



Scientific Claims in Advertising: Let's Get Detoxed!

Teacher's Notes



Since we can't get students to put their feet into an electric current, try using a doll as the subject (*Barbie* perhaps?), with the punch line that "even a doll can be successfully detoxed!" Actually, even without anyone's feet being in the bowl, something's getting detoxed...or is it?

Aim:

To show that not everything that appears to use science is trustworthy and that it's important to look at scientific claims carefully.

Learning objectives and outcomes:

- To critically read a piece of literature and analyse the use of science and scientific evidence.
- To recognise the process of electrolysis.
- To motivate students to apply the scientific literacy gained in the classroom into their lives.

Resources required:

Two iron electrodes, two electrical leads, crocodile clips and a battery, large bowl, sodium chloride (salt) solution, plastic doll.

Safety:

DO NOT put hands in the bowl while the battery is connected. There is the risk of an electric shock.

Starter activities:

A quick pre-starter activity is to get the students to write down what they understand by the word "detox". Discussion of their responses leads to the starter activity.

Start with a body outline and get students to place and identify the organs which are involved in removing unwanted substances from the body. This can be done using whatever resources are available: interactive whiteboard drag and drop, stick on a flipchart, or use a student as the body outline and ask others to point out or stick on the relevant organs.

Tell the students about the product and about the advertised "explanation" for what happens – without giving the game away up front. Read the claims from one of the Aqua Detox websites. Identify any scientific claims or use of scientific words. Also look at the list of celebrity endorsements (10 minutes).

Core level main activity:

1. Ask students to discuss whether they would use and trust Aqua Detox and if yes, for what conditions. Ask students to identify which points on the website gave them confidence. Is a very professional, eye-catching website enough of a reason for believing an advertising claim? (5 minutes)
2. The teacher should then make the claim that they could conduct Aqua Detox on the doll. Does the class believe you? Find out. They should give reasons for their answers (3 minutes).
3. Demonstrate the Aqua Detox process using salt water, two iron electrodes, two electrical leads, crocodile clips and a battery (simple electrolysis circuit). Place the doll (the doll's feet, that is) in the bowl. Turn on and wait for a few minutes. While waiting discuss the article written by Ben Goldacre.
4. View the mucky brown water. Could this really have been inside a doll? What other suggestions could there be? What else could cause the brown solid?
5. Students are now asked if they believe the website? Go back to the article and highlight the use of scientific terms. Are they telling lies or bending the truth? What clues are there to the reader? Why are the case studies so enthusiastic?
6. Students should discuss in small groups the impact of treatments like this. Are the companies causing harm or should they be allowed to get away with this, especially if people are silly enough to part with their money? What, if anything, should be done?
7. Students could create their own pseudoscience product, with pseudo evidence.

Plenary:

Discuss what the students should do as consumers to avoid hoaxers and how some advertisers just lie, and talk about the need for general scientific literacy.

Extension:

Carry out further experiments e.g. using different metals for the electrodes. Write a letter to Aqua Detox suggesting an experiment they could carry out to try to convince people their equipment really does what it says it does (it's up to you if you actually want to send it!)

Adaptations and Other ideas:

- Could get students to role play being the Trading Standards Officer/Advertising Standards Authority Watchdog and the dodgy advertiser.
- If you can't get hold of the advert, or you want to do this differently, you could pretend this is a brand new invention.
- Give the students information about Trading Standards and the Advertising Standards Authority.
- Could team up with English or Media Studies department to write adverts etc.

ICT:

Looking at websites where there has been a misrepresentation of science in advertising.

Keywords:

Detox, electrolysis, electrodes, iron, sodium chloride.

Citizenship:

Significance of the media in society.

Assessment opportunities:

Scientific literacy skills, recording observations, finding evidence to support claims.

Curriculum links:

This activity could be incorporated into lessons where you may be looking into the importance of testing explanations, the need for scientific literacy, answering scientific questions of different kinds, and considering the strength of the evidence/quality of the product. This activity can serve as an introduction to the topics of physiology and excretion.

Homework task:

What other advertising claims have led to society getting the wrong idea about science? Did any of your friends or relatives believe the claims? Write a letter to *BBC Watchdog* raising your concerns about a misleading advert. (Once again, it's totally up to you as to whether you post it or not!)

The Aqua Detox Investigation:**Feedback from teachers who trialled and designed the experiments****Teacher 1:**

This was really simple and really effective. I introduced the topic of Aqua Detox, and we looked through the website. We then discussed whether they would go for it or not. The students were convinced by the company blurb and we analysed the company claims looking for scientific words. The students were particularly convinced by the celebrity clientele and the pictures of the water turning from colourless to brown. I then asked them for scientific reasons why the brown colour appeared and the students duly repeated the blurb from the website. I then claimed that I could detox Barbie. We all then gathered around one orange bowl and explained the analogies from the site and particularly focussed on Ben's article, which I copied out. I asked if students believed that Barbie could be Aqua Detox-ed, still the reception was mixed. Barbie was detoxified in ten minutes. The product was impressively disgusting and the students were horrified, "How can people lie like that?" they said. "Why would people part with that much cash?"

We then went back and looked at the company claims and identified the pseudoscience claims. It was very useful to do this after the placebo experiment as they could then use this knowledge to explain why people might feel better after a fake procedure.

We even have a nail bar next to the school offering Aqua Detox, so it was all very relevant. The activities were well received by the students and impacted how they saw the use of science in society.

Teacher 2:

I tried a practical activity based on Aqua Detox and supported it with the Aqua Detox website and Ben's article projected on the whiteboard. The practical showed it was blindingly obvious where the brown stuff in the water was coming from.

The practical work was trialled with a group of lower ability Year 10 students. It was clear that the concentration of sodium chloride was not important – the students poured fairly random quantities of salt into their beakers. Every beaker produced a dirty brown sludge. We used iron nails as electrodes, and ran the lab power packs at 6V.

The activity could be used to support thinking skills based lessons as well as science objectives. I think in the longer term this kind of work could be very useful for case study type coursework exercises in the new GCSEs.

