

# What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



## 5E LESSONS

Two-week lessons with over 100 topics



## ESCAPE ROOMS

Engaging activities for review



## INQUIRY LABS

Three different levels to fit every student



## AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



## SUB PLANS

Never worry about planning for a sub again.



## WARM-UPS

Bellringers for the entire year



## STATION LABS

Student-led exploration



## INTERACTIVE NOTEBOOKS

Bring science journals to life.



## WIKI TICKETS

Quick formative assessments



## STEM CHALLENGES

Real-world STEM problem-solving



## GRAPHING

Table and charts and graphs ... OH MY!



## SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



## SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



## WRITING PROMPTS

Writing activities covering 100+ topics

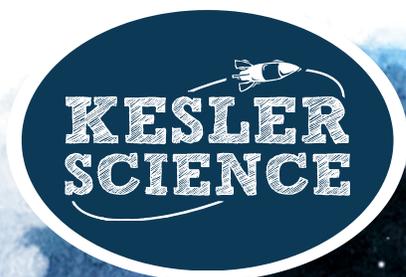


## EXPLORIES

Story-driven units with integrated activities



The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



## Robot Space Surgery

If you live in an area with plenty of doctors, you might take access to health care for granted. But what happens when you live in an extremely isolated area, or you get injured climbing some remote mountain? Getting help out there is a whole different ballgame. Scientists and engineers are working on an answer, though, and it's pretty impressive.

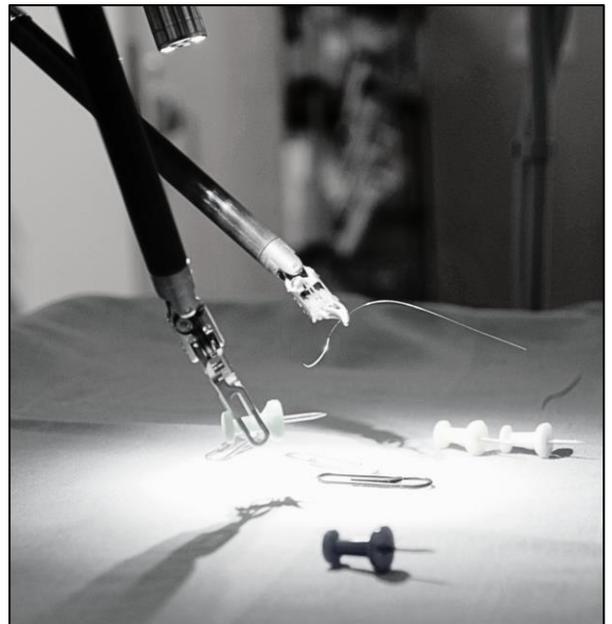
Last month, a two-pound tech marvel was sent off to the International Space Station. It's called MIRA, short for Miniaturized In vivo Remote Assistant. This tiny robot can do remote surgery with the precision of a top-notch doctor - grasping, cutting, and stitching. It's up there right now getting put through the paces with simulated surgeries. And the surgeons running the show? They're all the way back in Nebraska! 😊

MIRA is far from the first robot surgeon, though. Remote robot surgery has been rising steadily through the last decade. Certain surgeries, like hernia surgery, have really taken off with robots! Check out the graph on the next page.

For now, the robots surgeons are always controlled by human surgeons, just at a distance. The researchers doing this study were curious to see if robot surgery was always the right choice - and as it turns out, it may not be. Robots aren't great at certain types of surgery. Sometimes the human touch matters!

Image (top) by Nimur at the English-language Wikipedia, CC BY-SA 3.0,  
<https://commons.wikimedia.org/w/index.php?curid=3158337>

