

more effective than recycling **High Impact Actions: Teaching Guide**

Resources: Powerpoint projector, high impact fact sheets, 2 colours of sticky notes, small, erasable white boards

Background: Students should be familiar with CO₂, the issue of climate change, and the role of greenhouse gases

Opener (5 min): Show the first powerpoint slide. Using sticky notes, ask students to write the numbers 1 and 2 on two different sticky notes. Students should come up to the board and lace their number 1 sticky note on top of the action that they think would be the most effective way to reduce a person's impact on the climate, and the second sticky note on the second best action. Then skip to slide 2 to show the students which are actually the highest impact actions. The students should be able to easily see which actions they thought were the most effective versus actions that are actually the most effective. Discuss.

Jigsaw Activity (15-20min): Split students up into groups. Each group should include as many students as there are high impact action fact sheets being used. Students receive a number and then go to work on the fact sheet corresponding with their number. Students are to read the sheet, note down important information and answer questions to bring back to their original group (they become "experts" on this particular action). Once back in their original groups, students should explain what they learned to other group members who can take notes.

Information that "expert" students could be asked to bring back to their groups, and potential answers:

1) What makes this action "high impact"? Why for instance, does it have more effect on climate change than turning off a lightbulb?

Car ownership: Cars take a lot of energy to manufacture and to drive. Cars are inefficient because only 5% of the weight they need to move is made of passengers and what they carry.

Plant-based diet: Cows produce methane which is a strong greenhouse gas. It takes much more land to feed animals than it would take if we just ate plants. This requires more fertilizer/pesticides etc. Meat is also at the top of the energy pyramid, making it less efficient.

Air travel: Planes use more fuel/make more CO₂ to move the same amount of stuff. Planes release other chemical such as nitrous oxides that warm the earth more than CO₂ would on its own. Jet fuel is highly refined and it takes a lot of energy to fight gravity.

Fewer children: Each child will go on to produce a lifetime's worth of CO₂ in all areas (transport, food etc.). Each child may also have their own children (not on sheet).

2) Are there any helpful suggestions for carrying out this action? Are there any benefits other than helping the environment?

Car ownership: Take public transit, bike, walk. Not driving is usually healthier and contributes to cities that are better places to live in.

Plant-based diet: A plant-based diet can be better for your health (less risk of diabetes, death from heart disease etc.) and treats animals ethically.

Air travel: Use a webcam for meetings or staying in touch with family instead of flying. Travelling by train is another alternative and can even be faster than flying in some cases.

Fewer children: Allows you to focus more on your career and maintain personal freedom.

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3) Are there political ways to get involved with this issue?

Car ownership: Talk to city councillor to encourage the creation of bike lanes and public transit.

Plant Based diet: None given. Students might come up with their own such as 'encourage friends and family to eat less meat'.

Air Travel: Contact government officials or start a petition to get high speed railways.

Fewer children: Vote for politicians that care about the environment or join an organization that supports sustainability.

Group quiz competition (5 min): The remaining slides on the powerpoint presentation ask questions about the material learned so far in multiple choice format. Since each group has one student who is an expert all questions should be answerable. Ideally, each group should have an erasable white board to show their answers on so that you can keep track of their scores. Students are encouraged to work together with group mates in this section.

Helpful Knowledge for teachers

The Graph: Data for having a child is based on one child in the United states and includes the children that they will probably have, with responsibility for emissions given to the parent according to genetics (1/2 responsibility for a child, 1/4 for grandchild etc.).

Increasing a car's fuel economy is not included as a high impact action because it's hard to know if buying a more efficient car is better when it means more emissions for manufacturing a new car - whereas living car free is definitely high impact. Eating a plant based diet is based on a shift from an average omnivorous diet to either a vegan or vegetarian diet. Recycling includes paper, glass, aluminum cans etc. Upgrade light bulbs means switching ten incandescent light bulbs to CFLs.

The comparisons to recycling on each handout are based on the numbers used in the Ppt graph: one year of recycling all major household products (glass, newspaper, aluminum cans etc.) versus: a transatlantic flight, owning an average car for a year, eating an average of vegan and vegetarian diets for a year, and the footprint of one individual (as calculated above and divided over a typical lifespan in a developed country).

Sources for Car Free Living

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