

STUDENT ACTIVITIES

Robotic Surgery

Research and Inquiry

“Scientists in the United States are testing a robot which has been designed to carry out remote surgery in space.” (Watch this video.) What possibilities might exist if doctors could perform surgery in areas, like third world countries or remote communities, where hospitals don’t exist? (All levels)

http://news.bbc.co.uk/player/nol/newsid_6680000/newsid_6687100/6687115.stm?bw=nb&mp=wm

What is heart disease and how can you prevent it? (All levels)

http://www.kidshealth.org/kid/growup/conditions/heart_disease.html

If a robot can only do what it has been programmed to do, then can you say that a robot is able to think? Why or why not? What does it mean to be able to think? (All levels) Taken from <http://asimo.honda.com/EducationMaterials.aspx>

Watch video clips of robots on Nova. What do you think are the best uses for robots?

<http://www.pbs.org/wgbh/nova/robots/clips/>

Theo Jansen has created wind-propelled creatures. Watch this amazing video footage (especially the second video) and decide if these are robots or new animals, as he describes them? (All levels)

<http://www.strandbeest.com/film.html>

Discussion and Debate

- Take a survey of the class to find out who would prefer robotic surgery, who would prefer traditional surgery, and who is undecided. Have the ‘undecided’ group make a list of questions they need answered in order to make a decision. Have the rest list the pros and cons of each. Allow students to change groups during the activity. At the end, retake the survey and compare your results. (All levels)

- Read each of the following statements to your class. Then ask your students if the statement is: a) supported, b) refuted, or, c) neither supported nor refuted? Students must decide and state their reasons citing examples from the text. (Junior/Secondary)

1. The surgeon does not have to be in the same room as his/her patient during the surgery.

2. Doctors can see the areas they are operating on better when they use robots.

Get Active

Activities are good for your heart. (Elementary)

<http://www.heartandstroke.com/site/c.ikIQLcMWJtE/b.3479027/>

Act Now BC: Healthy Living (Youth)

<http://www.actnowbc.ca/EN/youth/>

Related Links

Virtual Surgery – This may replace practicing surgery on cadavers and animals for medical students.

http://www.sciencentral.com/articles/view.php3?language=english&type=&article_id=218391146

Tiny robots could replace laparoscopic instruments which are usually used in less complicated surgeries. In this case, small robots carrying cameras would enter through small incisions and carry out less invasive surgeries. (Junior/Secondary)

http://medgadget.com/archives/2005/10/tiny_robots_for.html

Doctors who are good at video games may be better at remote surgery. (All levels) Elementary teachers may want to review laparoscopic surgery with their students.

<http://electronics.howstuffworks.com/surgeon-video-game.htm>

<http://videos.howstuffworks.com/sciencentral/2650-video-game-playing-surgeons-video.htm> (video)

You’ll have to register for an account to see the videos, but it’s free and the videos seem very informative. (However you’ll have to ignore the ads.) In the link below, you can find out how simulators allow doctors to practice before they conduct heart surgery. (Junior/Secondary)

http://www.sciencentral.com/articles/view.php3?language=english&type=&article_id=218391649

Open-heart surgery is an invasive procedure. This short video shows a coronary bypass surgery thanks to a camera that the surgeon wore during the operation. (Secondary)

<http://www.fi.edu/learn/heart/healthy/openheart.html>

Try completing an open-heart surgery using this Flash program. (Junior/Secondary)

<http://www.abc.net.au/science/lcs/swf/heart.swf>

Learn about the human heart. (Elementary)

<http://www.fi.edu/learn/heart/index.html>