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STOP THAT ASTEROID!

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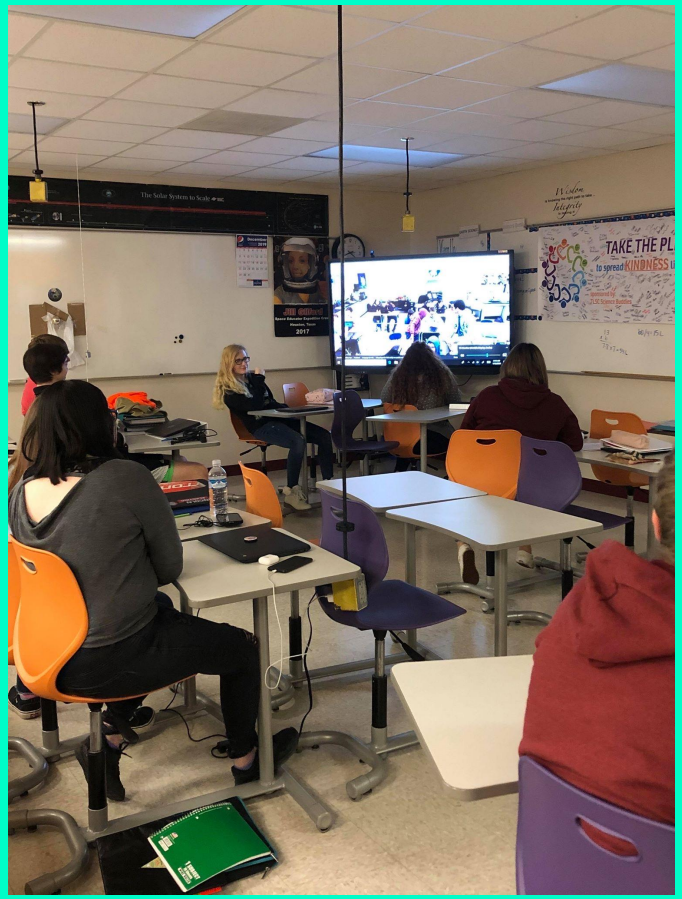
http://bit.ly/stopthatasteroid

A smashingly awesome challenge.



Virtual Buddies!

- Learning together from Miles apart!

1) A recent gallup poll asked Americans what their most trusted packaged good was. This finished first overall, millions were shipped overseas during WWII. Since, then over 100 billion have been sold in 1951. The first decorative ones were sold and remain popular today with varieties such as dora, spiderman, smiley face.

2) Once among the top 100 baby girl names in the U.S. in 2006 it took a sudden drop to #382. Many were hesitant to use it.

3) These are the only 2 states that have never had a 100 degree day since becoming a state. According to USA Today they both are tied with a 98 degree high.

How often are your students giving high-fives or fist bumps about the tasks they complete in your classroom?

