**The next generation**

Look at the advert for a new mobile phone.





“This phone has inherited all the best features of the earlier models!”

SELL PHONES MAGAZINE

**To discuss**

1. In what ways could the advert give the wrong idea about how characteristics are inherited?
2. How would you explain biological inheritance to somebody who was confused by the advert?

*Biology> Big idea BHL: Heredity and life cycles > Topic BHL1: Inheritance and the genome > Key concept BHL1.1: Heredity and genetic information*

|  |
| --- |
| **Response activity** |
| **The next generation** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | Similarities and differences between family members can be explained by the passing of genetic information from one generation to the next and the effects of the interaction of organisms with their environment. |
| Observable learning outcome: | Explain that biological characteristics are inherited when genetic information stored in the genome of each parent is passed to offspring. |
| Activity type: | Critiquing a representation, discussion |
| Key words: | heredity, reproduction, genome |

This activity can help develop students’ understanding of the idea that *biological* characteristics are inherited when genetic information stored in the genome of parents is passed to offspring, by challenging them to think critically about how inheritance is sometimes represented in the media. It can be used in response to the following diagnostic question:

* Diagnostic question: Baby eyes

**What does the research say?**

Studies have found that 11 and 12-year-old students can struggle to link “characteristics that you get from your parents” to inherited genetic information (Cisterna, Williams and Merritt, 2013).

It has also been reported that the media, especially television, can be students’ major source of information – and misunderstandings – about genetics, DNA and inheritance, particularly for primary school students (Donovan and Venville, 2012). Young children can struggle to appreciate that only living organisms have the ability to transmit biological features from one generation to the next (Schroeder et al., 2007).

Researchers have used formative assessments coupled with constructivist approaches that enable students to build their own explanations of heredity, which may help to develop students’ understanding and overcome misconceptions, including the use of group discussions (e.g. Chin and Teou, 2010).

**Ways to use this activity**

Students should complete this activity in pairs or small groups. The focus of the activity should be on group discussion to critique the mobile phone advertisement. 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 a careful selection of groups; or by allocating specific roles to students in the each 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 discussion to another group, or to the class.

**Expected answers**

Students’ discussions are likely to vary, but they may pick up on the following points:

* Mobile phones cannot reproduce to make “the next generation” of phones (they have to be designed and built by people).
* Mobile phones do not have a genome/DNA/genes that stores genetic information (and affects their features).
* Mobile phones cannot pass their genetic information/genome to the next generation of phones.
* Therefore, new mobile phones cannot inherit features from the previous generation.
* Only biological characteristics can be inherited.
* Only characteristics affected by genetic information stored in the genome can be inherited.

**Acknowledgments**

Developed by Alistair Moore (UYSEG).

Images: pixabay.com/GraphicMama-team (1424911)

**References**

Chin, C. and Teou, L.-Y. (2010). Formative assessment: using concept cartoon, pupil's drawings, and group discussions to tackle children's ideas about biological inheritance. *Journal of Biological Education,* 44(3)**,** 108-115.

Cisterna, D., Williams, M. and Merritt, J. (2013). Students' understanding of cells & heredity: patterns of understanding in the context of a curriculum implementation in fifth & seventh grades. *American Biology Teacher,* 75(3)**,** 178-184.

Donovan, J. and Venville, G. J. (2012). Exploring the influence of the mass media on primary students' conceptual understanding of genetics. *Education 3-13,* 40(1)**,** 75-95.

Schroeder, M., et al. (2007). Teaching preschoolers about inheritance. *Journal of Early Childhood Research,* 5**,** 64-82.