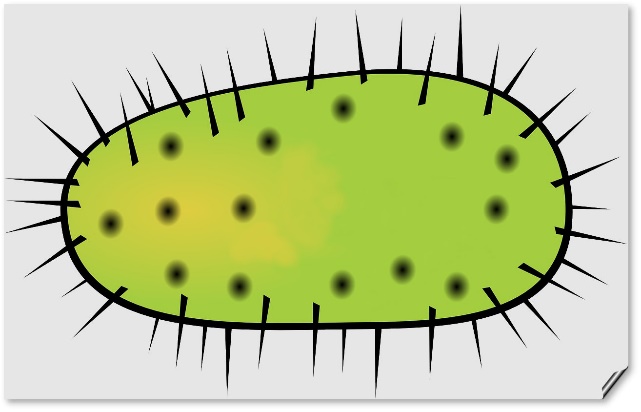
**What would happen if…**



Your teacher has given you some pictures.

They show things that can cause disease.

**To talk about in your group**

1. Do you agree that the thing in each picture can cause disease?
2. How does each thing cause disease?
3. Can you think of any more things that cause disease?

**To work on in your group**

Write a short story called “What would happen if…”

Include in your story:

* a person called Ali
* what would happen if Ali did, or came into contact with, the things in the pictures
* how this could lead to disease.

*Biology > Big idea BHD: Health and disease > Topic BHD1: What are health and disease? > Key concept BHD1.2: Disease*

|  |
| --- |
| **Response activity** |
| **What would happen if…** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | The good health of organisms can be compromised by infectious and non-infectious diseases, which can be caused by germs, lifestyle, environment, or information in the genome. |
| Observable learning outcome: | Recall that diseases can be caused by germs, lifestyle, environment or information in the genome. |
| Activity type: | Discussion |
| Key words: | Health, disease |

This activity can help to give students the opportunity to explore their thinking about causes of disease and encourages social construction of new ideas (meaning making) through dialogue. It is intended to be used in response to the following diagnostic question:

* Diagnostic question: What causes disease?

**What does the research say?**

When children aged 14-15 in Turkey were asked to draw and write about disease, the major themes in their answers were names of specific diseases (most commonly measles, followed by flu, cold and cancer), causes of disease (most commonly microbes [58% of answers in which a cause was mentioned], malnutrition [15%], cigarettes and alcohol [11%] and dirty environment [9%]), consequences of disease (most commonly fatigue, being sick, death and pain) (Isik, Çetin and Özarslan, 2017). Similar results were observed when children aged 8-11 in Hungary were asked to draw and write about causes of disease (Piko and Bak, 2006). One student out of 81 in the Turkish study drew a “faded flower”; all other answers pertained to humans. Ideas about mental health did not appear in the children’s drawings, but did appear in 17% of written answers.

There is evidence that children up to age 11 appreciate that environmental factors, which are not germs, can cause ill health. The most commonly cited factors were pollen, exhaust fumes from vehicles, and smoke from cigarettes (passive smoking); other factors mentioned included dust, “air pollution”, factories, rubbish dumps, and “polluted water” (Woods et al., 2005; Pluhar et al., 2009).

Asking children to draw, discuss and write is an established technique for probing their understanding of health and disease, which has been said to enhance participation by children; the drawing aspect in particular enables children to convey personal preferences and concepts that may be beyond their current vocabulary (Wetton and McWhirter, 1998; Backett-Milburn and McKie, 1999; Harrison, 2002).

**Ways to use this activity**

Students should complete this activity in pairs or small groups.

In part 1, each pair or group looks at drawings of behaviours or entities that can cause disease; these drawings may be those produced by students in the diagnostic activity ‘What causes disease?’ (in which case you may wish to swap drawings between groups so that students are not looking at their own drawings, to reduce sensitivities), or they could be sourced from elsewhere.

In part 2, each pair or group writes a story (or a series of bullet points) to explain what would happen if an imaginary person did, or came into contact with, the things depicted in the drawings.

There is evidence that the gender of the character in a ‘storying’ activity may influence the perception of appropriate health behaviours (Mooney and Lorenz, 1997). The gender neutral name Ali is used in the student activity but could be changed if desired.

The focus throughout the activity should be on group discussion to answer the questions about the drawings and to decide what to include in the story. It is through the discussions that students can check their understanding and develop their explanations. Listening in to the conversations of each group will often give you insights into how your students are thinking.

The quality of the discussions can be improved with careful selection of groups, or by allocating specific roles to students in a group. For example, you may choose to select a student with strong prior knowledge as a scribe, and forbid them from contributing any of their own answers. They may question the others and only write down what they have been told. This strategy encourages contributions from more members of each group. After their discussions, each group should be prepared to report the key points of their discussions to another group, or to the class.

**Equipment**

For each pair/group:

* drawings of behaviours or entities that can cause disease (either produced by the students in the diagnostic activity ‘What causes disease?’, or sourced from elsewhere)
* paper (if not writing on the student worksheet)

**Expected answers**

The students’ stories are likely to vary considerably, but it may be possible to categorise answers into the six broad stages of understanding described by Bibace and Walsh (1980):

|  |  |  |
| --- | --- | --- |
| **Stage of understanding** | **Conception of what causes illness** | **Conception of how or why illness arises** |
| Phenomenism | Something external to the body and remote from it in space or time (e.g. the Moon) | ‘Magically’, or no concept |
| Contagion | Something external to the body but in close proximity to it (e.g. a sick person sitting nearby) | ‘Magically’, or ‘immanent justice’ (punishment for misbehaviour), or no concept |
| Contamination | Something external to the body that has touched it | Physical contact with the cause (e.g. germs) |
| Internalisation | Something external to the body that is taken inside the body | Inhaling or swallowing the cause (e.g. germs); no concept of effects on body systems |
| Physiological | Various causes that affect internal structures, including lifestyle or something external to the body that is taken inside it | Disruption to normal functioning of body cells/organs |
| Psychophysiological | Various causes that affect internal structures, including lifestyle, or something external to the body that is taken inside it, or psychological processes such as stress | Sophisticated explanations of how internal systems are affected (e.g. link between stress, blood pressure and effects on the blood vessels and heart in cardiovascular disease) |

Better answers may include the idea that not all behaviours or entities that *can* cause disease inevitably do lead to disease; some increase the likelihood or risk of disease, but may not make it certain.

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