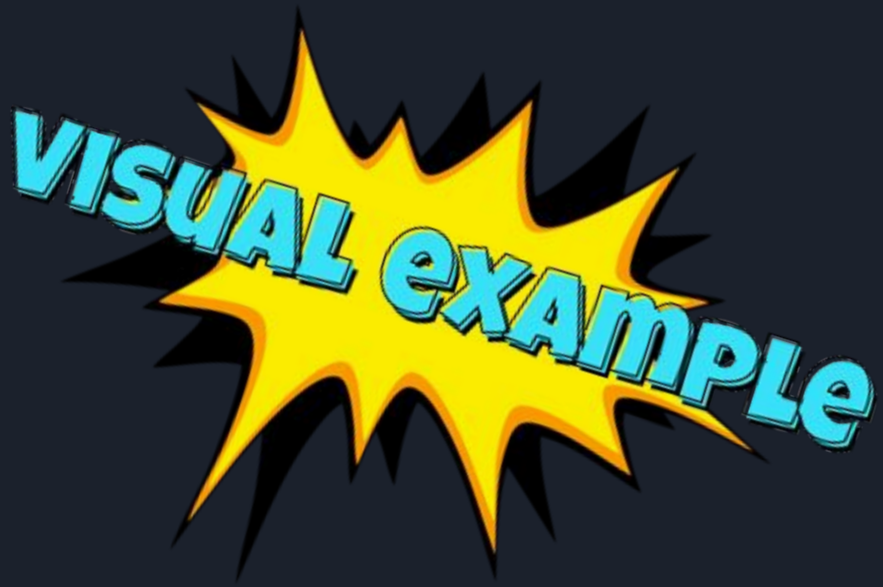
via GIPHY

The Scenario:

In January 2021 a special operations team was sent to AsteroidMDL to create a shield, but there was a rocketship malfunction and they were unable to successfully complete the mission. AsteroidMDL is now barreling towards Earth and we must design a shield to protect all mankind!

You will use the materials provided to design and create a shield to protect our Earth from being shattered. After designing, you will have to send the instructions to the astronauts to successfully build the shield. However, in the rocketship malfunction all video communication systems were critically damaged. Your only means of communication will be sending written electronic procedures.

Video 1



What is an asteroid?

- ★ Small (~600 miles across) rocky object orbiting the Sun, particularly between Mars and Jupiter
- ★ A few pass close to Earth or enter the atmosphere as meteors

The Materials

Your team will have access to the following materials:

