter the global environmental disruption that is currently facing us. As language school owners, managers, and teachers we feel that the subjects and topics we review in the classroom can and must help our students to analyse and understand the impact of issues such as global warming, biodiversity loss, or pollution. Students can only envisage solutions if they are fully informed, and the knowledge they could gain in our language classes could help change their attitudes and behaviour.

UN Sustainable Development Goal 13 'Climate Action' calls upon all countries to integrate Climate Change Education throughout the education system, to mainstream it in national education policies and across curriculum and assessment. While we may not be part of mainstream education our language schools are in a unique position, free from the constraints of a restrictive and imposed curriculum, to be able to create modules and lessons that effectively bring these issues into our classrooms.

Education experts agree that to ensure effective learning and deep understanding of the subject matter, environmental education should be integrated across school curricula at all levels and this means all schools, including language schools. We strongly support actions to energise education in our schools around commitments to environmental education, in line with the Paris Agreement and UN Sustainable Development Goal 13. This project aims to bring environmental education to the attention of language schools in Europe and beyond, and lead by example.

In this chapter we are going to look at how schools can make an impact by bringing questions relating to environmental sustainability into the classroom. We will also consider how we can devise topics for teachers that focus on specific issues, whatever the language level of their learners.

# 5.2. Adding GSS to your curriculum

Many schools use textbooks which may or may not have chapters or references to the environmental problems that we are all facing. Most modern textbooks give a nod to the environment and climate change, but often not until B level. Indeed, if we take a look at the detailed vocabulary list published by the Common European Framework of Reference we will see that no mention is made of the environment as a topic for vocabulary until level B2!

For reference, the CEFR for Languages: Learning, teaching, assessment was designed to provide one single transparent and comprehensive basis for the elaboration of language syllabuses and curriculum guidelines, as well as for the design of teaching and learning materials, along with the assessment of foreign language proficiency across the European continent.

As a result, within Europe we find that climate change and all the other environmental issues facing us are not officially recognised as a vocabulary or language topic until level B2 which is, after all, a relatively sophisticated level of language compared to the level of most European language learners. We disagree that learners require such an advanced level before being presented with study materials that cover these essential topics, as we will discover below.

Schools can easily create work sheets from realia or other materials that include topics covering issues relating to environmental sustainability that are occurring everywhere, all the time.

A good example at the time of writing is Hurricane Ian.

In A1 we have the weather as a topic in the CEFFR, so instead of restricting vocabulary to

It is sunny.

It is raining.

Rain, snow, etc

How about including:

It is windy.

Storm, hurricane, tornado, etc,

An easy way to introduce elements that are becoming more concerning and more frequent because of global warming is to use language games such as Pelmanism (matching pictures to words or match pictures to pictures) or worksheets and flashcards, film clips, or photos-

Beginners and up to A2 classes can also practice numbers with language such as

Wind speeds of 200 kilometres per hour

One third of Pakistan is under water

The sea level is rising by ...

The glacier is melting by ...

Or we could practice geography and directions:

The hurricane is west of Florida

The drought was in east Africa

Or connectors and time:

First there was an earthquake at 9 am Next the tsunami hit South Korea at 10h15 Finally it arrived in Japan at 10h20

We can also use some of the concrete suggestions seen elsewhere in our handbook and make number practice worksheets or flashcards such as:

A double button on the toilet saves x % of water Our school recycles x% of its waste An LED lamp saves x% of electricity

Some schools only use published textbooks which means that they will have to add specific content into their curriculum and include it in their course programmes.

A coherent way to do this is to have a detailed curriculum available to all teaching staff broken down lesson by lesson with the material and tasks required for each, linked to a database that all teaching staff can access. This ensures continuity and allows the students to receive the same lesson and information from all teaching staff.

Schools may decide to create detailed supplementary lesson plans as a teaching group project or mandate one or two staff to produce a range of basic materials, according to which set texts need the most padding. Once it has been set up teaching staff can be encouraged to create extra worksheets, or to identify and upload into the database extra visual or reading materials connected to each lesson at each level, so that the contents remain fresh.

As students progress through the levels there is no doubt that more material will become available. In French language text books climate change is one of the basic topics that we find alongside trending topics such as Discrimination, Technology, Human Rights, Accessibility, etc.

A2 and B1 level books often feature chapters on discrimination, which is not a less complex issue than sustainability. Perhaps in future, revised editions of the most popular text books we will see more emphasis and more material at A2 + levels that focuses on the environment. We live in hope!

The process of including appropriate and informative material dealing with the whole range of environment related issues is clearly much easier for schools that have devised their own curriculum in line with the CEFR, as they can more easily add environmental topics to the curriculum itself.

However, in both cases, teachers and academic managers will need to know how to maintain a standard in properly introducing environmental learning aims and outcomes. The CEFR provides the comprehensive basis needed for all schools to be able to create language syllabuses and curriculum, to conceive and design learning materials alongside the assessment of the language proficiency gained.

In Europe the CEFR and the Companion Volumes have provided schools with many of the key aspects of language teaching and learning, including a complete and detailed set of descriptors. These are revised from time to time with the aim of reflecting societal changes and in so doing they often incorporate and include new topics and vocabulary. For example, the new set of descriptors is now gender neutral. So we can both hope for and push for the next revision to include more items that focus on the environment and the need to protect it.

What are some of the main environmental issues in Europe? Let's consider air pollution. This has a major impact on human health. In Europe every year exposure to fine particulates is responsible for around 400,000 premature deaths and the impact is disproportionally evident in central and eastern European countries (EU Figures from Dec 4, 2019. Health at a Glance: Europe 2020 State of Health in the EU Cycle © OECD/European Union 2020). And yet the CEFR still has not assimilated the importance of such issues into its descriptors.

The CEFR has had a very significant influence on language learning and teaching in Europe because its impact goes beyond merely describing levels. It has championed communicative proficiency, and the communicative approach, which is widely if not universally recommended today. Communicative proficiency can best be defined as a learner's increasing ability to communicate and operate effectively in their chosen target language. A reminder for those not familiar with the Common European Framework that descriptions of levels are skills-based and take the form of 'Can Do' statements, level by level.

Alongside and in parallel with the framework, Cambridge University Press has given teachers access to their research into vocabulary learning across the CEFR. If you go to the English Profile website – www.englishprofile.org and click on Free Registration English Vocabulary Profile you will then see which words and phrases – complete with individual meanings of each word – is typically mastered by learners at each CEFR level.

# **EnglishProfile**

Soloct						
animals		glish				
arts and media body and health clothes communication crime describing things education food and drink homes and building money natural world people: actions people: appearance people: personality politics relationships shopping sports and games	gs e	C1 C2 Select All Part of Speech	sh English Q Search O Ac	Ivanced Search	Clear Results	
- Select -		- Select -		~		
Hide culturally sensiti	ve words 🗌 Yes					
Results 1 - 20 of 1569	96		Sort by:	Base Word	✓ Ascending	✓ Display #
Base Word	Guideword	Level	Part of Speech	Торіс		Details
cattle		B1		animals		Details
clothes		A		clothes		Details
albeit		C2				Details

ENVIRONMENT	A1 A2 B1 B2	C1 C2 Select All	Search + Ac	dvanced Search	🗙 Clear Results		
Торіс		Part of Speech					
- Select -	~	- Select -		~			
Hide culturally sensitive wo	ords 🗌 Yes						
Hide culturally sensitive wo	ords 🗌 Yes		Sort by:	Base Word	✓ Ascending	∑ Display #	20
Hide culturally sensitive wo Results 1 - 2 of 2 Base Word	ords 🗌 Yes Guideword	Level	Sort by: Part of Speech	Base Word	Ascending	✓ Display # Details	20
Hide culturally sensitive wo Results 1 - 2 of 2 Base Word environment	Cuideword SURROUNDINGS	Level	Sort by: Part of Speech noun	Base Word	Ascending	<ul> <li>Display #</li> <li>Details</li> </ul>	20

However, according to this system you can only talk about, understand, or learn about the environment if you have reached B2!



If we look for the term 'sustainability' then we need to move up to C2!

Engli The Cl	<b>shPro</b> EFR for Eng	file Ilish				
British English Am	erican English					
English Voca	AL A2 B1 B2	Online - Briti	sh English Q Search 🚱 A	dvanced Search	🗙 Clear Res	ults
Торіс		Part of Speech				
- Select -	✓	- Select -		~		
Results 1 - 1 of 1	oras 🗋 res		Sort by:	Base Word	~ Ascen	ding 🗡 Dist
Base Word	Guideword	Level	Part of Speech		Торіс	Details
sustainability		C2	noun			Details

Thankfully the issue of environmental sustainability has been recognised by some other language publications such as Teaching English.

Teaching English is an online resource platform which provides teachers with hundreds of high-quality resources such as articles, videos, publications and continuing professional development courses. It aims 'To help and encourage teachers who want to integrate positive environmental action into class.' Their website also aims to encourage teachers to create their own modules with appropriate materials at every level, and gives suggestions on how to integrate environmental action into existing lessons.

Section						Page
Foreword						9
A word from the wri	ters					10
Introduction						11
Integrating sustaina	bilit	y topics into your	teaching - some thing	s to consider		14
How to use this pub	licat	ion				16
Principles for develo	opin	g effective teachi	ng materials			16
A final word						19
Part 2: Activit	ies	for low rest	ource classroor	TIS	Time	Page
1. The 5 Rs Taking action to	1.	The 5 Rs puzzle	Vocabulary Listening	A2 Primary aged 9-12	15 mins	22
reduce, reuse, recycle, repair and	2.	The 5 Rs in action	Listening/notetaking Speaking	A2-B1 Primary aged 9-12	30-40 mins	23
sustainably.	3.	Our green pledge	Speaking Future with going to;	A2-B1 Primary aged 9-12	20 mins	25
2. Endangered animals	1.	Guess the animal	Speaking Comparatives	A1-A2 Primary aged 9-12	20-25 mins	27
Reflecting on the importance of protecting all	2.	Endangered but unknown	Speaking Listening / notetaking	A2-B1 Primary and above	35-40 mins	29
wildlife,	3.	A new logo for wildlife protection	Creativity Presentation skills	A2-B1 Primary aged 9-12	20 mins	32
3. Storm coming Learning about extreme weather	1.	Seasons and (extreme) weather	Vocabulary Speaking	A2-B1 Primary and above	20 mins	34
and taking action to reduce risks.	2.	Extreme weather quiz	Vocabulary Listening	A2-B1 Late primary and above	20 mins	35
	3.	Sending out an SOS	Writing	A2 and above Secondary/adult	20-25 mins	37
4. Sports in (climate) crisis	1.	The climate impact of	Speaking/ presenting	A2 and above Primary and above	20 mins	39
Exploring the		SOOLIS	LISTERIO			

The graphic above is part of the British Council's Climate Connection programme whose objective is to address the challenges of climate change by uniting people working in education and especially those involved in teaching English. (https://www.britishcouncil.org/climate-connection)

This environmentally-specific strand has been developed to look at Climate Action in Language Education. This has been developed by partners and teachers in the UK and around the world to create new resources for teachers of English so that they may integrate climate change issues into their teaching more easily.

In parallel with these materials Climate Action in Language Education is an open online course (MOOC) accompanied by a 10-part podcast series, The Climate Connection, which explores the whole climate crisis topic.

