The language of climate change

Lesson plan 2

The development and usage of language related to climate change

*The purpose of this lesson plan is to teach research skills and encourage students to explore how language originates, evolves and develops, with a particular focus on terms related to climate change.*

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For this lesson plan, we will be demonstrating how the *OED* can be used to explore the development of language related to climate change, using *carbon* as an example.

**Student activity:**
- In groups, list some words related to climate change that you might like to explore further.
- Report these back to your class.
Teacher notes:

Suggested terms:

- Climate
- Clean (e.g. clean energy)
- CO₂
- Eco/eco-
- Ecological
- Environment/environmental/environmentally
- Emission
- Energy
- Extinction
- Global/global warming
- Green
- Greenwash/greenwashing
- Kaitiakitanga
- Non-renewable
- Organic
- Plastic
- Recycle/recycling
- Renewable
- Rewilding
- Sustainable/sustainability
- Unsustainable

It may be worth students exploring umbrella terms rather than specific terms – e.g. in this instance we will be looking at ‘carbon’ rather than a narrower term such as ‘carbon offsetting’ but will explore the specifics later.

Exploring sense development

Words often develop from their original meanings and take on new senses.

Each OED entry contains at least one sense (which typically consists of a definition and a set of illustrative quotations). In entries with multiple senses, each represents a distinct meaning of the headword you can see at the top of the page.

Unlike in dictionaries which focus on current English usage, where the most common current sense of a word is usually shown first, in an OED entry the earliest known sense of a word appears first, and senses are grouped and structured to show the chronological development of the word.

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The first quotation in any block of illustrative quotations is always the earliest known example of the word being used in that particular sense (according to the evidence available to editors when the entry was prepared).

In the *OED* entry for *carbon*, we see this as the first definition:

1. a. Chemistry. A non-metallic chemical element, atomic no. 6, which occurs in crystalline form as diamond and graphite, in black, amorphous form as coal, charcoal, and soot, and in combined form in numerous substances, including all living tissues, petroleum and natural gas, and many minerals. Also as a count noun: an atom of this element. Symbol C.

Carbon atoms, which have a valency of four, are able to link with each other and with other atoms (e.g. hydrogen, oxygen, and nitrogen) to form chains and rings, and a great variety of carbon compounds (organic compounds) exist. The two familiar carbon allotropes are diamond, which is a hard, transparent, electrically insulating substance and graphite, which is opaque, lubricating, and an electrical conductor. Since the 1980s a large family of other crystalline forms (fullerenes) has been discovered, based on hollow structures consisting of large numbers of carbon atoms. Activated, active, pyrolytic, retort carbon, etc.: see the first element.

1788 J. St. John Jr. L. B. Guyton de Morveau et al. *Method Chym.* Nomencl. 32 We adopt to it the modified name of carbon, which indicates the pure and essential principle of charcoal.

1801 Philos. Trans. (Royal Soc.) 91 197 I believe it contains a little carbone, produced by the decomposition of the alcohol.

The first known usage of this sense was in 1788 (as we can see from the quotations), but it’s not until 1977 that we first see the sense of *carbon* meaning ‘carbon dioxide or other gaseous compounds released into the atmosphere’ appear.

**Student activity:**
Choose one of the terms from your list and use the quick search bar to look it up in the OED. Note down:

- When did the word first appear in the English language?
- What was its original meaning?
- Look for the sense you were thinking of when you added the word to your list: when was this sense first used?
- Does the date surprise you? Is it earlier or later than you had anticipated?
- What other senses have developed in the word’s history? Is there any additional information you need to take note of as well as the definition? Dictionaries often label entries and senses to indicate the subject field, the region(s) in which it’s used, the kind of word it is (slang, colloquial, etc.), and so on.
- Has the word been used in an unexpectedly positive or negative way?

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Teacher notes:
Encourage students to explore the full OED entry.

For students who chose to explore clean, you could point out sense 4, which relates to honesty and guiltlessness.

For environment, it may surprise students that the sense we recognise today has only been in use since 1935.

If any of your students have decided to explore the entry for organic, adj. and n., this could provide an interesting example to highlight to the rest of the class. As well as the definitions we are most familiar with today...

... we can also see medical, musical, and legal senses, which are entirely distinct. There is also ‘organic chemistry’ within the entry, which exemplifies both how a word can take on a meaning entirely at odds with its original meaning (organic chemistry can refer to carbon compounds of non-biological origin) and how words can branch out in multiple ways – here we can see how ‘organic’ has one use within the realms of science, and another in more general use.

