

## Unit One

**GPS** = Global Positioning system

**The primary application of GPS** is navigation.

**Other associated applications:** tracking systems for monitoring delivery vehicles and finding stolen cars.

**More creative features:** drift alarms on a boat GPS. If the anchor starts to drag and the boat starts moving, there is a setting on the GPS that allows it to detect the movement, and alarm sounds to warn you, and prevents the boat from drifting unnoticed. Another example on boat systems is man overboard button. So if you are sailing along and someone falls into the sea, you hit a button, which logs the position and ensures that you do not lose track of where you were, which then enables you to turn round and come back to the same point and find the person.

### **GPS applications and their descriptions:**

- 1- **Topographical surveying:** mapping surface features.
- 2- **Geological exploration:** applications in mining and the oil industry.
- 3- **Civil engineering:** setting out positions and levels of new structures.
- 4- **Avionics equipment:** air traffic control, navigation and autopilot systems.
- 5- **Maritime application:** navigation and safety at sea.
- 6- **GPS in cars and trucks:** high way navigation and vehicle tracking.

### **Vocabulary**

1- **ensure:** make sure      2- **allow, enable:** permit      3- **prevent:** stop

The core function of your GPS receiver is to **allow/enable** you to locate your precise geographical position. To **allow /enable** the device to function, it receives at least three signals simultaneously from the GPS constellation -30 dedicated satellites which **ensure** receivers can function anywhere on earth. To **allow/enable** extremely precise positioning and **prevent** errors from occurring due to external factors, this device is designed to receive four separate signals.

**Read the passage then answer the following questions.**

In his 1979 novel, *The Fountains 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 in the real world. NASA has launched the Space Elevator Challenge, a competition with a generous prize fund, and several teams and companies are working on serious research projects aimed at winning it.

As its name suggests, a space elevator is designed to raise things into space. Satellites, components for space ships, supplies for astronauts in space stations, and even astronauts themselves are examples of payloads that could be transported into orbit without the need for explosive and environmentally unfriendly rockets. However, the altitude of orbital space – a colossal 35,790 km above the earth – is the measure of the challenge facing engineers. How could such a height be reached.

The answer is by using an incredibly strong and light weight cable, strong enough to support its own weight and a heavy load. The design of such a cable is still largely theoretical. This should 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.

**1- How do you think a space elevator would work?**

**2- What could it be used for?**

**3- What technical challenges would it face?**

**4- How seriously do you think the concept of space elevators is being taken at present?**

**Vocabulary**

1- connecting = joining

2- raise = lift / make something go up

3- transported = carried (objects, over a distance)

4- support = hold something firmly/ bear its weight

5- attached = fixed

6- ascend = climb up

7- descend = climb down

8- powered = provided with energy/ moved by a force

9- controlled = driven/ have movement directed

## Emphasizing Technical Advantages

### Vocabulary

- 1- conventional = standard, usual
- 2- eliminates = gets rid of
- 3- superior = better / the best
- 4- energy-efficient = has low energy consumption
- 5- enhanced = improved
- 6- reduces = decreases

- Complete following the tips on emphasizing technical advantages using the words in the box.

conventional	eliminated	enhanced	reduced	superior
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When describing technical advantages, it is useful to emphasize ....

- a- ....**enhanced**... performance, compared with the older model of the same product.
- b- negative issues that have been .. **reduced**..., or completely ..**eliminated** ...
- c- special features that differentiate the technology from ...**conventional**... systems.
- d- performance levels that make the technology ...**superior** .. to the competition.

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- 1- entirely / totally = completely
- 2- considerably / dramatically = significantly
- 3- exceptionally / highly = extremely

**Complete the following sentences by underlining the correct word.**

- 1- We have come up with a completely / significantly unique profile.
- 2- It completely / dramatically reduces vibration.
- 3- Machines like these can never be entirely / highly free from vibration.
- 4- the new design runs dramatically / extremely smoothly.
- 5- Another advantage of the new profile is that it is considerably / entirely lighter.
- 6- So compared with our previous range, it is highly / totally efficient.
- 7- trials so far suggest the design is completely / exceptionally durable.
- 8- We expect it to be entirely / significantly more reliable than rival units.

### How can you explain technical concepts to non-specialists?

Richard: It is obviously best to use everyday language as far as possible. But, I do not think that means avoiding jargon altogether. I find the best approach, so as not to sound patronizing, is to use a certain amount of technical language, and then immediately afterwards give straightforward explanations of what it means using everyday words. When it comes to explaining tricky technical concepts, a good technique is to make comparisons between the technical point you are trying to illustrate and things from everyday life that people are familiar with, to help them paint a picture in their minds. And then to help lighten things up, and stop things from being dull, I think it is good to use a bit of humor as well, and maybe a few amusing anecdotes.

### How can you solve the following problems while explaining technical terms?

- 1- not being understood
- 2- explaining difficult concepts
- 3- being patronizing
- 4- sounding dull

### Complete the following table using the words in the box.

basically (2) call effectively essentially imagine other picture refer simple simply
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Function	Words/ Phrases
1- Simplifying the language	in <b>simple</b> terms/ put <b>simply</b> / in <b>other</b> words/ <b>basically</b>
2- Simplifying the concept	<b>effectively</b> / <b>essentially</b> / <b>basically</b>
3- Focusing on technical terms	what we <b>call</b> / what we <b>refer</b> to as
4- Illustrating with images	If you <b>imagine</b> / if you <b>picture</b>