Integrating environmental sustainability into the curriculum can be tricky especially if the curriculum is designed to respond to the requirements pre-determined by an obligatory end of course exam. So while this project is convinced of the need to include environmental issues as a way to educate our learners about the impact these issues are having on our planet globally, we also recognise the challenge this integration represents and the difficulty for teachers to see how topics fit into a curriculum and where they can be used alongside a course book.

Our recommendation is that if you are not free to integrate these issues into your class's curriculum (whatever their level), you study the full course description found in your course book and search for links that will lend themselves to ways that will allow you to add a little extra into the course.

Below is the beginner level syllabus from a popular English language teaching textbook: 'Headway'. Predictably there is no mention of either climate change or the environment, but any creative teacher ought to be able to think of several ways how they might be able to link these issues to this pre-devised syllabus.

UNIT	CRAMMAR	DEADING		MAIN COURSE	
UNIT	GRAMMAR	READING	SPEAKING	LISTENING	VOCABULARY
UNIT 1 Hello!	am/is/are my/your This is	Introduction dialogues, Everyday English dialogues	Introductions, Good morning! Practicing introduction dialogues.	People meet each other and introduce someone else.	How are you? What's this in English? Numbers 1-10 and plurals.
UNIT 2 Your World	He/she/they His/her Questions	Where are they from? Two people are on holiday in New York.	Students ask and answer questions about where people are from.	Countries, Numbers 10-20	A set of cities and countries: Brazil, Spain Adjectives: awful, really good, fantastic, beautiful Nouns: centre, hospital, building, park
UNIT 3 All about you	Verb to be is recycled and extended to include negative and question forms.	We're in Las Vegas!	Roleplay: in a band.	An interview with the band Metro 5.	Jobs: a nurse, a doctor Personal information: surname, first name, address married Social expressions: I'm sorry, thanks, please
UNIT 4 Family and friends	Possessive adjectives. Possessive 's. Has/ have Adjective + noun Irregular Plurals	Paddy McNab and his family, My best friend.	The alphabet, On the phone, Saying email addresses.	Who are they? Listen and identify the people.	The family: mother, son Describing a friend: very beautiful, really funny
UNIT 5 The way I live	Present Simple: I/you/we/they a/an Adjective + noun	Colin Brodie from Dundee.	Role play: At a party.	Where is Colin? Who is he with? At a party: Flavia and Terry are at a party in London.	The lexical set of sports/food/drinks. Languages and nationalities.
UNIT 6 Every day	Present Simple: He/she Question and negatives Adverbs of frequency Prepositions of time	Lois Maddox	Talking about daily routines, Asking and answering questions about daily routines, Lifestyle questionnaire	Listening a phone conversation between Lois and Elliot.	Days of the week. The time. <b>Words that go together</b> : watch TV, get up early

UNIT 7 My favourites	Question words Subject pronouns Object pronouns Possessive pronouns This and that	A postcard from San Francisco, A holiday postcard.	Describing lifestyles, preferences and places, Roleplay: conversations in town.	Listening the requests with Can 1?	Adjectives: lovely, terrible, comfortable, friendly Opposite adjectives: new/old, big/small Places: chemist, post office
UNIT 8 Where I live	There is /are Prepositions: in, on, under, next to	Vancouver-the best city in the world, What to do and where to go.	Talking and asking about rooms and furniture, Giving directions.	My home town, Steve talks about living in Vancouver.	Rooms and furniture: living room, bedroom In and out of town: beach, mountain, sailing,
UNIT 9 Times past	Was/were born Past simple: irregular verbs	It's a Jackson Pollock.	Telling a story from pictures, Saying the dates in English.	Magalie Dromand, Magalie dromand talks about her family.	Saying years People and jobs Irregular verbs Have, do, go: have lunch, do homework, go shopping
UNIT 10 We had a great time	Past simple: regular and irregular Questions Negatives Ago	Dialogues with simple past.	Did you have a good weekend? Asking about holidays, A questionnaire, My last holiday, Roleplay: asking and giving directions.	Angie and Rick are at work, Jack and Millie's holiday.	Weekend activities: go to the cinema, have a meal Time expressions: on Monday, last night Sports and leisure: tennis, skiing, windsurfing Play or go: play tennis, go skiing Seasons: winter, summer
UNIT 11 I can do that	Can / can't, Adverbs, Adjective + noun Requests and offers	The Internet, What can you do on the internet?	Talking about what you can do, Talking about everyday problems,	Five people talk about what they do on the internet.	Verbs: draw, run, drive Verb+noun: Listen to the radio, chat to friends Adjective+noun: fast car, busy city, dangerous sport Opposite adjectives: dangerous/ safe, old/modern, old/young
UNIT 12	I'd like,	You are what you eat,	Discussion-what is a good diet?	Conversation with Adam,	Shopping: bread, milk, fruit,

Please and thank you	Some /any, Like and would like	People from different parts of the world describe what they eat.	Roleplay: Ordering a meal.	Birthday wishes, What people want on their birthday.	stamps, cheese, ham Food: cereal, salad, pasta, fish In a restaurant: menu, starter, desert, soup, salmon
UNIT 13 Here and now	Present continuous, Present simple and present continuous.	This week is different, Colin, a millionaire, gives money to homeless teenagers	What's the matter? Why don't you?	What is Nigel wearing? Nigel is on holiday, What's the matter.	Colours: blue, red, green Clothes: jacket, trousers, shoes and socks Opposite verbs: buy/sell, love/hate, open/close
UNIT 14 It's time to go	Future plans, Revision: question words, tenses.	Seven countries in seven days, Life's big events: three people talk about their family, education, work and ambitions.	A mini autobiography.	Eddie is talking to a friend about his holiday plans, Social expressions	Transport: travel by bus, coach, motorbike, plane Revision

#### Course Description

In this course it is aimed to develop students' general English through the skills of reading, writing, listening and speaking. Each unit is organized to enhance students' basic knowledge of vocabulary and grammar through reading texts. The students will learn how to form simple sentences and use them in real life situations. By the end of the course, students will be able to produce basic sentences and communicate in simple real-life situations.

#### Course Objectives

- 1. To help students read and understand simple texts.
- To help students understand basic expressions and conversations and use them in real-life situations.
   To help students write basic sentences leading to a paragraph using the vocabulary and grammar learned in the textbook.

#### For example:

Unit 2 ask where are you from? – Include countries suffering environmental problems

Unit 4 deals with the alphabet - How do you spell 'plastic'? Or 'climate'?

Unit 6 deals with adverbs of frequency – It's always hot in the summer

Unit 7 deals with holidays – where do most people go? Why? How do they travel?

Unit 8 focuses on places to live. Vancouver is the best city in the world. What's the worst?

Unit 9 deals with the past and telling a story - so we could imagine a timeline of the most dramatic climate events such as Hurricane Katrina and so on.

Unit 11 deals with everyday problems, so it is easy enough to insert environmental problems like hurricanes or floods, or adjectives like 'frightening' or 'terrible' into the lesson.

Unit 13 asks 'What is the matter?' Lots of potential here

Unit 14 talks about future plans and transport. What are the cleanest forms of transport?

We could also add the following text under the course objectives:

1. To help students read and understand simple texts including those on topical issues such as climate change.

2. To help students understand basic expressions and conversations covering everyday topics such as climate change / issues concerning the environment, and use them in real-life situations.

It is worth noting that the Headway series introduces climate change at the intermediate level, as a topic to carry *may* and *could*. But if we wait until then, it will (no modal needed) already have had irreversible consequences.

Two more practical ideas:

# SPORT

Most textbooks, especially those for younger and teenage learners, have a unit on sport.

Rather than just listing different sports and talking about what learners like to do and when they do it, lesson plans can easily be extended to include how each sport impacts the environment, how the changes in our global environment are affecting sports and athletes, or how we preserve sporting events as part of a sustainable future.

It is so often forgotten that sports facilities, events, activities, and the manufacture of sporting goods all have an impact on the environment. Therefore when we teach a unit based on sport we can deal with issues such as energy consumption, air pollution, greenhouse gases, waste disposal, etc.

We can extend the activities suggested to include some of the following:

- The effect of climate change on sporting events
- Qatar's pledge for a carbon-free World Cup
- FIFA's pledge https://www.fifa.com/social-impact/sustainability/climate-pledge
- The United Nations has a great page for ideas 'Addressing climate change through Sport'.

#### WORLD DAYS

Look out for 'special days' dedicated to environmental issues. For example, March 22<sup>nd</sup> is World Water Day. Why not take the opportunity to talk about fresh water as a scarce resource? Or how we can save some of the water we use in our homes and schools?

Check online for a calendar of other 'world days' related to natural resources, wildlife and the climate crisis. You can find lessons related to 'world days' on websites like ELT Sustainable.

#### **ENVIRONMENT CALENDAR**

Why not make an international environment calendar with your students and adapt some lessons to include the topic of the month?

INTERNA	TIONAL ENVIRONM	MENT DAY CALENDAR
Month	Thematic	International days
January	Birds	20 January: International Penguin Day
February	Fairtrade	27 February: Fair Trade
March	Water	22 March: World Water Day
April	Earth	22 April: World Earth Day
May	Animals in danger	20 May: World Bees Day
		22 May: World Biodiversity Day
June	Oceans	8 June: World Oceans Day
July	Plastic	3 July: World No Plastic Bags Day
		4 August International Clouded Leopard
		Day
August	Wildlife	12 August International Elephant Day
		10 August Bio Fuel Day
September	Air	16 September: World Car Free Day
		17 September: International Coastal
		Clean-up Day
October	Sustainability and	14 October: World Sustainable
	development	Development Day
		16 October: World Food Day
		24 October: International Day of Climate
		Action
November	Our Planet	21 November : world fisheries day
December	Our World	4 December: wildlife conservation day
		5 December : World soil day

# 5.3. Final note

As should now be clear, our research has shown that environmental issues have not yet been integrated into the CEFR as fully as they could be. Our project team has therefore decided to petition the relevant people to examine their current practices and take greater account of environmental issues in future. As we have seen, the CEFR is regularly reviewed in order to keep it fresh and topical. The opportunity therefore exists to integrate themes based on environmental sustainability into the framework at every level, and ensure that the revised detailed descriptors reflect these changes. Such a revision, together with the impact this could have on publishers and course book writers, would be of great benefit to language teachers across Europe and help them make environmental issues a more important component part of the language teaching curriculum, at all levels and for all languages.

# 6. Creating an effective lesson plan

# 6.1. Introduction

A good lesson plan is an important part of a language teacher's 'toolbox'; some might argue that it is the most important part. This is especially true for inexperienced teachers, who will benefit from the guidance that a well-produced lesson plan provides. More experienced teachers may not need to rely quite as much on their lesson plans – indeed, there is a school of thought that suggests that the best way to evaluate an experienced teacher is to observe them teaching without any lesson plan at all! But for the vast majority of language teachers a good lesson plan is an invaluable asset. It is also something that most academic directors require their teachers to produce so that they can be sure that relevant material is being covered in a timely and appropriate way. Lesson plans also provide academic managers and other teachers with a useful 'script' to follow, as a reference point, when conducting lesson observations.

For these reasons, all pre-service teacher training courses (such as the CELTA or Trinity Certificate) will devote a significant amount of time to demonstrating how useful lesson plans can be, and how they should be structured. This applies to traditional, classroom teaching, as well as online teaching and hybrid formats.