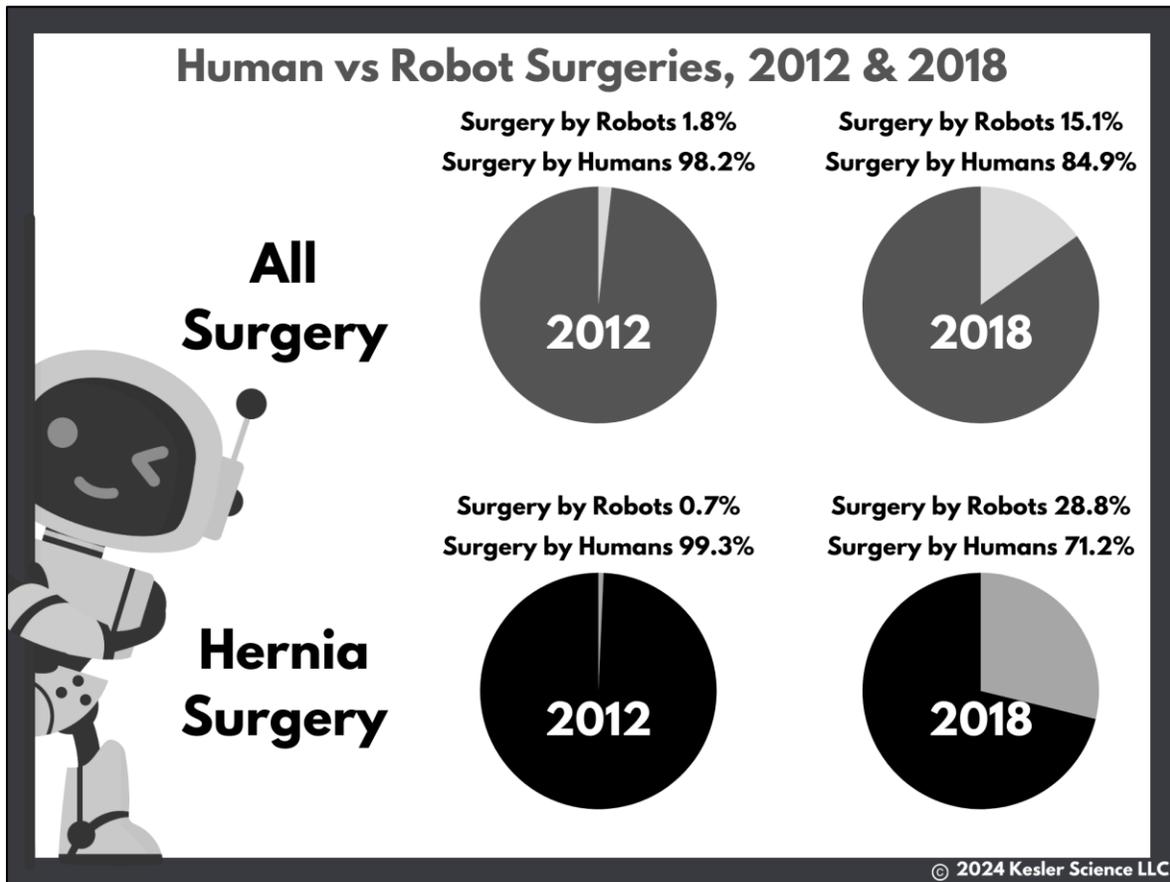
Image (bottom) by Staff Sgt. Bernardo Fuller -  
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<https://commons.wikimedia.org/w/index.php?curid=41410451>



*Above, a surgeon at the Fort Belvoir Community Hospital demonstrates the actuating arms of the da Vinci Surgical System, which enables surgeons to perform operations through tiny incisions and is powered by high-tech robotics that gives the surgeon the best possible view with HD cameras*

*Below: A laparoscopic robotic surgery machine. Patient-side cart of the da Vinci surgical system.*





1. How does the percent of all surgeries performed by humans change from 2012 to 2018?

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2. Compare the number of all surgeries performed by robots to the percent of hernia surgeries performed by robots between 2012 and 2018. What do you notice?

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3. Using the patterns in data above, what percent of all surgeries do you predict are performed by robots in 2024?

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## Robot Space Surgery

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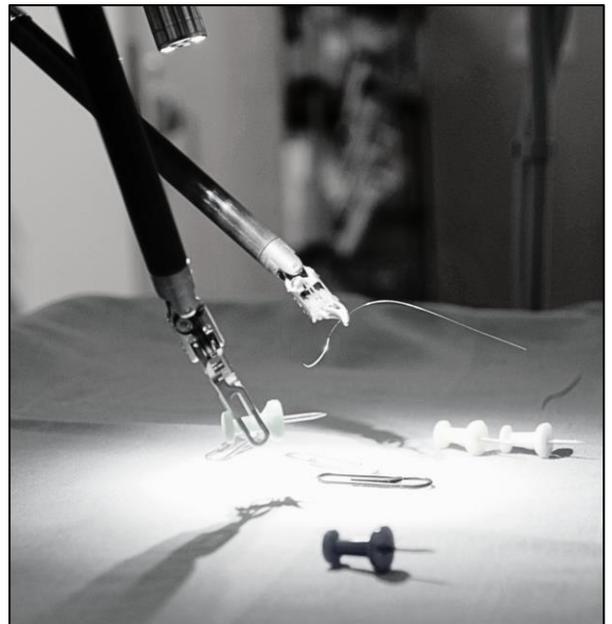
*What if we use MIRA to inspire our students to create their own remote devices to solve interesting problems? They could design their solution and build models with simple materials like string and cardboard.*