1 Paper Plate

1 4x6 index card

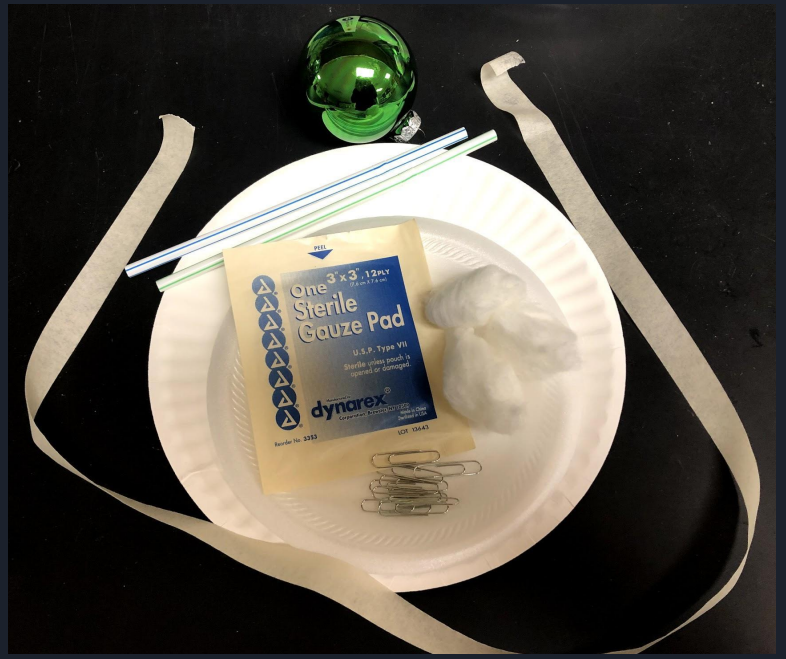
1 Gauze Pad

2 Straws

3 Cotton Balls

5 Small paper Clips

3 ft of masking tape



**Scissors may be used to manipulate materials. You do not have to use all of the materials provided.

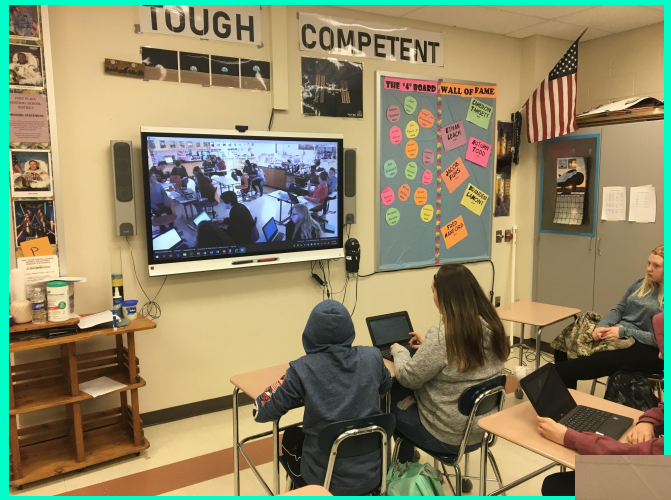
Construction

- ★ Your Earth based mission control team will send your design to the team of astronauts to build. Be sure to make your directions clear and easy to follow!
- ★ At the same time you will receive a set of instructions to build another team's design.
- ★ Once receiving the instructions you will have 10 minutes to build the design.

Testing

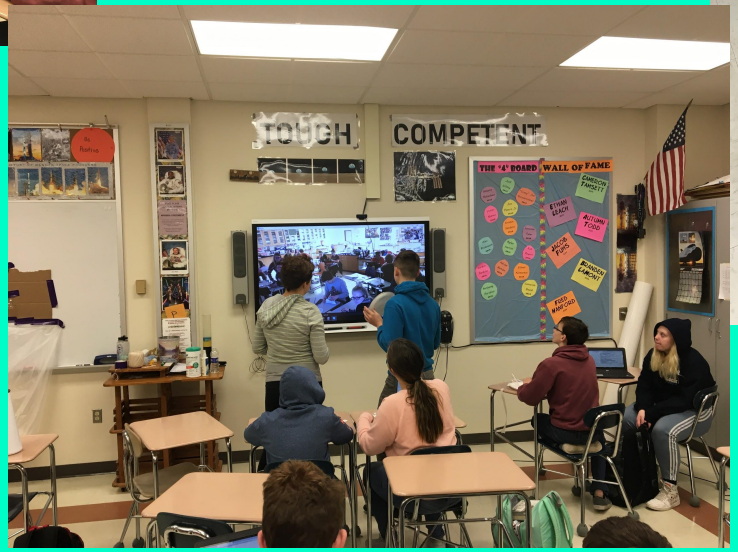
- Each team will then take the completed shield to the testing area- but first compare shields- do they look identical?
  - Was there any miscommunication?
- Goggles must be worn!
- 1 glass "Earth" will be provided- affix the shield for testing
- A 500 g "asteroid" will be swung into your shield from a teacher specified height

Will your shield protect the Earth from Armageddon?



Communication

DESIGN CHALLENGES!



COLLABORATION!

Electronic Communications

Written Communications Slides

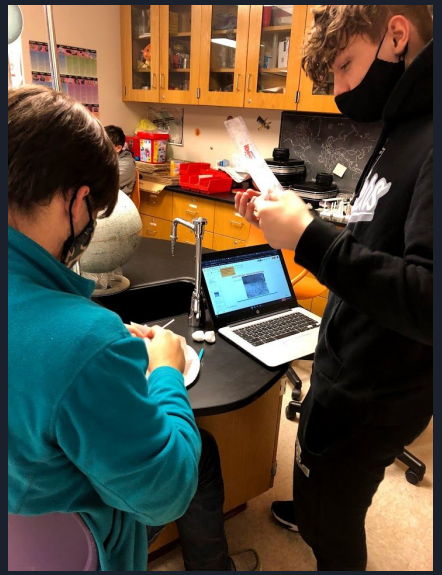
1. Your team will receive a set of materials to build a prototype of your shield. You will need to create a set of step by step instructions for the other team of astronauts to build and test. No pictures, only written descriptions!
2. Share your written procedure to the CapComm of your corresponding team, including your team number at the top of the document.
3. Remember, you get 1 set of instructions so make it count!

Mission DeBrief

1. Did your shield protect Earth?
2. If it failed, why?
3. What was challenging about building your shield?
4. What did your team do well?
5. State some similarities between this activity and an actual NASA mission (such as Apollo 13)
6. What changes would you make if we did this activity again?