So what constitutes a good lesson plan and how might a standard lesson plan be adapted to include environmental themes?

# 6.2. The components of a standard lesson plan

There is no such thing as a universally accepted lesson plan template. However, a standard lesson plan will almost always include the following items:

**INFORMATION** about the class, such as the number of students in the group and their level; the date and length of the lesson.

**MAIN AIM(s)**: i.e. the main focus of the lesson. This could be skills based (Reading, Writing, Listening or Speaking) or language based (Grammar, Vocabulary, Phonology, Functional language, etc.)

It can be helpful to express the main aim in these terms: By the end of the lesson students will be better able to...

**SUBSIDIARY AIMS:** Specific skills or items that students will learn, revisit, expand on, etc.

As part of the professional development, teachers may also be encouraged to specify a **PERSONAL AIM** i.e. describe what they personally hope to achieve in the lesson. This

could be a piece of classroom research or a development need following an observation from a previous lesson, for example.

**MATERIALS**: All those teaching resources needed to execute the lesson successfully.

**STAGES:** Language lessons are normally divided into various stages, both in order to provide the lesson with a clear structure, and to allow for a variety of focus and activities (which will help keep students focused and engaged). Each stage should be given a name and an aim, and be allocated a specific amount of time.

A note on timings: teachers should always allocate a certain amount of time for group discussion that may start spontaneously as a result of a student making a comment or asking a question. These spontaneous discussions often focus on issues that are of real interest or importance to students, and can therefore generate opportunities for seriously meaningful communication to take place, and for language to be introduced that wasn't included in the lesson plans. Teachers should seize such opportunities, even if it means having to curtail or reorganise the various stages of their lessons.

**PROCEDURES:** This is where the teacher describes what she is going to do, and what the students are going to do at each stage of the lesson. These descriptions can sound a little like stage directions. Adding these descriptions as bullet points should help keep each step clear. Inexperienced teachers may also find is useful to script their procedures. For example:

Instruction from teacher: "Write down three countries you have visited."

Concept check from teacher: "How many countries will you write about?"

It may also help to describe what students will be doing during each stage. For example:

Students discuss answers in pairs, while Teacher monitors.

A lesson plan may also include a column that indicates the sort of **INTERACTION** that takes place at each stage of the lesson, using an abbreviation code. For example:

Group work: Ss-Ss

Pair work: S - S

Instructions: T – Ss

Feedback: Ss - T

**ANTICIPATED PROBLEMS & SOLUTIONS:** What issues with the topic, the materials, or indeed the learners can the teacher anticipate? For example, if the lesson is based on showing the class a short video on YouTube, what would the teacher do as a Plan B if the Internet suddenly went down?

The following page illustrates the structure of a lesson plan template, as used by a CELTA training centre in the UK.

#### 

	Reading	Grammar	x
MAIN AIM:	Listening	Lexis	
	Speaking	Phonology	
	Writing	Functions	

By the end of the lesson students will be better able to...

SUBSIDIARY AIMS:				
PERSONAL AIM:				
MATERIALS:				
STAGE & PURPOSE	PROCEDURES	<b>†</b> + †	×	ANTICIPATED PROBLEMS & SOLUTIONS

Needless to say both the stages and the procedures will vary according to the main aims of the lesson, and the teaching methodology employed. To give one obvious example, a lesson that has as its main aim the development of receptive skills (reading or listening) is likely to have a very different series of stages and procedures to a lesson that is designed to encourage students to take part in a classroom debate.

# 6.3. The lesson plan template for Green Standard Schools

Given that our aim is to help teachers integrate environmental issues into their lessons more frequently and systematically, it will come as no surprise that we have introduced sections in the lesson plan template that we have developed that specifically address these issues.

The template we have designed is on the following page. As you will see, we have divided the main aims of the lesson into two:

#### Main language aims

#### Main environmental aims

In the second of these boxes we would expect the teacher to describe the particular environmental issue the lesson is designed to address, which could be any of the subjects listed in Chapter One of the Handbook, or indeed any other related subject that the teacher thinks merits attention.

As is noted elsewhere in this Handbook, certain environmental issues will be more suitable for different levels of ability. So, for example, while deforestation is the sort of subject that can be introduced at more or less any level; the consequences of insufficient government regulation on agricultural pollution (for example) is a subject that is unlikely to be addressed at levels below B2.

We have also asked the teacher to outline his or her assumptions, both about what the students already know with regard to the language aims of the lesson, and with regard to the environmental issue that is the subject of the lesson. This aim here, clearly, is to try to ensure that students are not asked to perform tasks that they are not prepared for, either linguistically, or in terms of their environmental knowledge.

The template can of course be adapted for use in different contexts. But teachers who would like to contribute a lesson to the bank of lessons that will feature on the Green Standard Schools platform are required to use the template we have developed. This is to ensure coherence, and means that teachers searching through the bank of lessons will know what to expect.

To make the process simpler, we have added our lesson plan template as a lesson plan builder on our platform. Please feel free to use the tool and join our growing community of teachers who want to contribute to a more sustainable future.

# GREEN STANDARD SCHOOLS LESSON PLAN TEMPLATE

Title

.....

Author .....

School .....

Students' age range	Level	Lesson duration (mins)

Lesson Aims	
Main language aims	
Main environmental aims	

Assumptions (what you think students might already know)		
About the language		
About the topic		

Resources & material needed		

Stages	Aim	Duration	Procedure

Notes		

Here is an example of a lesson plan that has been developed using the GSS template:

# Title: A Magic Machine Called a ...

# Author: Owain Llewellyn

#### School: ELTsustainable

Students' age range	Level	Lesson duration (mins)
Secondary to adult	B2 upwards	80 minutes

Lesson Aims		
Main language aims	<ul> <li>By the end of the lesson learners will have had the opportunity to:</li> <li>Better understand how repetition can be used when speaking persuasively</li> <li>Use repetition to speak persuasively</li> <li>Respond to a challenging authentic video</li> <li>Create a video text that aims to persuade</li> </ul>	
Main environmental aims	<ul> <li>By the end of the lesson learners will have had the opportunity to:</li> <li>Increase awareness of the value of trees in overcoming the climate emergency</li> <li>Increase awareness of how individual action is vital in overcoming the climate emergency</li> </ul>	

Assumptions (what you think students might already know)		
About the language	It is challenging language, but the video supports this with visuals. The language focus raises learners' awareness of a higher-level skill, the use of repetition to be persuasive. This is rarely covered in course books however it is likely to be something they are familiar with in their first language. It may be necessary to elicit situations in their life when they will need to speak persuasively and therefore an awareness of how to use repetition to help them do this.	
About the topic	Students are likely to be familiar with the topic of the climate emergency. They may or may not know how	

serious it is. They may be feeling anxious about this.
Many students may not feel very clear about what
they can do and this lesson is intended to help them
clarify in their minds what they can do.

#### **Resources & material needed**

Internet connection, computer, and projector

Video: <u>https://youtu.be/-Q0xUXo2zEY</u> Please note that the video has subtitles which cannot be removed. This will aid lower level learners however for higher level learners (B2 and above) you may need to consider this and increase the challenge of the task, for example by increasing the number of words they associate with the word tree in the viewing activity.

Optional: Students' smartphones for the final activity.

A free teacher account at Flipgrid <u>https://info.flipgrid.com/</u> for students to safely share their videos.

Stages	Aim	Duration	Procedure
1	Lead-in	10	<ul> <li>Ask learners to think about the following, making notes if necessary:</li> <li>Imagine you are walking through a forest.</li> <li>Where is it?</li> <li>What's the weather like?</li> <li>What can you see (as well as trees)?</li> <li>How are you feeling?</li> <li>Suddenly, you come to a place where many trees have been cut down.</li> <li>Why did someone cut them down?</li> <li>How do you feel now?</li> </ul>
2	Discussion of ideas	5	Tell students:
			Share your thoughts with a partner. How similar were your ideas?
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3	Pre-viewing activity	10	Ask the students to draw a spidergram with the word 'tree' in the middle. Ask them to write 3 or 4 things they associate with tree on the spider gram.

4	Viewing activity	10	Tell them they are going to watch the first part of a video and ask them to add more words, ideas or pictures relating to the word 'tree' that arise in their mind as they watch. Play the video in the resources section to the point at which Greta Thunberg says 'we are ignoring them' (1:23)
5	An affective response to the video	10	Give the students the following task. Imagine you meet the two people in the video. What questions would you like to ask them about the topic? Make a list of three questions. As a language teacher you are not expected to know the answers, but you can guide them on how to find the answers, and/or encourage them to seek out the answers outside the lesson.
6	Roleplay	10	Sts. work in pairs and role-play a conversation based on these roles: Student A: You have just watched the video and you are feeling worried and anxious about the climate emergency.

			Student B: You think there are lots of things we can do to overcome the emergency. Try to reassure your friend and make suggestions about what they can do.
7	Language focus	10	Display these lines they say in the video: But we can still fix this. You can still fix this. Lots of solutions are talked about. But what about a solution that is right in front of us? What should we do? What should you do? Ask the class 'what do these sentences all have in common?' Accept all reasonable suggestions and elicit that they all have repetition. Ask what the effect of this repetition is. Elicit the fact that it helps make it more persuasive. Tell them you will play the second part of the video from where they left off before (1.23). Ask them to say pause every time they see or hear another example of the speakers using repetition to sound more persuasive.
8	Task: create a video text.	15	Ask learners to work in pairs to prepare the text of a video of one to two minutes in which they both speak that aims to persuade their friends to do something positive for the environment such as plant trees, go to protests, cycle or any other ideas they mentioned in stage 6. Ask students to record their videos to their phones if possible. If

	possible, create a teacher Flipgrid account and give students access so they can safely share their videos with you and the class. Ask them to share their video and for homework watch the other videos their peers submit and give constructive feedback on three of them.

### Notes

A really important aspect of an environmentally themed ELT lesson is to reduce students' 'eco-anxiety' and increase their sense of empowerment to act positively on the issue. One great way to do this is to ensure the learning and activity goes beyond the classroom. Flipgrid is a free educational platform that allows students to safely share video with their teacher and classmates. The act of creating the video, sharing it here and then watching each other's videos and offering constructive feedback takes the dialogue beyond the classroom walls. If you are also confident that sharing the videos to other forms of social media can be done within your internet safety measures, it will enable them to engage in this dialogue more widely.

In this sample lesson plan, the linguistic goals of developing listening and speaking skills, and using repetition to make a persuasive argument, are developed by focusing on a familiar but vitally important environmental topic: climate change and what we can all do about it. It's a great example of how desired language outcomes can be achieved while simultaneously raising awareness of important environmental issues.

Now it's your turn. We look forward to seeing your lesson plans on the GSS platform soon!

## 7. Developing Responsible Global Citizens

## 7.1. Introduction

In 2020, Simon Harris, CEO and Academic Manager of International House Sofia, proposed that all language courses should be transformed into holistic personal development pathways that he called "Developing Responsible Global Citizens." The idea behind the DRGC approach to language learning is strengthening language competences through student-centred teaching approaches (primarily project-based learning, task-based learning and process writing) and built on so called CHEDI topics: Community, Health, Environment, Diversity and Innovation.

