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Writing scientifically with stem cells

Specification reference:

- B1.2.3 Stem cells

Aims

In this activity you are going to assess the quality of some science articles written for different publications.

Learning outcomes

By the end of this activity you should be able to:

- Assess the quality of science articles written for newspapers, magazines, and websites.
- Write a well-structured article about stem cells that captures the audience through its use of precise vocabulary and real-life examples.
- Give constructive feedback to one of your classmates on a science article they have written.

Setting the scene

Science affects our lives to the extent that if you open any magazine or newspaper you are likely to find an article about science. The accuracy and quality of science reporting varies considerably. Some is correct and written in an interesting and engaging way. Other articles may be highly inaccurate, exaggerated, or just uninteresting. British journalist Ben Goldacre writes a regular column in which he pulls apart science articles for their inaccuracy.

Task

Read each of the following newspaper articles about stem cell research. Discuss the questions that follow with your partner and agree on an answer between you.

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Article 1: Former blind person able to ride a bike with stem cell treatment

The end may be in sight when it comes to curing vision through stem cell therapy. A man who could see nothing at all can now ride his bicycle unaided, and a woman who could barely read even the largest street signs can now read her favourite novel with ease. And if this wasn't enough, some colour-blind people can now see the rainbow in full beauty. What do these people all have in common? Their vision has been saved through the injection of stem cells into their eyes, to replace retinal cells that have been damaged for one reason or another.

Although a final solution is still some way off, initial trials have shown incredibly promising results – the best yet for anything involving the use of stem cells in vision treatment.

A leading scientist in the field, from the SCR institute, told us that "so far the tests had all been on animals, and although they were proving effective for some time, we had yet to get results like this in humans." She explained further that "the results have proven the tests to be safe, which means we've crossed a big hurdle in terms of being able to carry on the research and keep helping people in future".

Article 2: You won't believe what happened when this blind person tried a radical new therapy

This blind person thought they would never see again after an illness made their eye malfunction and they lost their vision.

But some doctors tried a 'crazy new therapy' that had only been used on animals. Nobody thought it would really work, but you'll never believe what they saw next.

At first not much happened. It was like 'an injection but into the blind person's eye', rather than their arm.

But then what happened next shocked everyone: as time passed, the blind person began to see again. They could go back to texting and browsing the internet like everyone else. And who said science wasn't the coolest?

Article 3: Controversial new treatment voted by MPs

Picture a world where scientists can grow the cure for life-threating illnesses in the comfort of their own lab. This is what's hoped for when the controversial issue of stem cell research will go to a vote by MPs later this month.

This branch of research uses human-animal embryos, and so a positive vote would give scientists the power to create and destroy life as they choose. At what price do we want science to advance?

Only time will tell whether the research will be given the go-ahead, but campaigners on both sides have already been vocal about their views on the issue of whether scientists should be allowed to play god and grab the reigns of humanity.

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Article 4: Breakthrough in controversial field of medical research

Research involving the use of stem cells has been carried out for years – most famously in the case of Dolly the sheep – the first ever animal to be cloned from the adult stem cells of another animal. But until recently, scientists had been unable to create embryonic stem cells from human cells. Technical difficulties that had plagued research teams were recently overcome by a team in the US, who were able to create these 'master' cells from a batch of donated skin. This field of research has always been marred in controversy due to its use (and subsequent destruction) of early-stage embryos, and this breakthrough will no doubt stir up the murky waters once more. However, these cells, which can be produced to be genetic matches for specific people, could open the door to a field of medicine in which diseases are treated by a cure precisely engineered to match the individual. Damaged or malfunctioning organs could be replaced by a healthy and genetically identical match, grown specifically for the patient and with no risk of rejection or complication.

Article 5: what are stem cells, and what do they do?

Cells in the human body, divide and replace each other all the time – the cells in your skin can split and create more skin cells. But, not all cells are made from an identical parent. There are also certain cells in your body, that can create cells that then go on to become one of many different kinds of cell. These are called stem cells.

Stem cells are crucial in the early stages of life, when an embryo, is formed from a fertilised egg. The cells needed to build all of the organs, muscles, bones, and other body parts can't just come from another identical cell, because none of those cells exist yet. So stem cells are needed to split and turn into other different kinds of cell, such as the red blood cells, in your blood.

Red blood cells are in fact a good example of what can be made from a stem cell. Your body is always creating new red blood cells, to make sure it can keep the required flow of oxygen going to keep it alive. These red blood cells, are made in stem cells found in your bone marrow. The same stem cells in bone marrow also produce white blood cells and platelets. Some diseases, such as leukemia, affect bone marrow, and so people with these diseases often need blood transplants or other treatments to replace their blood cells.

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Questions

You need to, look at each of the five articles and assess their quality as a piece of science writing by filling in the table. Give each article a rating out of 10 for each of the questions.

	Article				
How grabbing is the headline?	1	2	3	4	5
How well does the article (not including the headline) capture and hold your attention?					
How well is the science explained?					
How balanced and free of exaggeration is the article? The most exciting thing about science is that it can have great implications for the future. It is very easy to use these implications as a hook to draw readers by exaggerating. Avoid doing this.					
How much of the content do you feel is backed up by an independent expert? Unless the writer is an expert in the field of research, they won't be in a position to judge whether the findings of a research paper are correct and so there should be evidence that the stated facts are supported by an expert.					
How would you rate the tone of the article in terms of speaking to you at your level? Articles should assume that readers have no knowledge beyond secondary school science, but always respect their intelligence.					
How would you rate the article's liveliness? A science article should make the reader more interested in science, so it's no good if the writer sounds bored throughout.					
How effectively has the work been edited? This means re-reading to cut out superfluous words and get rid of unnecessary detail.					
How effectively are quotation marks used? (If at all)?					
How effectively are punctuation and paragraphs used?					

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	Article				
How effectively have openers and connectives been used? How well do the paragraphs flow on from each other? Does it feel like the article flows well from start to finish?					
Did the article leave you wanting to know more? How much would you say you now want to research more about stem cells?					

Student follow up

Conduct some research of your own into stem cells, then write an article in the style of a newspaper, magazine, or news website. Once you've done this, swap it with your partner and rate each other's articles using the table from this worksheet.