Teacher Discussion Ideas

1. Talk about the importance of writing a precise procedure
2. Collaboration
3. Design process
4. Communication



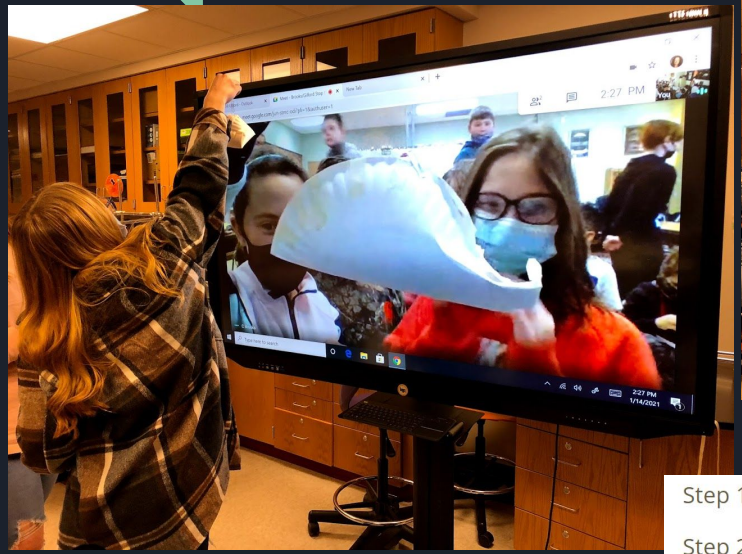
Group 5 Gilford: type your directions here

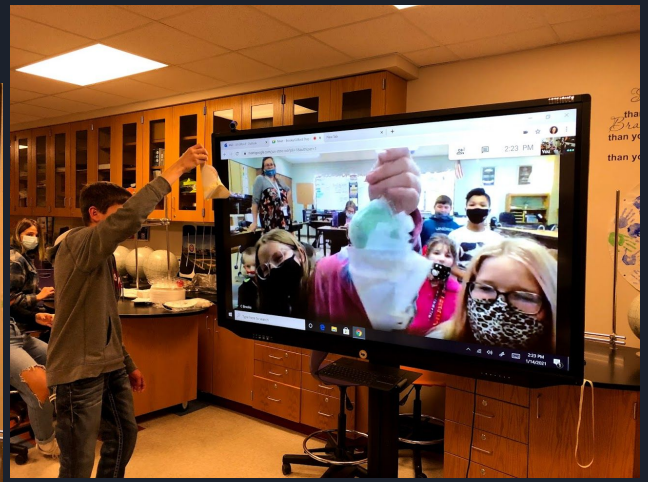
First cut you straws into four two inch pieces. Take your paper plate and draw a three inch by two inch rectangle about in the middle. Take apart one paper clip and poke a hole on each corner of your rectangle just big enough for the straws to fit. Then cut 4 pieces of tape at 1 inch each. Put the pieces of tape on the end of the straw then press it to the plate (when you flip the plate back over the straws should stand on their own) Cut card in half longways to get two 3 inch by 4 inch rectangles, cut one lengthwist again to get two 1½ inch by 4 inch cards. Cut the other card widthwise to get two 3 inch by 2 inch cards and cut ⅝ in off legthwise to get 2 inch by 2⅜ inch. Put 1 inch tape ½ on and ½ off every card on the legth side. The attach other ½ of tape to the outside of the staws on the paper for support and put cottn balls and cloth in the square box.. Cut 4, 4 inch peces of tape and lay them over the width. Cut 2, 5 inch peices and place them legth wise. Cut two peces of tape 4 inch and put the end of the sticky sides together and put one side to the back of the ball and the other to the plate.