CHEDI topics are considered to be the pillars of 21<sup>st</sup> century society in Europe and globally. Nevertheless, they are often overlooked in education, especially in language teaching. The British Council estimates that 1.5 billion people globally are currently learning the English language alone. This number becomes even larger if we add other languages. Therefore, language courses remain one of the most effective global vehicles for learning, discussing and reaching consensus on CHEDI topics. Since multilingualism is considered one of the cornerstones of the European project, language learning is a logical place to start the process of developing responsible global citizens.

Relevant teaching approaches were already discussed in the methodology section of this Handbook. This chapter will provide more insight into the CHEDI topics themselves, as well as explore ways to incorporate them with the environmental sustainability theme of our Green Standard Schools project.

## 7.2. CHEDI

As outlined above, CHEDI is an abbreviation for a number of topics relevant for 21<sup>st</sup> century society:

- Community
- Health
- Environment
- Diversity
- Innovation

Note that the environment itself, the central theme of the Green Standard Schools project, is already listed as one of the most important topics for developing responsible global citizens.

A curriculum based on CHEDI topics addresses, among others, common values, civic engagement and participation, diversity and inclusion – this aligns it with the Erasmus programme priorities for the 2021 – 2027 period.

In general, CHEDI topics should address the following issues:

- Community: topics on Europe's social component, values and their importance for the strength and sustainability of the Union;
- Health: focuses on the physical and emotional safety and well-being of individuals and societies, safe environments at home and work, as well as online security;
- Diversity: reducing inequalities, gender equality, cultural and religious diversity, refugees;
- Innovation: primarily STEM topics and Virtual Reality, but also using technology to deliver learning content.

A vast array of environmental topics is already discussed in this Handbook.

Currently, the main issue with implementing DRGC curricula is the lack of these topics in course books, meaning language teachers need to find, adapt and deliver their own course materials, while many of them don't have the time or skills to do this effectively. The Green Standard Schools project provides a solution to this problem for environmental topics, but all CHEDI topics should be addressed in a similar matter. The information presented in this chapter can be used as a starting point to incorporate more CHEDI topics in language learning classrooms, especially when used in the context of environmental sustainability.

Due to the sensitivity of various CHEDI topics, language schools need to ensure that each of these topics can be explored and discussed in a safe environment. Teaching languages to adult students of all ages and backgrounds provides an excellent "safe" platform to develop students' concepts, actions and behaviours.

## 7.3. Rationale for implementation in language courses

Systemic implementation of CHEDI topics in a language learning curriculum ultimately leads to:

- developing growth mindsets and communicative soft skills in students
- developing critical thinking, creativity, collaboration and self-organization
- learning how to manage meetings, personal finances, presentations and negotiations
- the ability to work in teams and develop leadership skills

In general, the aim of the DRGC approach to language learning is to develop **life competencies** just as much as language competencies. The idea of developing life competencies in language learners of all ages has been explored to some extent over

the past several years. In 2019, Palmina La Rosa from International House Giga, a language school based in Catania, Sicily, presented the results of piloting a custom-tailored leadership course with a group of adolescent language students. This marked the beginning of her collaboration with Cambridge Assessment English on developing a framework for life competencies. This framework was published in 2022 and defined eight main areas of life competencies:

- Creativity
- Critical thinking & problem-solving
- Digital literacy
- Learning to learn
- Communication
- Collaboration
- Emotional development
- Social responsibilities

Each group furthermore contains a list of thinking and learning skills, as well as social skills that are defined by this framework. This effort clearly demonstrates a consensus that language teaching should expand beyond the traditional approach of strengthening only (or even primarily) language competences. To accomplish this goal, language teachers need to adopt new and innovative teaching methodologies and focus on specific topics, as discussed earlier in this chapter. Supporting teachers with custom made teaching materials and training handbooks such as this one can contribute to a quick transition from traditional language courses to these new personal development pathways.

## 7.4. CHEDI in Green Standard Schools

CHEDI topics, alongside developing students' key competences, are pivotal when building a form of 21st century education which puts emphasis on the importance of developing their socio-emotional skills to prepare them to be active learners, citizens and team problem solvers. In the following segments this handbook will show you how to blend CHEDI topics with environmental sustainability to create a curriculum which along with respecting local and other cultures, taking the changing nature of the world into account, and supporting students' wellbeing, puts emphasis on the importance of sustainability as well. Take note that these topics and environmental issues are intertwined, the division here is for ease of reference.

### 7.4.1. Community and the GSS classroom

Building a strong community is what helps students and humans in general to achieve more. A sense of community is related to learning, engagement and satisfaction. Along with acceptance, belonging and support, a community shares common goals as well.

Community engagement is one of the cornerstones of environmental sustainability education. Through community engagement, students interact with the environment and they learn to appreciate and understand the experiences that impact their surroundings as well as other individuals and communities.

It is through environmental topics that students have the opportunity to acquire great depth of subject knowledge at the same time as developing valuable skills in communication and collaboration and improving their sense of social responsibility. In language lessons the emphasis should be on research-driven learning to enhance motivation and encourage team-work. In some textbooks there are environmental topics such as recycling, as seen in the example below. This lesson already includes discussions about personal responsibility (What kinds of things do you recycle? Do you feel guilty for not recycling enough?), there is a collaborative task in which a pair of students can share information they know about recycling, there are also reflective questions for them to discuss.

- 6 READING & SPEAKING
- a What kinds of things do you recycle? Do you ever feel guilty about not recycling enough? Why (not)?
- How much do you know about recycling? Do the quiz on p.39 with a partner.
- Now read the article about recycling and check your answers to b. How many did you get right?
- d Read the article again. Match each paragraph to the summary of what it's about.
- to the summary of what it's about. A || it's time to change our shopping habits. B One country has stopped importing and recycling plastic waste because it isn't of a good enough quality. C Popole are starting to understand that plastic is a major problem. D Popole don't really know what can be recycled. Some containers have parts which cannot be

- recycled.
   Some containers have parts which cannot be
   recycled.
   F 
   The food industry doesn't provide the right
   information clearly.
- What do you think is the main message of the article? Choose a, b, or c. erucuer chrosse a, b, or c,
   we don't recycle enough of our waste and need
   to make more of an effort.
   we port our waste to be recycled, but
   sometimes we are making matters worse.
   we need local authorities to do more to help us
   to recycle correctly.
- Complete the second word in these compound nouns from the article. water b
- tr eady-m oing p
- wrapping baby f pasta s
- g Have you noticed any of the problems mentioned in the article?
- Talk to a partner. Do you think that the following will happen in the future? Why (not)?
- all food will be produced without plastic packaging
   supermarkets will stop selling all types of plastic bags to their customers at the checkout
   food producers will improve the labelling on their packaging.
- people in your country will recycle 75% of their

### Why your recycling isn't working









- Inclear labelling is often to blame. Recycling info ries dramatically. Sainsbury's supermarket, for in-brand packaging exactly which parts can an ome manufacturers, on the other hand, include ne manufact cling symbo IS PVC. W
- Last year, more than half of the plastic waste that the UK expo for recycling was sent to China. China has now banned imports l'foreign grabage. because it is receiving too much poor-quality contaminated with non-recyclable items. It's a worrying prospe-are fears that it might not be possible to find alternative destin all our recyclable waste. As a result, plastic may end up being I
- we should stop assuming that everything that looks recyclable is, instead, we need to start buying products that come in ing that we are sure can be recycled, or better still, we should try

Latham-Koenig, C., Oxenden C. (Oxford University Press): English File Fourth Edition

In order to engage students more this lesson can be adapted as the topic provides an excellent opportunity for them to work together but also to connect with their local community. Students could be given a project-based task in the form of conducting primary research to investigate the possibilities of recycling in their area, they could conduct a poll on their neighbours' recycling habits, and/or create ways to encourage people to recycle more. In collaborative tasks like the ones mentioned above students learn to manage fairly the distribution of tasks and identify the steps needed to complete the task.

To raise awareness of their social responsibilities students could do writing tasks (using the process writing approach) on the concept of "*Think globally, act locally*". By engaging in these kinds of exercises students will be able to show how they organize written texts thematically and logically, how they vary sentence patterns to achieve effects when writing, and how they make use of a variety of cohesive devices to support the structure of their texts which are all essential competencies in written communication. The concept mentioned for the writing task should encourage students to think more about their contribution to environmental sustainability. Another topic which can be addressed is the set of principles called "zero waste" and the quote by a zero waste chef Anne-Marie Bonneau: "We don't need a handful of people doing zero waste perfectly. We need millions of people doing it imperfectly." which can also serve as an inspiration for written (or spoken) tasks to raise awareness of their role in the community.

Teachers could also organize discussions and debates on the NIMBY (Not in My Back Yard) phenomenon. By taking part in such activities students can choose presentation styles appropriate for their audience, speak at a steady pace when giving a presentation, appropriately express points of view and interrupt classmates in an appropriate way when disputing what is being said.

Along with learning about the environment, these tasks will help students develop the key competences necessary for becoming responsible global citizens. Students should share ideas, support others to communicate successfully, and understand personal responsibilities as part of a group.

### 7.4.2. Health and the GSS classroom

Social and emotional learning, physical safety and general well-being should be made an essential part of education. By encouraging students' self and social awareness we are helping them to have healthy relationships based on cooperation and make responsible decisions where they consider safety concerns, ethical standards and various consequences. By applying these methods we focus on the higher levels of cognitive learning from the revised Bloom's taxonomy: analyze and evaluate and thus try to encourage students to think critically, motivate them to contribute to their own well-being as well as that of others.

Topics that include thinking about health and well-being are already embedded in some of our textbooks such as in the example below.



Latham-Koenig, C., Oxenden C. (Oxford University Press): English File Fourth Edition

This particular lesson focuses on how to live life more mindfully and challenges consumerism. There are already questions for students to discuss collaboratively and to think about how these things affect their communities. In order to connect this lesson and similar ones to environmental sustainability, students can discuss which of these ways of simplifying their lives can have a positive impact on the environment and how. For example: making their own spreadable butter can reduce the use of packaging, especially plastic, using home-made cleaning products can reduce waste but it can also have a positive impact on marine life by releasing less toxic substances into water, driving less leads to a clear improvement of the air quality in their surroundings, etc. In order to further help students work on their wellbeing and to raise their environmental awareness it would be useful to ask your adult students to try some of the suggestions from the article or their own ideas and to write a report or create a presentation to analyse and explain how the experiment affects their wellbeing.

There are also other topics that link the environment to health and wellbeing which could be addressed in the language classroom following CLIL principles and using a

project-based approach to learning. For instance, students can learn how climate change impacts health by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods. Students can also discuss and do research on other exposure pathways, such as heat stress, air quality, water quality and quantity, food security and safety. Here is another example: teachers can organise a research-based jigsaw reading activity on the topic of water pollution and human health. Groups of students can get texts on the negative ways that water pollution can directly affect human health, by ingesting microplastics, consuming water contaminated by sewage, or drinking water containing chemical waste and share the information between groups.

Teachers can also encourage students to investigate some more specific topics related to health and the environment, for example: how climate change has allowed the common ragweed plant to spread uncontrollably and thus harm ecosystems and seriously affect people's health with regard to allergies, rhinitis and asthma.

By discussing these topics in the language classroom, students will not only learn about the facts regarding the effect of the environment on people's health, but also work on their key competences and develop emotionally and socially by understanding and discussing global issues and demonstrating empathy and relationship skills.