Exploring compounds

For many words related to climate change, the most revealing section of the entry may be towards the end, where the so-called ‘compounds’ are listed. A compound is a new term formed by combining two existing words and take on a fixed and distinct meaning – for example, the way climate and change
combine to form climate change. A compound is usually formed by combining and adjective and a noun (e.g. black hole) or a noun with another noun (e.g. rocket science).

Straightforward compounds are treated as subentries of a main entry and will appear in the compounds section as you see in carbon with carbon emission, carbon offsetting, and carbon footprint.

More significant compounds are treated as entries in their own right, especially if the compound has several meanings, or if it has a history distinct from that of its component parts. For example, global warming, n. which has its own entry, rather than being part of the compounds section of global, adj.

The compounds formed can tell us a great deal about how a word has been used in language, for example, that the concept of carbon debt and credit, and therefore the idea of a responsibility for our own carbon emissions—whether at a country, company, or individual level—has been in widespread general usage since the 1990s.
The quotations here also offer some insight into the complexities of the concept – for example in the 2011 quotation here from the Geelong Advertiser:

“Burning biomass releases carbon dioxide instantly, while repaying that carbon debt through new tree growth takes years.”

For carbon, the compounds also offer evidence of a drive to find solutions – e.g. carbon offsetting, carbon sequestration, etc.

**Student activity:**
In your initial list of terms, you may have noted down climate, eco-, environmental (or environmentally), and sustainable.

Take a look at one of these entries now. What do the compounds tell us about how this word has been used in language?

**Teacher notes:**
For climate, you could point out the increasing use of more urgent terms – we see climate change in 1854, but climate emergency emerging in the 2000s. We can also find terms such as climate justice and climate strike, suggesting a sense of injustice and a need to protest when it comes to the impact of climate change.

For eco-, compounds such as eco-freak and eco-nut indicate a lack of seriousness around climate change and a negative attitude towards those concerned about the climate, but ‘eco’ has been used in other compounds which also designate a person’s outlook, identity, or role (we also see eco-activist, eco-warrior, etc.).

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Environmental seems to be paired with words related to various professions (in this entry we see *environmental psychologist* and *environmental engineer*, for example), and a more formal, serious use—the compounds listed include *environmental health*, *environmental audit*, and *environmental health*.

You might like to point out that the compounds for *sustainable* seem to relate to infrastructure—buildings, transport, and so on.

**A word’s influence on the development of other words**

Beyond compound formation, a term can also spark new terms, or be formed based on the pattern of an older term (*greenwash*, for example, was formed based on *whitewash*). One of the compounds we can find in the entry for *carbon* is *carbon footprint*, used (according to our first quotation) since 1999.

You may be familiar with other footprint terms, such as *water footprint* or *plastic footprint*, and it might be tempting to believe that our use of *carbon footprint* sparked the formation of these other terms. You can use the advanced search again to investigate lemmas (words or phrases) that include ‘footprint’:

![Footprint search interface](image)

And here are the results:
Clicking into each entry and exploring the accompanying quotations can reveal when each term was first used—so we can see that ecological footprint was first used seven years earlier than carbon footprint, in 1992:

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And that in turn comes from *footprint*, n.8, the earliest quotation for which is dated to 1979, and refers to an ‘environmental footprint’.

III. The cumulative effect of an activity on its environment.

8. The impact of human activity on the environment, esp. with regard to pollution, loss of biodiversity, or consumption of natural resources; an instance of this; the magnitude of this. Cf. *carbon footprint* n. at CARBON n. Compounds 3, *ecological footprint* n. at ECOLOGICAL adj. Compounds.

1992 Environment & Urbanization 4 121 The total area of land required to sustain an urban region (its ‘ecological footprint’) is typically at least an order of magnitude greater than that contained within municipal boundaries.
1996 Austin (Texas) Amer.-Statesman 15 Apr. B10 Humanity must learn to leave a smaller ecological footprint...or the 21st century will be filled with unpleasant environmental surprises.
2006 New Scientist 17 June 372 Scientists calculate that a sustainable ecological footprint that shares all the world’s resources equally among its inhabitants would be 1.8 hectares per person...The eco-footprint of a typical American is 9.7.

And we can also see the use of *noise footprint* as early as 1967:

4. More fully *noise footprint*. The area of ground over which the noise of a plane flying overhead exceeds a certain level.

1967 A. J. Evans Let. 14 Sept. in Congress Rec. 27 Sept. 27010/1 The above studies will form the basis of a project to develop methods for predicting the noise footprint from an operational aircraft.
1988 Oil & Gas Jnl. 29 Feb. 23/2 No doubt exists that Prudhoe Bay oil field has indeed resulted in a ‘footprint’ on the tundra.
2007 F. Beull From, Apocalypse to Way of Life 148 The developed world creates more than its share of woe through the broadening footprint left by its economic machine.
2012 Green Parent Apr. 44 They worked together to build the first groundhouse—an ecologically sustainable home with almost zero footprint.