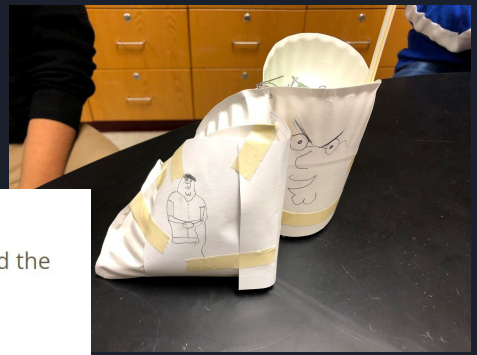
Group 6 Cochran: type your directions here

1. Cut the straws in half and tape them all together around the earth.
2. Cut a hole in the middle of the paper plate. Place the gauze and cotton balls around earth, secure with tape.
3. Put the earth in the middle of the plate and secure with tape.
4. The index card goes over it like a house.
5. The paper clips secure the index card to the plate.

More student examples!







Step 1. Unraveled the cotton

Step 2. Cut 1 straw in 4 pieces and inserted between the cottons and the ornament

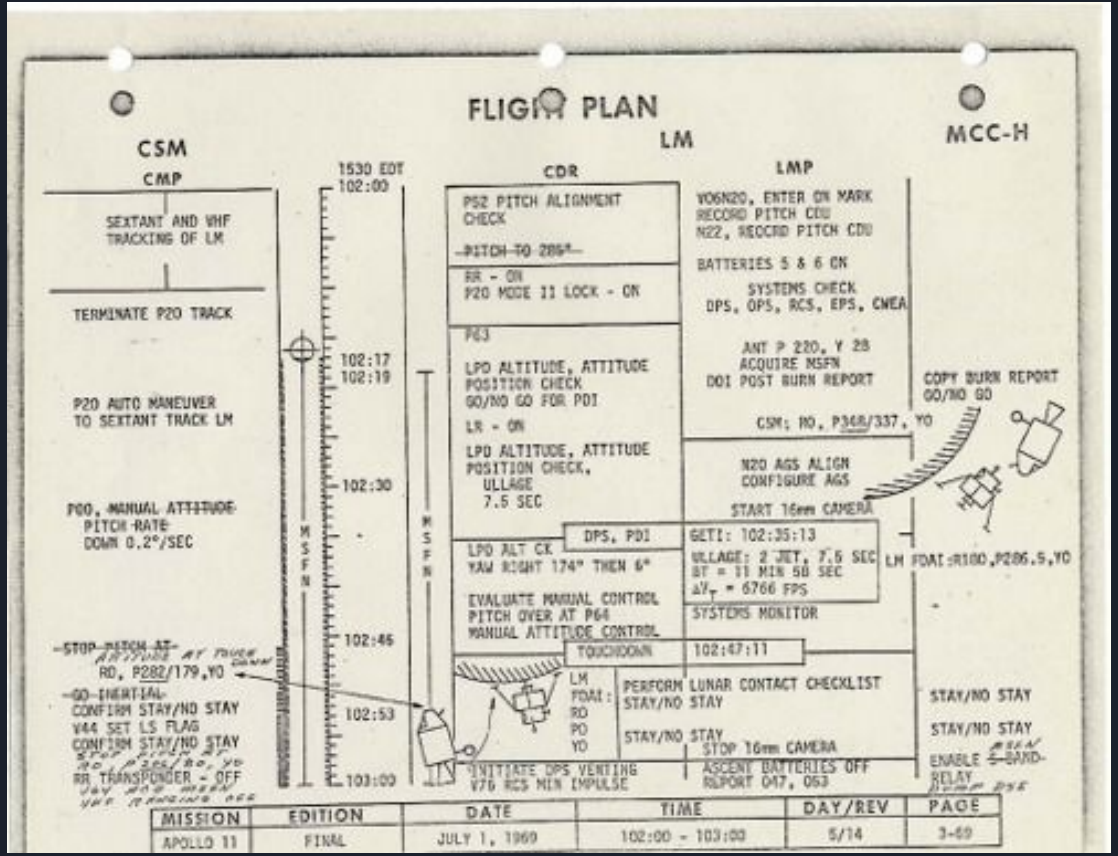
Step 3. Cut flashcard in half and tape it the cotton balls

Step 4. Cut the paper plate in half and wrap it around the ornament.