## 7.4.3. Diversity and the GSS classroom

Environmental sustainability has become a focus for many disciplines seeking to examine issues of social justice, poverty and distribution of resources. In 1987, the document called "Our Common Future" by the World Commission on Environment and Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It seeks to reconcile economic development with the protection of social and environmental balance. In 2001, the EU adopted a strategy in favour of sustainable development. This was revised in 2006 providing 'a long-term vision for sustainability in which economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting'. Having these documents as references it is clear that inclusion, diversity and equality play an important role in sustainability.

Teachers and students should approach this topic in an interdisciplinary way by connecting ecology with economics, politics, sociology, and other disciplines.

The lesson below is an appropriate example of how teachers can introduce this CHEDI topic into their language lessons. The lesson is about clothes, fashion and people's habits and opinions in this area. There are already prompts to discuss regarding buying items of second-hand clothing and the cost of cheap fast fashion. The video is about a brand of sustainable jeans. These prompts encourage the development of students' key competences, for example: students are motivated to show confidence in expressing their ideas and speaking in public, as well as elaborate on their choices and opinions.

d In pairs, think about what the journalists said, and try to complete their fashion rules.

Liza	Wear whatever you think	and makes
Adrian	you Dress for the age	l not for the
	age .	

- e 2.24 Listen to the end of the discussion and check. Who do you agree with more, Liza or Adrian?
- f Work in groups of three, and discuss three of the topics below. Take turns to be the presenter. The presenter chooses the topic and manages the discussion. Try to use the language from the box.
  - People should stop buying new clothes and buy more secondhand and vintage clothes.
  - Men are just as interested in shopping for clothes as women.
    Nowadays, nobody is prepared to suffer in order to look good. The most important thing is comfort.
  - You can tell a lot about someone's personality from the clothes they wear.
  - Cheap fashion means exploiting people in less developed countries.

Let's start with you, (Liza).	So, to sum up
(Adrian,) what about?	Can you let (Liza) finish?
Let's go back to	Sorry. Go ahead.
Politely disagreeing	
Sorry, but I don't agree.	I'm not sure about that.
True, but	I agree up to a point, but



- a Watch an interview about the Hiut jeans company. What do you think is the unique selling point (USP) of their jeans?
- **b** Watch the interview again. Then make notes under the following categories.

-	Description of Jeans
	1 Material: denim
	2 Style:
	3 Celebrity wearer:
	History of company
	4 When David and Clare started it and why:
	5 Who they employ:
	6 How many pairs of jeans they produce per week:
	7 How they try to make their jeans environmentally friendly:

Latham-Koenig, C., Oxenden C. (Oxford University Press): English File Fourth Edition

By expanding on these topics teachers can incorporate more aspects of sustainability and diversity. The topic of diversity and inclusion is suitable for affective development by challenging students to use critical thinking and working in teams with powerful emotional engagement. For example, students can discuss the topic of fast fashion in connection to cheap labour, terrible working conditions and workers' rights. Through meaningful and structured discussions and exercises, students can work on becoming responsible citizens by understanding social issues and balancing their own self-interest with the interests of others.

Similarly, students can investigate the lax environmental laws in some countries through case studies and/or secondary research tasks. They can critically analyse how these laws affect a country's economy on the one hand, and its population's health on the other. In this way, students can learn about environmental justice and how the costs and benefits associated with environmental impacts aren't always equally distributed among people.

Learning about the relationship between diversity, inclusion and sustainability develops students' empathy, it enriches collaboration and supports fairness and awareness of unconscious biases.

### 7.4.4. Innovation and the GSS classroom

Innovation and creativity are fundamental to all academic disciplines and educational activities. Creating involves putting elements together to form a coherent or functional whole. Creating includes reorganizing elements into a new pattern or structure through planning and it is the highest and most advanced level of the revised Bloom's Taxonomy. It includes generating new ideas, products or ways of viewing things and thus should be an integral part of developing responsible global citizens of the 21<sup>st</sup> century as our task as educators is to prepare students for ongoing change and jobs and situations that might not even exist today. Creativity and innovation is tightly connected to some other soft skills, especially communication, collaboration and learning to learn. Teachers can foster the development of these skills in the classroom and link it to environmental issues. The concept of a carbon footprint is taken as an example from a language learning textbook for young adults. This lesson starts the conversation on students' personal habits and choices. This is followed by a research-based task that encourages students to find out more about the carbon footprint of a bag of potato chips so there are already activities that develop students' social responsibility as one of the key competences.

4 Read the definition and watch the video again. Why do some of the food items have a high carbon footprint?

Carbon footprint: the amount of carbon gas that is produced by the activities of people and companies.

5 Work in pairs. Make a list of the snacks you eat during a typical week. Then discuss the following questions.

- 1 Does each snack have a big carbon footprint? Why? Could you reduce it?
- 2 Which foods should you avoid? Why?

#### Key phrases Talking about food choices

I (don't) think about ... when I buy .... I think my choice of food is .... ... has a large / small carbon footprint because .... I could cut down on .... I should avoid ... -ing .... is / are (terrible) for the environment because ....



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Wetz, B., Wildman, J., Beddall, F. (Oxford University Press): Oxford Discover Futures 3

The last question in the lesson (*Are there any environmentally-friendly alternatives?*) can serve as a starting point for teachers to introduce innovation and creativity into their plan. Students can work together in small groups to think of already existing alternatives

or generate their own more sustainable ideas for the packaging of potato chips or snacks in general. By doing this, students can create new proposals for solutions, pathways, or approaches relating to subjects of study, in this case the carbon footprint of the food we consume.

To engage students in complex creative activities students can collaboratively participate in brainstorming activities, identifying possible solutions to educate others on waste sorting and organize a real event, a presentation or a workshop on a neighbourhood or town-level in which they help their community to separate waste better and educate them on the recycling process in their area or help local businesses increase environmental sustainability.

To foster creative thinking and innovation in students, teachers can ask them to design an app that can help people waste less (e.g. food, clothes, ...) Clearly, this wouldn't be done digitally but through annotated planning and 'blueprint' design. By doing this, adult students can bring in prior knowledge to solve problems, use tools such as concept and mind maps, and convincingly present rationale behind their ideas and for their choices.

Another important concept, connected to innovation and creativity, is design thinking. It is an iterative process in which you seek to understand your users, challenge assumptions, redefine problems and create innovative solutions which you can prototype and test. Principles and stages of design thinking can be used in many tasks and projects in the classroom, especially when creating more sustainable solutions for everyday situations. Students can use the five phases of the process (*Empathize, Define, Ideate, Prototype, Test*) to think of ways to reduce the use of paper in their workplace, how to reduce the carbon footprint in their household, etc.

## 7.5. Conclusion

In order to holistically approach education and personal development, language schools should incorporate the topics of environmental sustainability, community, health, diversity and innovation into their curricula, as they are extremely relevant for the 21<sup>st</sup> century. As seen from the examples in this chapter, learning about environmental topics is closely connected to developing key life competencies. Both inside and outside the language classroom, learners can participate in creative activities, generate and evaluate new ideas to solve problems, clearly express themselves, manage emotions and take part in conversations, develop positive relationships with others, share ideas and understand cultural and global issues. These are only some of the key competencies that can be improved while learning about environmental sustainability and actively participating in meaningful project-based tasks.

Schools play a vital role in preparing their learners for current and future challenges, so by supplementing our curricula with CHEDI topics we will help our students to become

responsible global citizens, enhancing their motivation both to learn more but also to become more environmentally aware and proactive.

## 8. Planning ahead

As we all know, learning a new language is a complex process that inevitably takes a good deal of time. A few lucky people have a natural gift for languages and may be able to achieve a good degree of fluency relatively quickly, but for the vast majority of us there are no short cuts (no matter what certain dubious language course providers claim). We need time to be able to assimilate and process the language we are learning, and we need time to practice making ourselves understood. In most cases, this means learning for at least 700-800 hours before we can expect to achieve an advanced level, say C1 on the CEFR.

Of course this amount of time could be reduced if we are lucky enough to be studying in the country where our target language is spoken (English in the UK or Ireland, French in France, etc.) In this context, our exposure to the target language will be more or less constant and extend way beyond the classroom. But a majority or learners don't have the opportunity to go abroad to study, and have to learn the new language in the country where they live. In many cases learners also have to fit their language courses into their already busy lives, which means that formal study may only be possible for 2 or 3 hours a week. More intensive courses of 10, 20 or more hours per week may be possible at certain times of the year, but they are not readily compatible with busy schedules that involve work, or full-time study, family commitments, hobbies, and so on.

So whereas those language schools that are teaching the language in the country where it is spoken may only have the opportunity to work with the same cohort of students for a number of weeks or months, language schools that operate in the learners' own country could be working with the same individuals for several years.

This isn't normally a problem for academic managers as every language can be broken down into its component parts and these, together with the development of appropriate language skills, can be organised in a systematic and progressive way which avoids too much repetition at any one stage in the learning process.

In any case, a certain amount of repetition is more of a requirement than an obstacle on the journey to becoming fluent in a new language. Our brains may be able to grasp certain forms and meanings at the first attempt, but in many cases, learners need to be exposed to the same language time and time again before all the nuances of meaning or variations in form can be assimilated fully. This is one of the reasons why a majority of course syllabuses often begin with a revision of what the learners ought to have mastered in the previous course or courses.

What are the implications of all this for our project, which aims to help teachers integrate environmental issues into language classes at all levels? Is there a danger of repeating the same environmental topics *ad nauseam* and turning students off the idea of engaging with the subject matter we want them to focus on? Without a degree of planning, this could indeed be a wholly unfortunate outcome.

As with language learning, a certain amount of repetition of some specific environmental issues could be beneficial. So for example, the impact of our 'anything, anywhere, anytime' culture may need to be addressed more than a few times before learners begin to ask themselves if they could perhaps reduce their consumption e.g. buying out of season fruit that has to be flown half the way round the world so that it's always on the menu.

But again, we need to avoid over-exposure to the same issues, which could put people off. So how can we determine the 'Goldilocks level'? Not too much, not too little. The rest of this chapter includes a few concrete suggestions.

## 8.1. The syllabus

The vast majority of language courses are built around a syllabus, which in turn may be based on the contents of a published textbook.

Whether based on a course book or not, the syllabus for a course in often summarised as a table, which lists the items to be covered under a number of different headings. For example:

Unit and topics	Speaking and writing skills	Listening and Reading Skills	Grammar and vocabulary	Pronunciation
1.				
2.				
3.				

Our suggestion would be to add environmental issues to the syllabus as one or more additional columns, as follows:

Unit and topics	Speaking and writing skills	Listening and Reading Skills	Grammar and vocabulary	Pronunciation	Environmental issues
1.					
2.					
3.					

Academic managers and teachers would then be able to include environmental topics that are most relevant to the level of the students, and to the other language items that need to be covered. This would also allow syllabus planners to organise topics so that a wide range of environmental issues are covered, and that individual items are not repeated too often.

Alternatively, academic managers may want to consider the ides of developing a parallel, supplementary syllabus table specifically designed to cover environmental topics. There are of course many ways that this could be done. We would like to make the following simple suggestion.