The dates of earliest use are:

- 1967 – noise footprint
- 1987 – memory footprint
- 1992 – ecological footprint
- 1995 – digital footprint
- **1999 – carbon footprint**
- 2002 – water footprint
- 2007 – plastic footprint
So we can see that, perhaps unexpectedly, *carbon footprint* is just one of a number of footprint terms, and it was not necessarily a trailblazing term in English.

**Student activity**

Can you think of any terms related to (or formed in a similar way to) the words on your list that you might be able to explore in this way?

What can you learn or begin to guess at about your word’s place in the English language? Might it have influenced the formation of other words or have been formed based on words that came before it?

**Teacher notes:**

Encourage students to break their word into components, for those which don’t follow patterns quite as easy to see as *carbon footprint*, for example:

- they could look at either the ‘eco-’ or the ‘friendly’ in *eco-friendly* and explore patterns in formations
- the entry for *greenwashing* is limited in terms of the information that can be found on the entry page itself, but if they look at the building blocks of the words they can begin to discover how ‘washing’ has been used in other terms, how ‘green’ has been applied in other positive or negative ways, etc.

Each *OED* entry offers etymological information to enable students to trace a word’s origins, exploring both word forms and meanings, and you could suggest that students look at their word’s etymology as this may provide information on individual components of a word. Click ‘show more’ to view any additional commentary from our etymologists, and click any hyperlinked words to navigate to related entries.

**Finding more information**

We have found that the language used when speaking about climate-change across the world is predominantly English, or that words in other languages are often direct translations of English terms. In the case of *carbon footprint*, while it may not have influenced the English language it’s possible that it has sparked similar terms in other languages, as you can see from this text on the *OED* blog:
Some parts of the campaign use text laid out in the shape of a footprint (or more accurately a shoe- or boot-print) to reinforce the metaphor, and perhaps to give the problem a human dimension, or, it might be argued, to deflect it from big corporations on to individuals. Greenwash or not, it seems to have captured the public imagination, because we see the same metaphor occurring in many other languages, for instance Spanish huella de carbono, French empreinte carbonne, Italian impronta di carbonio, German Kohlenstoff-Fußabdruck (or CO2-Fußabdruck).

(excerpt taken from this blog article, where you can read more if you wish)

**Discussion point**

- Why do you think this is the case for the language of climate change?

- Can you think of any words related to climate change which are not English words or formed from English words?

**Teacher notes:**

One exception is *kaitiakitanga*. A loanword from the Māori language, *kaitiakitanga* means guardianship or management, especially of the natural resources of a place or area. It can also mean environmental stewardship considered as a duty of the inhabitants of an area.

You can find more information about this term [here](#). There is also an article available [here](#) about how climate change is spoken about in other languages, and the reasons behind this.

**Related commentaries**

One way to find information related to your term, as we did for ‘footprint’ appearing in other languages, is to look for a related commentary button. Some senses within an entry may show a speech bubble like this one at *carbon tax*.
Clicking on the bubble will show a pop-up box, where you can see an excerpt from a related article on the *OED* blog. Click on ‘read full article’ to view more information and see what you can add to your understanding of the terms you are investigating.

In the case of *carbon*, and its development, we can see that the new compound *carbon tax* was part of a wider emergence of climate terms related to growing concerns about the environment.

**Student activity**
Does your term include a related commentary within its entry?

What does this add to your understanding about the development of your term?

**Teacher notes:**
The term *eco-* offers a related commentary button which links to an article on the *OED* blog about words from the 1960s. It includes the text:

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Signs in the 1960s of things to come included, in the US, civil rights legislation and moves towards racial desegregation, where *black power* (1965) began to assert itself, and the beginnings of environmentalism (photos of the Earth taken from the Moon were a forceful argument for the *global village*; 1959); *biodegradable* (1959) and *unleaded* (as applied to fuel for vehicles; 1958) entered our vocabulary, species became *endangered* (1964) or *threatened* (1960), and *eco-* (as added to non-specialist nouns, as in *ecofreak*; 1969) was a strong contender for prefix of the decade. Of political correctness, the terms *ageism* (1969) and *tokenism* (1962) were coined in the 1960s.

This may provide some interesting discussion about shifts in attitude, due to the reference to *ecofreak*, the earliness of awareness of environmental issues (are students surprised that such words emerged in the 60s?), and also the reasons for the beginnings of environmentalism. Students might like to reflect on the recent controversy over Amazon founder, Jeff Bezos’s trip to space).

You might like to encourage interested pupils to look for the book Silent Spring, by Rachel Carson, a very important book for environmental science and the environmental movement, published in 1962.