

**The  
Economist**

**EDUCATIONAL  
FOUNDATION**

---

Weston Favell Academy

---

Noel Park Primary School

---

Hammond Junior School

---

Hillyfield Primary Academy

---

Faringdon Community College

---

BURNET NEWS CLUB 2019-20 • ISSUE 2

A photograph of an astronaut in a white spacesuit floating in space. The astronaut is wearing a helmet with a clear visor and has a large backpack. The background is a dark blue space with some light streaks and small orange specks.

# **SPACE EXPLORATION**

**IS IT WORTH THE COST?**



**BURNET  
NEWS CLUB**

In the year that India and China made strides into space, the re-establishment of the United States Space Command, and 'space tourism' edging closer to reality, the Burnet News Club debated whether space exploration was worth the cost.

SEE EDITOR'S PICKS  
[bit.ly/EP-Space](https://bit.ly/EP-Space)

Students tackled a range of ethical, environmental and economic quandaries raised by humanity's quest to push the boundaries of discovery. Our experts were quick to comment on the quality of students' questions. In this edition of Hub Highlights, we showcase a selection of the best contributions on this fascinating topic.

## THE EXPERT VIEW

### Best of the questions



**upbeat\_acorn,**  
**Birchwood Primary School**  
 to Commander Chris Hadfield

What discovery has inspired you the most?



**eloquent\_recipe,**  
**Crampton Primary School**  
 to Flight Commander Libby Jackson

How do you handle life and death situations?



**terrific\_pineapple,**  
**St. Mary's Catholic Academy**  
 to space medicine expert and  
 RAF doctor Bonnie Posselt

How long does it take for astronauts to recover after space travel?



**congenial\_shark,**  
**Preston Manor School**  
 to spacecraft engineer Abbie Hutty

How did it feel to help make the ExoMars Rover?



**genuine\_cat,**  
**Hammond Junior School**  
 to Professor Jim Al-Khalili

Where is space exploration heading next?



**focused\_violin,**  
**Allerton High School**  
 to founder of Rocket Women  
 Vinita Marwaha Madill

How does funding trips to space affect our economy?

## appreciative\_turtle and spirited\_bat

### The International Space Station: \$150 billion dollars well spent?

PRIMARY SCHOOL  
 Noel Park Primary School

**I**N 2006, the Guardian called the International Space Station (ISS) 'a costly mistake' and 'an embarrassment'.

NASA currently contributes \$3 billion dollars per year to maintain and operate the ISS. From a scientific perspective, is this a good use of money?

The ISS was primarily constructed as a space environment research laboratory, in which scientists could conduct experiments in fields such as biology, physics, astronomy, meteorology. Due to its location, the station is also suited for the testing of spacecraft systems and equipment required for missions to the Moon and Mars. The information gained about human health in the closed ecosystem and microgravity environment of the ISS is crucial. A Mars mission may end up being a three-year ordeal, so figuring out how to live and work in space for long periods of time is essential.

In addition, the ISS is an exercise in hands-on learning and how to live and work (and play!) in space for years. It has allowed scientists to observe changes to people's bodies and health and to trial adaptations to make life easier - crucial if space travel becomes for the masses.

NASA are using the ISS to keep a large chunk of their budget safe. In 2024, the money will be shifted towards developing a habitat for the Martian surface and a Mars Ascent Vehicle with which to launch samples from the surface of Mars back to Earth.

In conclusion, although the ISS may seem to be an unjustified burden on finances, we believe it holds the key to a brighter future culminating in human travel to Mars. It's an expensive, but essential stepping stone. ■

**funny\_power**

## Is space lawless?

SECONDARY SCHOOL  
**Weston Favell Academy**

**N**ASA has been investigating an alleged crime in space. Astronaut Anne McClain was said to have accessed her ex-partner's bank account while she was on board the International Space Station (ISS). This is the first allegation of its kind.

Having researched space law, I have found that the ISS is governed by an international treaty. This means that each country has criminal jurisdiction for its own personnel as long as it does not affect a person from another country. In this case it was reported that the location of the astronaut was not relevant but what was important was whether she had the rights to access his account or not.

