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Engineering English

Technology in Use:

Explain How Technology Works

Explaining How Technology Works

Look at the picture and discuss the following questions.

- How do you think a space elevator would work?
- What could it be used for?
- What technical challenges would it face?
- How seriously do you think the concept of space elvators is being taken at present?

Explaining How Technology Works

Read the article and compare it with your answers in the previous exercise.

Space elevators: preparing for takeoff

In the 1979 novel, *The Fountain of Paradise*, Arthur C. Clarke wrote about an elevator **connecting** the earth's surface to space. Three decades later, this science fiction concept is preparing to take off. NASA launched the Space Elevator Challenge, a competition with a generous prize fund, and several teams and companies are working it.

As its name suggests, a space elevator is designed to **raise** things into space. Satellites, components for space ships, supplies for astronauts, as well astronauts are example of payloads that could be **transported** into space without the need for explosive and environmentally unfriendly rockets. However, the altitude of orbital space – 35,790 km above the earth – is a measure of the challenge facing engineers. How could such a hight be reached?

The answer is by using incredible strong and lightweight cable, strong enough to support its own weight and heavy load. The design of such a cable is still largely theoretical. This would be attached to a base station on earth at one end and a satellite in geostationary orbit (fixed above a point on the equator) at the other. Lift vehicles would then **ascend** and **descend** the cable, **powered** by electromagnetic force and **controlled** remotely.

Explaining How Technology Works

Match the verbs in the text with the definitions

1	connecting	a	carried (objects, over a distance)
2	raise	b	hold something firmly / bear its weight
3	transported	c	climb down
4	support	d	provided with energy / moved by a force
5	attached	e	joining
6	ascend	f	driven / have movement directed
7	descend	g	fixed
8	powered	h	climb up
9	controlled	i	lift / make something go up

Key: 1e, 2i, 3a, 4b, 5g, 6h, 7c, 8d, 9 f

Verbs to describe movement.

Space Elevator: Video Discussion

Videos:

- 2011: **Michio Kaku on the space elevator**
  https://video.search.yahoo.com/search/video?fr=tightropetb&p=space+elevator&guccounter=1#action=view&id=16&vid=8968c93e0df432db3aaec5420c7a4e95
- 2012: **Space Elevators**
  https://www.youtube.com/watch?v=_2M73aXuORI
- 2017: **Space Elevator Connecting Earth To Space Station**
  https://video.search.yahoo.com/search/video?fr=tightropetb&p=space+elevator&guccounter=1#action=view&id=19&vid=418c5e760756e1c3872ab1a2a65407a9
- 2018:**An Elevator to Space: Markus Landgraf at TEDxRheinMain**
  https://video.search.yahoo.com/search/video?fr=tightropetb&p=space+elevator#id=36&vid=fa1679d48ab077e8f41a53a792b95552&action=view

Article:

- 2018: **Space elevators: Japan to test cable-car movements from ISS**
  https://www.news.com.au/technology/science/space/space-elevators-japan-to-test-cablecar-movements-from-iss/news-story/b77509f458dd2621cb9654d6e1ac9442

Explaining How Technology Works

Activity:

Using your notes, and in your own words, write two to three paragraphs about the space elevator.

Turn-in the write-up