The bicycle model of climate change education

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Climate change is the biggest environmental challenge of our time, which is why it is also a central theme in education.

However, in many countries, climate change education is still viewed and implemented from a narrow perspective, the focus being mainly on knowledge development.

Though knowledge is important, climate change education is far broader than that.

To highlight the diversity and complexity of climate change education, a team of researchers developed a model, called the holistic climate change model, to illustrate what holistic climate change education should look like.

The model is drawn in the form of a bicycle, because like a bicycle, climate change education is an entity that needs all of its parts to function.

Furthermore, a bicycle is not static – it is in constant movement and needs a user to work. So what does the model consist of and how can the model be put into practice?

Wheels: knowledge and thinking skills

In schools around the world, the main focus of climate change education is often on knowledge development and more specifically, on scientific knowledge and historical trends.

Though it is clear that the level of knowledge among students tends to be low and that more knowledge on climate change issues is needed, knowledge in itself is not enough.

There is abundant research showing that knowledge is only one component that leads to a more sustainable lifestyle.

For this reason, gathering knowledge should not be an end in itself. Rather, students should learn to use knowledge critically and to build new understanding through comparison and analysis of information coming from different sources.

Combining knowledge can help develop thinking skills, as well as help increase systems thinking from a climate change perspective.

For this, a multidisciplinary approach to education is needed, but even that should only form a part of climate change education.

Frame: values, identity and worldview

The learner's identity, values and worldview form the basis for any learning – and especially learning about climate change.

The frame that they form serves as the base for new skills and knowledge. The wickedness of climate change is apparent in the value conflicts related to it.

Therefore, we need value discussion that is diverse, from the standpoints of human dignity and equality.

In addition, it is crucial to question consumer habits and offer learners ways to act on climate change.

In practice, this can mean reflective discussions, debates or other active learning methods. Value and worldview education are essential parts of climate change education.

Saddle: motivation and participation

The saddle represents a person hopping on a bike. For learners to become climate responsible citizens, they must feel that climate change matters to them and they play a role in solving the climate crisis. Climate change should not be presented as a distant problem or made difficult to understand. On the contrary: educators ought to find connections between the learners' own life and the issue to be studied. An encouraging tone of voice is to be preferred: There are many ways to slow down climate change. Participation is shown in the actions of individuals and communities.

Chains and pedals: action to curb climate change

In the context of climate change education, action means ways to act in everyday life. Even young learners can participate in action to mitigate climate change when they are encouraged and guided towards it.

Actions can be divided into personal-life actions and social actions, both of which can be enhanced by taking action in groups.

For personal sphere actions, students can first use a carbon footprint calculator to examine which lifestyles have the biggest emissions and then take impactful actions to reduce those emissions.

Some actions, such as eating a planetary diet, will have much greater impact than other actions, such as recycling. Students should also be encouraged to take social action, such as joining a climate march or lobbying to local politicians. These actions can help change social norms, affecting how people view climate change issues.

Brakes: operational barriers

Taking climate action is not easy. To promote environmentally responsible behaviour, it is crucial to understand what is hampering action and stopping people from acting.

These obstacles are often humane – such as desire for comfort – but there are also plenty of structural obstacles, which can only be changed gradually.

When the internal and external obstacles are recognised, it is easier to recognise what needs to be done to overcome those obstacles.

Light: hope and other emotions

We know that many children and young people are extremely worried about climate change.

Climate crisis discussion makes many people experience negative emotions, such as concern, fear, sadness, guilt, hatred and hopelessness. In education, these emotions must be recognised, because they affect learning. Instead of negativity, climate change education should spark hope and compassion. This can be achieved through positive actions, for instance.

Handlebar: future orientation

Climate change is already here, but it is also very much a question of our future. Education must provide ways to view the future with a critical eye but in a positive light.

The aim of education for the future is to practice decision making even in situations where one cannot be totally confident that the decision is right. It is important to remind the learners, that the future has not happened yet, we can still change it.

Putting the model into practice

The holistic bicycle model can be used for many purposes. For instance, teachers have used it to assess their own teaching methods, while researchers have used it to assess how holistic climate change education is present in the curricula.

As it is a holistic model, it does not bend very well for planning a singular learning session, whereas it can serve as a structure or check list for educational planning in long-term, such as course development, climate change education programs, learning paths, educational materials and curriculum guidelines.

Where would you find it useful?

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