Most important Step 5. Draw Peter Griffin on one of the halves of the paper plate. Use the paper clips to hang it up.

Examples of Important Apollo Flight Log Procedures!

https://history.nasa.gov/afj/ap13fj/index.html



APOLLO 17
System
Procedures

SYSTEMS MANAGEMENT

5 TAPE RECORDER OPERATION

1 RECORD CSM & LM VOICE/DATA
PWR - AUDIO/TONE
MODE - INTERCOM/PTT
SUIT PWR - ON
INTERCOM T/R - T/R
VHF AM A&B - OFF (preferred if LM voice/data not reqd)
If VHF AM A&B - SIMPLEX or DUPLEX
VHF AM SQUELCH A&B - noise +1
PCM BIT RATE - as desired
Comm Carrier (preferred)
If LWHS, position mike 1/2 inch from mouth
Go to step 3

2 RECORD SIM DATA
DATA SYS ON - ON
PCM BIT RATE - HIGH
Go to step 3

3 TAPE RCDR FWD - STOP then RWD
TAPE RCDR RCD - RCD
TAPE RCDR FWD - STOP then FWD

4 DUMP CSM VOICE/DATA
S-BD AUX TAPE - TAPE
TAPE RCDR PCM - PCM/ANLG
Go to step 7

5 DUMP SIM DATA & CSM VOICE/DATA
S-BD AUX TV - SCI
DATA SYS ON - ON
Go to step 7

6 DUMP LM DATA
S-BD AUX TAPE - TAPE
TAPE RCDR PCM - LM PCM
Go to step 7

7 TAPE RCDR FWD - STOP then RWD
TAPE RCDR RCD - PLAY
TAPE RCDR FWD - STOP then FWD (On MSFN cue)

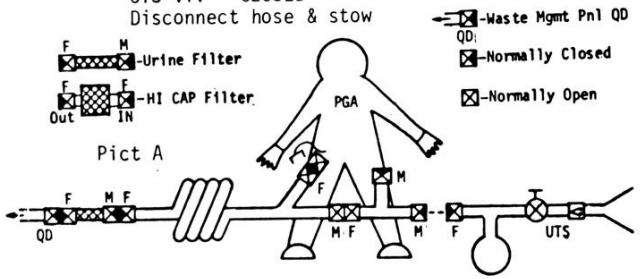
DATE 8/21/72

SYSTEMS MANAGEMENT

10 URINE DUMP MODES

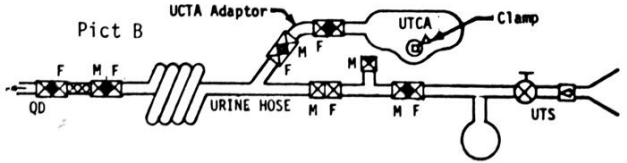
A UCTA (IN PGA)(Dump)
Connect plumbing (pict. A)
WASTE MGT OVBD DRAIN vlv - DUMP
Disconnect urine transfer hose from PGA
Replace cap on PGA thigh QD
Connect UTS to "T" Adaptor
UTS vlv - OPEN
Purge dump line 2-5 min
WASTE MGT OVBD DRAIN vlv - OFF
UTS vlv - CLOSED
Disconnect hose & stow

Pict A



B UCTA (OUT PGA) (DUMP)
Connect plumbing (pict. B)
Verify UTCA Clamp attached
UTS vlv - CLOSED (verify)
WASTE MGT OVBD DRAIN vlv - DUMP
Disconnect UCTA Adaptor from urine transfer hose
UTS vlv - OPEN
Purge dump line 2-5 min
WASTE MGT OVBD DRAIN vlv - OFF
UTS vlv - CLOSED
Disconnect hose & stow

Pict B



DATE 8/21/72

Teacher Notes:

The setup:

- Hang glass ornament on the wall or whiteboard with a paperclip.
- Tape a trashbag underneath to catch the possible broken glass. Might also put a trashcan underneath too!
- Hang a 500 g mass from the ceiling.
- Tape cardboard pieces around it to allow padding if the 500g mass misses the target.
- Materials tips: raid your school nurses cabinet and get the glass bulbs 50% off after Christmas!
- You can also use whatever materials you have available in your classroom!