The opening chapter of the handbook divided the environmental topics we should all be introducing into our classes into three very broad areas:

- Global warming and climate change
- Pollution
- Biodiversity and conservation

Each of these areas covers a huge range of separate issues, and every one of them could generate enough material for hundreds of hours of classroom study. Needless to say they should all be included in any language course that aims to raise awareness of their importance.

A supplementary syllabus table that focuses on environmental issues might therefore look like this:

Supplementary syllabus for Environmental issues					
Unit	Global warming and climate change	Pollution	Biodiversity and conservation		
1.					
2.					
3.					

We're not suggesting that items from all three areas need to be covered in each course unit (or equivalent block of time). Again, we have to be conscious of the danger of overload, so it would probably be wiser to include an issue from one of these broad areas in each unit, rather than try to cover all three. But a supplementary syllabus of this description would enable course planners to include items from all three areas on a systematic basis, and ensure that they are all included at some stage of the course.

Whether or not we should devote an equal amount of study time to all three of these broad areas is an interesting subject for debate. All three are unquestionably important, and all three merit everyone's attention. Some scientists might argue that global warming and climate change is the most urgent issue facing our planet, and of course climate change also has implications for biodiversity and conservation. But given the amount of coverage the subject of climate change already receives in most media, there could be an argument for concentrating on the other areas instead, as these don't always receive the same amount of media attention.

Ultimately, we think that the frequency with which these areas are covered should depend on the local context of learners and what concerns them most. But again, we would also recommend including at least one item from at least one of these broad areas in each course unit (or equivalent block of time) and covering various items from all three areas at some stage during every course.

# 8.2. What subjects to include and when?

As we have already seen in previous chapters of this handbook, some environmental issues are, by their very nature, rather more complicated than others, and may therefore require more advanced language skills before they can be addressed in the classroom. To give one simple example, while the impact of climate change can be dealt with at any level including A1 (e.g. temperatures as way to practice numbers; adjectives such as *hot* and *dry* to practice comparatives) it clearly wouldn't be appropriate to focus on issues such as the wide ranging impact of the different greenhouse gases that are responsible for global warming until learners have reached a more advanced level.

Let's look at one issue and consider how and when related issues might be included at different stages of the language learners' journey.

As we saw in chapter one, agriculture is one of the prime causes of global warming and is responsible for around 18% of all greenhouse gases emitted.

At a very low level, students might be asked to classify food into different types such as meat, cereals, fruit, and vegetables (doubtless provoking the standard debate about whether a tomato is a vegetable or a fruit).

A follow up activity might be to try to classify some of these food items with regard to their global environmental impact – e.g. high, medium, low, or don't know. This would give learners the opportunity to think about the impact of their normal diet on the planet. (They may also be surprised to learn that traditional forms of rice cultivation are responsible for over 1% of total global greenhouse gas emissions.)

At a slightly higher level, learners could be asked to compare the environmental impact of producing different food items (e.g. a kilo of red meat compared to a kilo of rice or bananas.) This sort of information is readily available on the Internet and could provide the basis for a lesson focusing on reading or listening skills.

Other similar issues that could be included at higher levels (intermediate or above) could be:

- The impact of climate change on food production in certain regions of the world
- The environmental cost of transporting food items around the world
- The arguments for and against teenagers adopting a vegan lifestyle
- Deforestation for food production
- The polluting effect of agricultural chemicals and fertilizers
- Whether we need to include insects in our diet

### Etc.

So with just this one subject (the environmental impact of food production) there are enough issues to be spread across a wide range of levels. All that is needed is for academic managers and course planners to include these items in a logical, progressive, and coherent series of course syllabuses. The aim being to ensure that all issues can be covered meaningfully, and without needless repetition.

## 8.3. Evaluation

One of the subjects language teachers and their academic managers sometimes ask themselves is:

Should we limit ourselves to testing our learners' knowledge of the language they are studying? Or can we include other, more general knowledge in our tests or other forms of evaluation?

In other words, is it legitimate to ask questions such as:

### Which is the biggest country? Russia, Australia, or Germany?

In order to answer a question of this description, students need to be able to understand the question (purely a linguistic requirement) but they also need to have an idea of the size of each country, which involves some general knowledge as well as an understanding of which countries the question is referring to.

If this sort of question is legitimate, is it equally legitimate to ask questions such as:

Which is the least polluting way for one person to travel from Paris to Berlin? By plane, bus, or car?

If we are incorporating this sort of topic into our language classes, is it legitimate to include questions of this description in our tests as well?

A similar question is this:

What can we assume that students already know about environmental issues?

In other words, if we are teaching students at B2 level, we can be fairly confident that they have mastered most, if not all, of the language items and skills that we would normally cover at levels A1-B1. If we are systematically including environmental issues in all our courses, can we be equally sure that they have mastered the environmental concepts that we have introduced in earlier levels? Is there any way we can know this without some form of evaluation process? Does it matter?

We must always bear in mind that, first and foremost, our students want to develop their language skills. In our view, how far we can or should go beyond testing these specific skills is an issue that still needs further discussion.

# ANNEX I: How to teach in a more environmentally sustainable way

The phrase 'greening the classroom' has mostly been associated with the integration of environmental and other sustainable issues into the curriculum. However, this is not the only way that school owners, managers and teachers can take action and make their classrooms more eco-friendly; there are many tangible actions that all schools, whatever the nature of their business and client profile, can put into practice to address these issues.

We all need to make environmental and sustainability issues subjects that are brought into our classrooms and discussed with our students. Language schools are in a privileged position to be able to do this, as we can create our own materials which we can focus on specific issues, while also ensuring our students achieve their language goals.

According to the United Nations World Commission on Environment and Development, sustainable development is defined as "development that meets the needs of the present, without compromising the ability of **future generations to meet their own needs**".

In other words, sustainability is using resources effectively to create and maintain the conditions of our natural environment, so that humans and nature can exist in harmony for future generations. What better way to teach this than to lead by example and show students that we are not just spouting theory, but that our schools are genuinely practicing what they teach.

We can easily encourage students to make small changes in their behaviour, both in our schools and beyond. One way of raising their awareness of sustainability practices in the school would be to start a project that first examines and then sets out to reduce the eco-footprint the school generates. This could be achieved by a student focus group that follows a process like this:

*Step 1*: Explain the concept and explain to the group why this is an activity that is worth doing.

Step 2: Identify and analyse the school's emissions.

Step 3: Devise plans to reduce these emissions.

Step 4: Verify the reduced footprint.

Step 5: Report and log all emissions.

There are several sites that help organisations to plot their eco-footprint. For example, try <a href="https://www.carbonfootprint.com/">https://www.carbonfootprint.com/</a>.

All the decisions you make about reducing your school's carbon footprint should be on your website, so that your clients can see the efforts that your school is making to become a more sustainable business. Some clients may use this information as one of the criteria in their choice of destination, so it is important to give them the information they are looking for and make it readily available.

After all, language schools that import students from abroad can be seen as part of the tourism sector, and there is now a broad consensus that tourism should be sustainable. In fact, all forms of tourism including language travel have the potential to be sustainable if they are planned, developed, and managed properly. Tourist development organisations are promoting sustainable tourism practices in order to offset any negative effects on the environment. They are also drawing attention to improved experiences for visitors and addressing the needs of the host communities.

In the language sector important initiatives such as the Green Standard Schools accreditation scheme, or the International House sustainability badge are there to ensure that schools, like other sectors of the tourist industry, embrace concerns for environmental protection.

These labels have their origins in corporate social responsibility and encourage educational establishments to think about social equity, the quality of their offer for both staff and students and how, by committing to a sustainable model, they can contribute to a dynamic, viable economy delivering jobs and opportunities.

For further reading click on the <u>link</u>.

Now we have defined one aspect of environmental sustainability we can take a deeper look at the whole concept and notion of sustainability and see how that can be applied to the education sector, and to language schools in particular.

Many, if not most, language schools are small businesses and are typically owned by one person or a family, so these issues are important considerations as they often have an impact on expenditure and budgets, as well as on the environment.

The good news is that in 99% of cases, making an effort to be aware of and take these issues into consideration will not only be of benefit for the greater good, it will also be of benefit in one way or another to the company.

Ensuring that your school is as sustainable as possible involves looking at several different areas, so we have divided this chapter into the following subjects. Each one has a direct impact on the environment that we can learn how to manage:

- 1. Paper
- 2. Recycling
- 3. Water
- 4. Energy
- 5. Transport
- 6. Purchasing & Food

### Paper

Paper is a resource that figures largely in our everyday activities and it is consistently wasted in huge quantities throughout the education industry.

When produced from wood sourced from sustainably managed forests, paper is a renewable resource. Healthy forests act as carbon sinks, binding CO2 from the atmosphere and mitigating climate change. So one place to start is to investigate where your paper comes from.

Having said that, no matter where it comes from, we should always ask ourselves the question: do we need to use paper at all? It should be remembered that it is not the single use of paper that has implications for the environment; paper production, its distribution, use and disposal, all require a large amount of energy and other resources. For example, paper production and recycling uses vast amounts of water, which is an increasingly scarce and valuable resource in many parts of the world.

To minimise environmental damage in your school, an easy place to start is to purchase recycled paper made by companies that support responsible forest management. There are several options on the market and there is also a wide variety of paper quality, so that you can purchase paper according to the end result required. Worksheets, if they need to be printed, may be printed on lower quality to that demanded for an official document, for example.

In many schools paper is one of the largest budget items under the heading 'materials' so reducing its consumption can be of major benefit both to your business and to the environment. Furthermore, you also need to factor in all the additional costs associated with paper use such as printers, printer ink, paper clips, folders, pens, storage space, and so on, as well as the time and energy needed to file and find paper documents. Together they make a heavy demand on your finances and making the decision to switch from paper to a more digital system, like an online administration and teaching platform, will not only minimise unnecessary use and waste, but equally importantly become an important contribution to the school's bottom line.

Online programs and platforms allow you to store, share, and synchronise notes across devices, including desktop computers, laptops, tablets, and phones. Investing in a system however basic, can modernise and energise your teaching delivery.

Circulating teaching materials online is also very easy, and by using a projector and laptop or electronic display to project these materials, you will save vast quantities of paper.

Use a network drive to share files and remember to make it clear to students that you will not provide hard copies, but that they can receive any document by shared systems, email or other apps, on their laptops and phones.

If you really have to print remember:

- Only print the pages you really need.
- Increase margins and reduce font size.
- Printing in black and white is preferable; colour toner is more expensive and has a greater environmental impact.
- Set printers by default to double-sided.
- Use print preview to avoid printing unnecessary pages.
- Print multiple pages per sheet.
- To save costs on toner/ink, consider fonts that use less ink, such as Century Gothic or Garamond.
- Make sure you recycle toner and ink cartridges when empty.

To summarise:

- The minimum effort is to make sure to use both sides of each sheet of paper when printing, and then recycle the paper when it is finished with.
- A slightly more radical approach is to try not to print at all, or to print as few worksheets and documents as possible.

But why not aim for a paper-free approach to teaching? It sounds complicated but if used as part of a whole school approach to sustainability, everyone will benefit:

- In a paperless school the amount of money saved can be used to improve other facilities or purchase other digital materials for teachers and other staff.
- Students benefit as they can receive personalised work programmes on their phones/tablets/laptops etc. This will allow them to focus on areas that need their attention without being made to feel slow, or that they are not progressing with the rest of the class.
- For students who have advanced quickly, they can be sent work that will stretch them further, allow them to progress at their own rhythm and even become role models in group work when covering the more advanced topics/structures/ vocabulary that they have already mastered, when these are presented to the class as a whole.