In 1967, the Outer Space Treaty was agreed by 109 nations, this sets guidelines on how space is to be peacefully explored. 2019 saw the first test of space law but I wonder if there will be more in the future as space becomes more popular? What do others think? ■

## Comment

**beloved\_chocolate**  
**Graveney School**

I think that there will be more testing of space law in the future, as more humans go to space. I would like to see if laws fall through, change or adapt. How would a crime by a citizen from one country against someone from another country be dealt with? Would enforcing of law in space work given the costs of bringing them back to Earth for trial? Could there be a whole new law system, whereby people are tried and prosecuted and punished in space? What would the laws of this system be, and would they include laws specific to space?

**resilient\_mandarin**  
**The Ruth Gorse Academy**

Space has its own extraordinary beauty that almost nothing else possesses. Space is our own responsibility, and if we wanted to harm a part of space in which there might be extra-terrestrial life, we would need laws.

**genius\_chocolate**

## Should there be an age limit on who can go up to space?

PRIMARY SCHOOL  
**Hammond Junior School**

**N**ASA sent astronaut Scott Kelly to space, whilst monitoring his twin brother back on Earth. Kelly found lots of different genes in his body which could be harmful to children. They have a life ahead of them, and alterations in their genes from space travel could affect this life, as their genes have not yet fully developed. Space travel could also intervene with children's learning as they would have to go up to space for a long period so they would miss school.

But on the other hand, this could be an amazing opportunity and memory for children to make with their family. If this is your child's dream, they deserve a chance to try and achieve it. In conclusion I believe that there should be an age limit, but I believe it is ultimately up to their parents. ■



## Comment

**content\_lemon**  
**Boutcher C of E Primary School**

Mars, or another planet for that matter, could be our escape route from climate change. However, if there is an age restriction of 18 upwards, think of how many children will be left. In addition, children have dreams. This may be the chance of a lifetime for some. I feel like an age limit for travelling into space isn't necessarily essential as long as they have the needed supervision. What we need is trained and trustworthy people. Whilst an age limit isn't necessary, I think character is. We're not talking about immature young people with money, but genuine characters who long to explore.

**accomplished\_reality and careful\_science**

## Are we the only living life form in the universe?

SECONDARY SCHOOL

Faringdon Community College

**I**N 1961, astronomer Frank Drake wrote an equation to quantify the probability of finding an advanced civilization elsewhere in our universe. The equation took into account factors such as the amount of stars with planets around them and the fraction of those planets that were capable to hold life. The universe is astonishingly big. The Milky Way has more than 100 billion stars, and there are over a trillion galaxies in the visible universe. Even if habitable worlds are rare, their sheer number – there are as many planets as stars, maybe more – suggests lots of life is out there.

Water is a key ingredient for life as we know it. And water is fairly common in our solar system. For example, evidence is building that liquid water may flow underneath the surface of Mars. Europa, a moon of Jupiter, appears to also have a liquid ocean and so might its moons Callisto and Ganymede. This builds the evidence that extra-terrestrials do exist. Planets with water might be the only planets that can be inhabited and even in our solar system some of our planets may hold life. Never mind the rest of our Universe which will also be likely to hold water. That said, still we don't know for sure if water is needed for survival.

However, Nick Longrich, a senior lecturer at the University of Bath, has said that the evolution of intelligent life on Earth (us) is so unlikely it may have happened just once. It comes down to whether intelligence is a probable outcome of natural selection. ■

**zestful\_editor**

## Can we live in space?

PRIMARY SCHOOL

Hillyfield Primary Academy

**N**ASA HAS learned that the ecosystem inside the spacecraft plays a big role in astronaut life. Microbes can change characteristics in space and microorganisms that naturally live on your body are transferred more easily from person to person.

According to HEROx, humans have to be housed, fed and kept happy in between their working shifts. Also, if they're working far away, there is a time delay to consider - on Mars, the average 20-minute wait between transmission and reception means the rovers used can't go very far. This explains how difficult it would be to contact and communicate whilst building in space.

Finally, hauling building materials across 225 million km of space - the average distance between Earth and Mars - would be a nightmare. According to C&EN, it costs about \$4,000 to launch a kilogram of material to low Earth orbit and many times that amount to send it to Mars. Therefore, trying to ship tons of concrete would be financially ruinous and logistically very difficult. ■

**honorable\_conclusion, funny\_power and fiery\_wolf**

## Is it worth it? The Great Space Debate

SECONDARY SCHOOL

Weston Favell Academy

**WATCH VIDEO HERE**  
[bit.ly/BNCSSpaceVid](https://bit.ly/BNCSSpaceVid)