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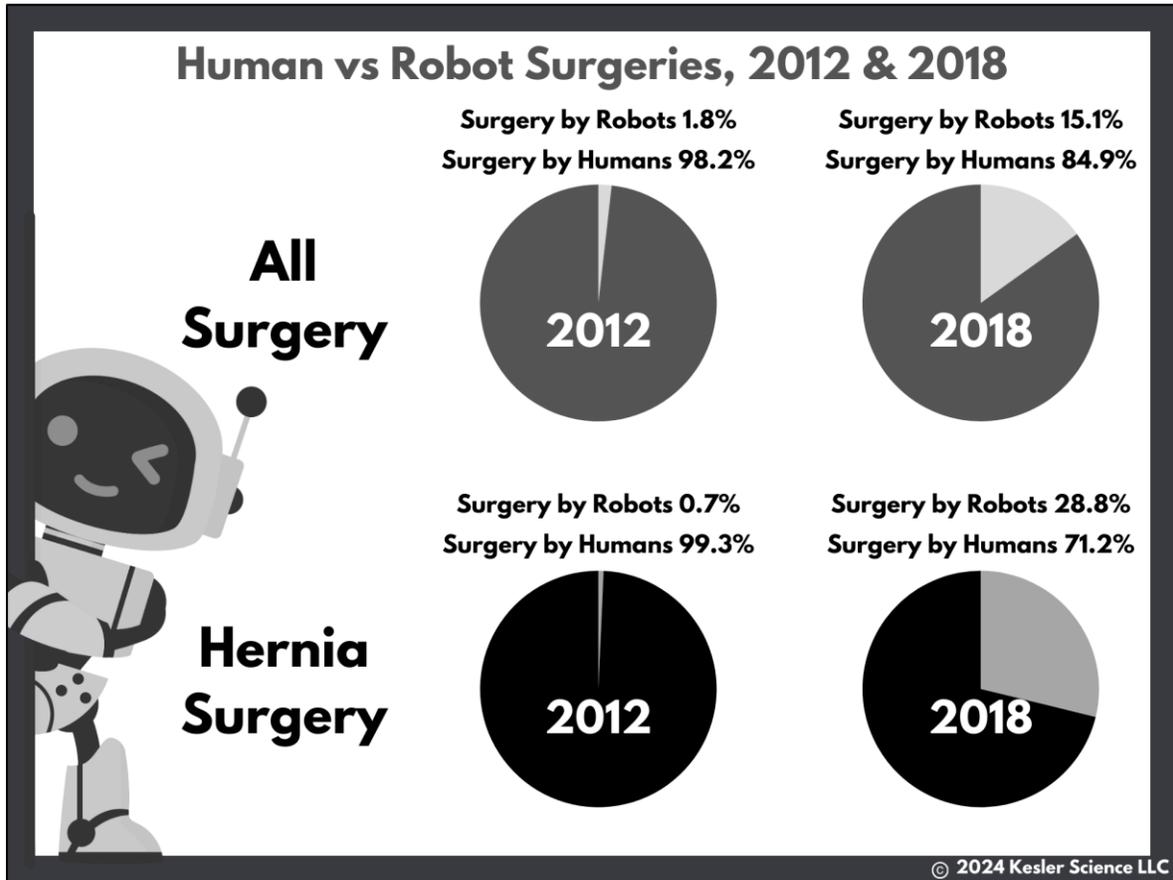
Image (bottom) by Staff Sgt. Bernardo Fuller - <https://www.dvidshub.net/image/593564>, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=41410451>



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1. How does the percent of all surgeries performed by humans change from 2012 to 2018?

*The number of all surgeries performed by humans went down from 98.2% to 84.9%.*

2. Compare the number of all surgeries performed by robots to the percent of hernia surgeries performed by robots between 2012 and 2018. What do you notice?

*In 2012, there were fewer hernia surgeries performed by robots compared to all surgeries. In 2018, 13.7% more hernia surgeries were performed by robots.*

3. Using the patterns in data above, what percent of all surgeries do you predict are performed by robots in 2024?

*There was about a 14% decrease in the number of all surgeries performed by humans over 6 years. Based on the patterns in data, it would be reasonable to guess that 70% of surgeries are performed by humans in 2024.*