More Teacher Tips:

- Use a chart like this in a google doc for each class to post to the class for electronic communications. You can also use Google Slides- share the document to the student and assign each group a slide- it's all on one document this way.

Group Number	Names	CapComm email address
1		
2		
3		
4		
5		
6		

Teacher Takeaways:

-Can be adapted to

- -ANY age group
- -ANY subject area
- -ANY content area

-Use what you have

- -Class Size
- -Materials
- -Space, etc

-Make it your own and have fun with it! Students love this lesson!

When poll is active, respond at **PollEv.com/jillgilford190**

Text **JILLGILFORD190** to **37607** once to join

Is a hotdog a sandwich?

YES!

NO!

To

0

Is a hotdog a sandwich?

YES!

NO!

Is a hotdog a sandwich?

YES!

NO!

Is a hotdog a sandwich?

Reasons?

Confirmed answer:

https://www.sbnation.com/lookit/2017/2/24/14731870/nasa-transcript-hot-dog-is-a-sandwich-apollo-13

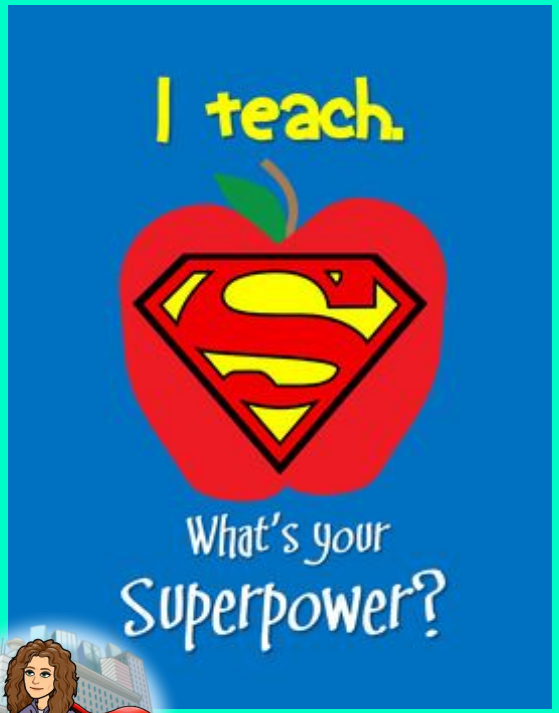
"Is a hot dog a sandwich?" It's one of the internet's greatest debates. Stalwarts of both sides have been arguing for years about whether tube meat in a bun is indeed a sandwich, but what we all failed to realize is that NASA settled this back in 1970 during the Apollo 13 mission.

APOLLO 13 MISSION COMMENTARY 4-12-70 CST 5:04P GET 27:51 85/1

SC Hello Houston, Apollo 13.
CAPCOM 13, Houston. Go ahead.
SC Just a passing comment Joe, we're having lunch right now and I just made myself a hot dog sandwich with catsup. Very tasty and almost unheard of in the old days.
CAPCOM That's correct 13. As I recall the flight plan, you're suppose to put mustard on the hot dogs and not catsup but I guess we'll overlook that.
SC We blew it.
SC Right.
CAPCOM How's everything going?
SC About pretty good. We have about 4 different methods of spreading catsup, right now.
CAPCOM Okay, Jack. We'll have your update to you before too long.
SC Okay, fine Joe. We did a pit check on the Hycon camera and everything works okay.
CAPCOM Okay. Beautiful. We don't have anything else for you at the moment.

END OF TAPE

What's Your Superpower???



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THANK YOU FOR ATTENDING!

Patrick Petty

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Feel free to contact us with any questions!