A number of our project partners adopted this approach some years ago by creating their personal teaching databases. In order to share resources, all the teaching staff register their lessons and worksheets into a shared database. These are saved by level (A1 for example) or by grammar point or theme. This allows any member of the teaching staff to search for lesson plans and worksheets by level or topic. To compliment this approach, schools can invest in technology that allows digital materials to be shared in their classrooms while allowing teachers and students to make notes directly on displayed materials. This can be done using whiteboards and projectors as a cost-effective solution, or using more sophisticated equipment such as interactive whiteboards.

Most students are very happy with this format as it is modern, efficient, environmentally friendly, and dynamic on many levels. Naturally, we will still occasionally have to print materials (preferably using recto verso A5 sheets of paper) for those students who feel unable to make the digital leap.

## Paper is not just in the classroom

So the question is where else is paper used in language schools and other educational establishments?

The answer is: in many places, such as bathrooms and kitchens, on information boards, in brochures and booklets, progress records, attendance sheets, etc.

So how can a school reduce paper consumption in all these areas? Here are three quick ideas:

- digitalise display boards
- send information and booklets by email or WhatsApp groups
- digitalise your administration system, which will encompass progress records, attendance sheets, and much more.

Perhaps the most complicated areas to change are bathrooms and kitchens. Most schools provide paper handtowels, but these can perhaps be replaced by efficient hand dryers. If you can't install hand dryers, use a hand towel dispenser that distributes one sheet at a time. This will ensure that everyone uses less and the school will save money

That leaves us with one of the least eco-friendly areas where paper is used and often to excess - toilet paper. The shocking and often forgotten truth about toilet paper is that it is toxic to the environment as a large proportion is made from wood pulp. Toilet paper also uses a vast amount of water to produce.



The addition of a small shower head in the WCs which can be used before paper to ensure better hygiene and cleanliness (a common practice in many countries) can help, and should certainly reduce the volume of toilet paper required.

Other areas of paper consumption and concern in schools, especially with the requirements and legislation in force during and post Covid are cleaning wipes – make sure that they are recyclable and/or bio-degradable. The same for tissues which have also been in constant use everywhere throughout the pandemic.

We must also remember to pinpoint paper used in the disposable cups that are often distributed by coffee machines or water fountains. Providing staff and students with reusable cups is one way of eliminating paper for hot drinks; one option for water and cold drinks is to use potato starch goblets which are biodegradable.

### Tests and exams

Paper is still widely used for certification and exams (with exam papers then being shipped around the world for marking), although for languages like English, exams are increasingly appearing in digital format. If your school belongs to an association or special interest group of language providers, perhaps the group could lobby for any paper-based examinations and tests that are in current use for your particular language, to be provided online – at least as an option. While you may not be successful at first, it is worth contacting the various organisations that control these exams, so that they become more aware of their responsibilities, and respond to the challenge of reducing the impact their business has on the environment.

All language schools use placement tests for evaluating existing language competence in potential students. For the most part, these tests are available in paper format. There are some commercial digital placement tests available, but their cost is fairly high for their intended purposes. You can now access digital placement tests for English, Italian, German, Spanish, French and Russian languages free of charge at the following website: <u>https://nextgenplacement.org/</u>. These tests were developed through a transnational Erasmus KA2 project and are available to any language school worldwide.

### Online teaching

Another way to reduce paper and your carbon footprint is, of course, by teaching online. This came to the fore during the pandemic when many schools were forced to switch more or less instantly from traditional classroom teaching to online. Many schools chose to use a service like Zoom or Teams, both of which are simple to use and readily adaptable to a language school's needs, as they do not require massive investment in microphones, screens, lighting or cameras. Both platforms can, however, be enhanced by a minimum investment in microphones for the classroom.

There are many aspects to consider before giving a lesson that you are used to teaching in a classroom and transforming it into an online session. You will need to consider materials – are they adapted to being shown online? Much better to have them available digitally to share, than to pick up your old cue cards, photos or other visuals and wave those in front of the camera.

As with classroom-based lessons, the content needs to be planned and the supporting materials ready to cue. Needless to say a good internet connection is required at both ends, to ensure that students remain connected to their teacher throughout the lesson.

Many schools are now teaching hybrid classes where some students are in the classroom in the language school, while others are following the same class live online, all around the world. Hybrid teaching is and will continue to be an answer for many students who are unable to travel for whatever reason, and gives language schools the chance to welcome students from different countries and fill classes so that they remain economically viable.

If it is done well there is little difference between the effectiveness of a course in a classroom and one that is delivered online. And although online teaching still generates a carbon footprint, it is almost always much less significant than the footprint caused by traditional classroom teaching. And of course online teaching encourages teachers and schools to adopt fully digitalised, no-paper teaching resources. Why are we still using high cost paper-based course books? That's an interesting question which we can't go into in depth here. For one opinion on the subject, you might like to visit the following blog:

### The extraordinary endurance of course books | jonathan dykes blog (wordpress.com)

Paper may be one of the areas where schools can most readily reduce their carbon impact, but let us turn our thoughts to a whole series of other questions of equal importance that, if taken into consideration, will help your school achieve a more sustainable business model.

### Recycling

Many people ask: why recycle?

Recycling and reusing waste materials plays a significant role in sustainability because it reduces the negative impact that our human activities have on the environment. Recycling drastically reduces the air pollution, water pollution and land pollution that is caused by discarded or burning waste products. Reusing and recycling products greatly impacts and reduces the need for landfill waste, which in turn will reduce both pollution and greenhouse gas emissions.

Other than having a positive impact on the world we all live in, there are plenty of more important reasons for us to recycle. Recycling saves energy and diminishes our need to start from fresh, using up limited natural resources. So, if we all make the effort, recycling can not only impact prices by bringing them down, we can also make resources re-available and therefore avoid unnecessary environmental damage.

In schools recycling areas can be used to heighten student, staff, and visitors' awareness of the importance of using resources not just once but several times.

Both individual consumer and business organisations have an important role in making recycling a success and it is a vital part of any sustainable business model

Try to find a company that collects and recycles your waste properly, and employs disadvantaged people such as those with mental or physical disabilities. In some countries, companies are legally required to employ disabled people and by working with such companies, schools can not only deal properly with their waste but also help companies that keep disadvantaged people in work. What does 'recycling properly' mean? Again, this is a complicated subject but it boils down to reducing the amount of your waste that goes into landfill sites, or is burnt.

Last but not least, try to measure the volume of waste that is recycled in your school, and then try to set goals to reduce this volume. Recycling is much better than not recycling, but because any recycling process uses energy, water and other resources, reducing the amount of waste that needs to be recycled is a much, much better solution.

### Water

Water is essential for life. Clean water is essential for health.

On a global scale, having sustainable water means being able to provide each person on the planet with affordable access to the minimum 20 to 50 litres of daily water required to sustain life. This follows the United Nations General Assembly recognition of "the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights".

Municipal water use accounts for just 10 per cent of total water use. And yet, worldwide, an estimated 748 million people remain without access to an improved source of water, and 2.5 billion remain without access to good sanitation.

Water is a limited commodity and one for which we have to instigate a management strategy in order to ensure global provision. If we do not do so this will inevitably lead to water shortages. Indeed changes in the climate are already having an enormous impact which will only get worse in the near future if we do not take appropriate steps right now.

Water conservation is practical and can be undertaken immediately by each and every one of us to help preserve this most precious resource.

Water is a commodity that we often take for granted in much of Europe, and so perhaps we do not look as carefully at the cost to our business as we may do for other items on our list, such as energy. But it does have a cost and therefore reducing our usage will have the double benefit of lowering our bills and helping to ensure that there is enough to supply all our needs.

As with most of the areas that we will be highlighting, the best place to start to devise a management strategy is to take a careful look at recent bills, say over the last two or three years to see and understand how much you are really spending on water. From there, with your baseline, you can see and be inspired by how much you can save, not just in litres but also in euros.

### Tips for saving water and adding a water management strategy

In all our schools as in our homes we can undertake a series of tasks and checks that will help all of us manage our resources more efficiently, and perhaps this will encourage students to implement similar measures in their own homes and workplaces. Our job as school owners, managers and teachers is to educate and to talk about those things that we can all do easily that will contribute to conservation.

1. Check for leaks - especially in and around each and every toilet.

Small 'invisible' leaks from a WC can be wasting as much as 100 gallons of water a day.

Leaks can be spotted by putting water dyes into the toilet and checking for coloured water in and around the base, or by placing cloths or newspaper around the base. This could be done over a weekend if you feel that this is not a positive image for your school.

Check all faucets and pipes for leaks.

Leaks waste water 24 hours a day, seven days a week. Usually the problem can be solved quickly, easily, and very economically by replacing washers. Small drips can waste 50 or more gallons of water a day.

2. Where possible, install aerators on taps. These significantly reduce the amount of water used, without noticeably changing the water pressure.

3. Ensure that no one uses the toilet as a dustbin or an ashtray.

To flush away a cigarette end, a WC uses five to seven gallons of water. Placing visuals above the WC asking users to only place used paper in the bowl can help avoid this.

### 4. Put a plastic bottle in your toilet tank

Put an inch or two of sand or pebbles in the bottom of a half litre bottle to weigh it down. Fill the rest of the bottle with water, put the top on and and place the bottle in your toilet cistern, safely away from the operating mechanism. On average the bottle may save five gallons or more of water every day, without harming the efficiency of the toilet.

5. Install taps that have an automatic shut-off feature. If that is too difficult or costly, place posters in bathrooms and kitchens, that encourage staff and students to turn off the water while washing their hands or brushing their teeth. Running water with no specific purpose is one of the greatest losses in the household and in our schools.

6. Install a dishwasher in staff or student kitchen areas (if you have them).

Running your dishwasher once a day with a full load will not only save the school money, but it will also improve hygiene and save water.

7. Install cold water drinking fountains so that students or staff do not leave the tap running water to cool it for drinking.

8. If your school has a garden or grounds there are several other specific things that you can do to save water and reduce costs:

- Water your lawn only when it needs it. Step on some grass. If it springs back up when you move your foot, it doesn't need water.
- Water less frequently by deep soaking your plants or lawn.
- Water during the cool parts of the day.
- Position your sprinklers so that water lands on your lawn or garden, not in areas where it does no good. Also, avoid watering on windy days when much of your water may be carried off to the streets or elsewhere.
- Plant drought-resistant trees and plants.
- Put a layer of mulch around trees and plants which will slow the evaporation of moisture.
- Use a broom rather than a power water cleaner to clean driveways, sidewalks and steps as using a hose wastes hundreds and hundreds of gallons of water.
- Don't wash personal or school vehicles with car washes or hoses. Use a small amount of water and sponges. Wash down your car from a small pail of soapy water. Only use a hose for one quick rinse.
- Collect rain water in a tank or barrel. This is perfect for watering plants or cleaning outdoor equipment.

### Energy

The energy bill is probably the largest single bill that you receive in the school, so again, it is really worth monitoring and analysing your consumption. There are several easy ways to begin to reduce this big annual expense:

• Check that you are using the best tariff at the right time.

- Do an energy-diagnosis analyse your invoices and set targets for reducing your consumption. Then make sure everyone in the school is aware of the target!
- Talk to energy suppliers and get them to help you find solutions.
- Last but not least, look for a supplier that promotes reusable energies.

One language school kept a three-year log to trace the impact that the very practical measures for saving energy they had opted for made to their bills. Over three years they halved consumption by doing nothing more than installing timers on everything: lights, photocopiers, drink machines, computers and so on. The school closes at 5.00 pm so at 5.30 pm everything was automatically turned off, and on weekends too. Timers that can be programmed are cheap and easy to install and can make a huge difference to your energy consumption.

Check out with a professional the type of heating that you have installed. Changing to a heat pump, more modern radiators, or ensuring that your school is correctly insulated can all significantly reduce your energy consumption.

Setting thermostats to environmentally friendly temperatures also makes a huge difference. The temperature you should set your thermostat to will vary according to the time of year, the number of people you have in each room, the thermal insulation properties of your building, and so on. In the winter months, you probably don't need to heat the building until the temperature falls to around 18-19°C. Similarly, in the summer, you probably don't need to switch air conditioning on until the temperature in your school exceeds 24-25°C. An adjustment of even 1°C to your thermostat can make a big difference to your energy consumption, and to your energy bills. When the school isn't occupied, which is probably at least 10-12 hours a day, the temperature can be allowed to fluctuate more widely without causing any discomfort, so a programmable thermostat is ideal.

As the world becomes more impacted by climate change and the need to act becomes more obvious, some cities or regions have introduced schemes to encourage the installation of solar panels, which is also a great answer to rising fuel costs. In France, local authorities have help desks for businesses trying to economise on energy and they are an invaluable source of information and potential solutions. Governments in most other European countries will probably offer a similar service. In many cases financial support to change to more sustainable energy systems may also be available.

### Transport

It will come as no surprise to hear that bicycles and walking are the most sustainable methods of transportation. Not only do they produce zero greenhouse gas emissions, but they are also enjoyable and good for you!

But as a school, how can we be mobile in a manner that is the least damaging to the environment and does not impair the mobility needs of future generations?

If your school opts for a sustainable transport policy then there are various things that you can easily put into place that will make an impact and reduce damaging greenhouse

gas emissions, which in turn will improve your local air quality and reduce global warming.

Supporting the construction of bike-friendly routes in your city and improving policies around bike safety are integral factors in bolstering biking communities, and are obviously good for both the environment and your clients.

If you have space in the school, you could also set up a secure bike rack, which should encourage more people to get on their bikes.

In Europe, many students from other countries come to our schools by bus, train and cars and many schools have brochures and websites giving information about how best to reach our towns and cities. Why not give a 'Green Tip' for the most eco-friendly way to travel to enjoy a course at your school?

Check out direct bus and train routes to your city and make the information widely available on your booking pages. If you have a number of students arriving at your local airport at more or less the same time, why not offer a shared pick up mini-bus? This will be cheaper and more convenient for your students, cheaper for your driver, and do wonders for local pollution levels!

Investigate local green transport schemes and see if you can negotiate an agreement with your municipal services to offer your students a reduced rate, or some other advantage, if they use local public transport or a city bike scheme. Many councils offer schemes by which employers can purchase subscriptions for their employees at reduced rates to encourage them to come to work by bike. See what is on offer and maybe ask the Council to extend such offers to your students.

If you have car hire partners make sure they are offering electric cars and find out where the nearest charging point to your school is. Or ask for one to be installed outside your school!

In Europe ethanol and liquified natural gas are also being more widely used for transportation, so ensure that you know which garages stock these fuels to be able to pass the information onto your students.

For those schools that import students from abroad, air transport is a major factor in their carbon footprint. There are many schemes that offer ways to offset the emissions your students generate by flying. Some of these are more reliable than others, so it's important that you make the appropriate checks before signing up to any such scheme.

While all airlines are moving towards more sustainable operations (both in the air and on the ground) some are moving faster than others so it's always worth investigating options before you book your ticket.

It may occasionally be necessary for school managers to travel to events in locations which mean that flying is the only feasible option. But within Europe the train and bus networks are improving day by day. This means we can more easily travel between many European cities using efficient public ground transportation, which is invariably less damaging to the environment than flying.

## Purchasing and food

As we have seen, the language travel industry can make huge savings and huge contributions to environmental well-being by adopting certain practices and being more aware of the impact various areas of their activity have on the planet.

In this final section we will see how small businesses can take some fundamental economic criteria (prices, quality, deadlines, etc.) into account and integrate them to form part of a sustainable and socially responsible approach.

For language schools, a sustainable purchasing policy means bringing together three essential points:

- 1. The environmental concerns that we have already talked about touching on areas such as energy performance, re-using items where possible, waste reduction, etc.
- 2. Ethics and social responsibilities: respect, working conditions, inclusivity, diversity, etc.
- 3. Economic factors: financial costs, quality of products and services, delivery times, etc.

Today, many companies consider the implementation of a sustainable procurement policy as a priority within their overall Corporate Social Responsibility (CSR) strategy, as they are faced with the expectations of their clients who want to know where the products they purchase come from, and what they are made of. Companies increasingly want to be seen as leaders in environmental care and promote their brand as being responsible.

To reassure your customer base and attract new clients specifically looking for a language course provider that is making the effort to instigate a sustainable business model, you should think about formalising your CSR criteria by incorporating such principles as Fair Trade, financial transparency, renewable energies, environmentally friendly products to maintain a healthy work environment, equal opportunities, accessibility, waste reduction of all sorts and recycling. By developing and implementing a broad CSR statement you will find that not only can you reduce your impact on the environment but you can also grow your business.

Here is a quick and basic (non-exhaustive!) check list

- Choose suppliers that are low-impact, fair trade or environmentally friendly.
- Make use of reused and recycled materials that have been sourced responsibly (e.g. by using recycled paper).
- Reduce waste by reusing/recycling packing material as opposed to throwing it away after one use.
- Maintain a healthy work environment where staff and students feel respected and valued (e.g. accessibility, equal opportunities).

The benefits of these principles will strengthen your reputation and brand value while reducing your organisation's costs (e.g. by reducing waste and saving energy).

In some language schools, an important part of the purchasing policy can include a sustainable attitude to food. Language schools often offer all-inclusive packages to students, and many have found that the most cost-efficient way to ensure a quality and standardised product is to outsource 'packed lunches'.

One Language school found that by outsourcing the packed lunch to a local sandwich company it meant that:

- 1. Students were able to choose their lunch in advance.
- 2. There was a very significant reduction in complaints and in waste.
- 3. The supplier chosen has reduced packaging and used, for the main part, locally sourced and seasonal products, such as apples
- 4. The students have a wider choice of lunch food including non-gluten, vegetarian and vegan options

## Conclusion

In our quest to make our language schools and teaching practices more sustainable we come back to the first step which is to plot our current carbon footprint. Having this information will help identify the areas where changes will have the most impact. As mentioned at the beginning of this chapter, one way to analyse the starting point is to involve your students and make it a task for a focus group that would have to do some research, devise questions and interview staff and students as part of the project.

Each language school has its own particularities, so the steps one school takes won't necessarily be the same as the steps you choose to implement.

To conclude, here, is a wrap-up list of ideas for language schools to reduce their environmental impact.

1. Offer online classes and allow staff to teach some of their timetable remotely.

This is great for the environment. You are helping your staff to reduce their environmental impact as well as giving them a chance to do some of their working week without having to commute.

This may only be a small part of the timetable, but even a small change like this can help reduce traffic and a business's overall carbon footprint. Further, with fewer people in the office, companies can save money usually spent stocking, lighting and heating the workplace.

2. Provide public transit commuter benefits

When your staff are in the school, how their commute contributes to greenhouse gas emissions still can be influenced. Public transportation (bicycles, buses, trains, trams) is the greenest way to commute, and companies can encourage employees to take advantage of these transport options. Small businesses can also provide employees with public transit benefits that help the employees and the environment.

### 3. Use sustainable products

The items that we purchase to ensure our schools can function — such as paper, cleaning products or stationery — can be damaging to the environment because of the way they are made and the processes that go into making them.

As we have seen, paper items commonly used, such as rolls of toilet paper and reams of printer paper, can all be made from consumer waste. Recycled products such as these maintain a circular economy and reduce overall waste.

For cleaning products, there is a whole range of green cleaners that don't include chemicals but which use natural ingredients. They work just as well. And by using them your school will be seriously contributing to maintaining clean water courses and reducing pollution.

4. Make use of second-hand finds

Furnishing the school doesn't have to mean paying high prices for brand-new furniture. Enhance your green credentials by buying second hand and recycled furniture. This not only ensures that items of perfectly good furniture won't be thrown into landfills, but may also support organisations that are helping to employ disadvantaged people so it is a win-win.

5. Reduce, reuse, recycle

The best way to keep waste out of landfills is by never sending it there in the first place. Initially, your school should reduce consumption where it can. A good example is instead of buying disposable cups, plates and utensils opt for glass or ceramic alternatives.

If you can't reduce, then recycling is the next best thing. Most cities now provide a service for this and have made the recycling process less complicated.

6. Compost

Another way to avoid waste going into landfills is to compost. Many cities now offer communal composting areas and your school is the perfect place to implement a communal compost program. Staff and student lunch leftovers can be turned into soil instead of methane for either your school garden, or a local care home or even for staff gardens! Also, make sure you compost all coffee pods instead of throwing them in the rubbish.

7. Make energy-efficient upgrades

Becoming energy efficient doesn't only help to shrink carbon footprints, it also helps to reduce your school's energy bill.

Many simple things can be done: use energy-efficient appliances; move to LED lights; automate lights with sensors; use smart thermostats; take advantage of natural light; and supply staff with laptops instead of desktop computers.

8. Use green web-hosting services

Websites use energy too. The servers that host a website's data are constantly on, using up copious amounts of energy, but you can choose where your data is stored. More and more, eco-conscious companies are offsetting that energy usage in order to go carbon neutral and Google, for example, has done a lot to decarbonise its data centres and claims that its cloud services now produce zero net carbon emissions. The largest cloud computing provider out there, Amazon, has promised to achieve the same by 2040 through building its own wind and solar farms.

9. Do business with green businesses

Web hosting isn't the only way businesses can go carbon-neutral with the companies they choose to operate with. Schools need to consider everything they purchase. Is there a green alternative supplier? Many small changes can add up to a big impact.

10. Buy carbon offsets

Finally, for whatever portion of your company's carbon footprint that can't be reduced through changes, the purchase of offsets can help make your school become carbon neutral. When choosing, it's important to search for third-party certification and the projects the offsetting investments are made in, so that you are sure that actions taken are in line with your overall policy.

### Final words

Every company has a different level of impact on the planet, but we all contribute to climate change, pollution, and the waste crisis.

Each school's decision to become environmentally sustainable and gain certification is a step in the right direction, but it's more critical than ever to start now and get it right.

We are at a point in time when even the biggest companies and household names are incorporating sustainability practices into their businesses because, like you, they know that the environmental crisis is a very serious and dangerous phenomenon.

Every business and every language school, whatever its size, has a part to play. By taking into account our individual carbon footprints, by teaching our students about environmental issues, by taking the necessary steps ourselves and encouraging others to reduce their footprints and impact, we can all help – and hopefully reverse the damage we are doing to our beautiful planet.