Teach Space with a real satellite

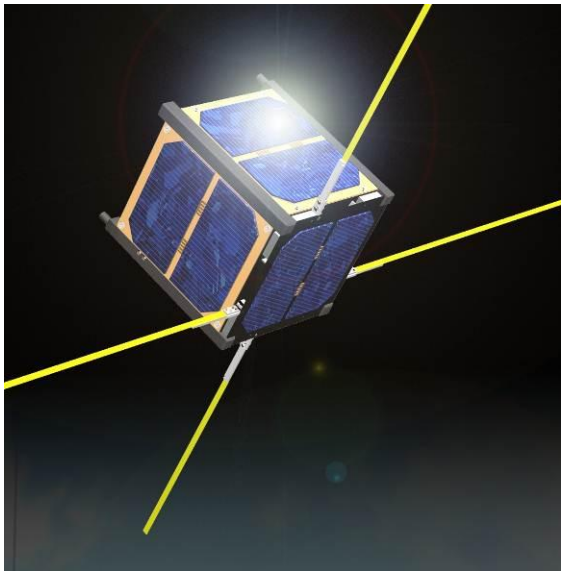
The purpose of the FUNcube project is to provide a signal DIRECTLY from a satellite in space that can be easily received by schools and colleges. The target audience is primarily students at both primary and secondary levels. The information will be displayed in an attractive format and provide stimulation and encouragement for students to become interested in all STEM (Science Technology Engineering & Maths) subjects in an unique way.

As well as building the actual satellite and paying for its launch, the team has developed a simple and cheap "ground station".

This is simply a small aerial which connects to a special FUNcube USB dongle. Used outdoors, this will receive the signals directly from the satellite and transfer the data to specially developed graphical software running on any Windows laptop.

At Primary level we will be able to demonstrate

- Solar radiation – the power of the sun
- Concepts of planets, orbits, forces and eclipses
- Batteries working in darkness
- Sizes – The International Space Station is large (five double decker buses) – FUNcube is very small (10cm cube)
- Geography – nations, places weather etc



At Secondary level we envisage being able to demonstrate

- On board temperatures – internal and external
- Voltages and currents flowing from the solar arrays and to/from the battery.
- Temperatures from external metal strips which have different finishes to provide an enhanced demonstration of the "Leslie's Cube" experiment
- Displaying the spin rate by plotting a graph of solar panel
  current/voltages
- The effect of bar magnet carried on satellite to align it with the earth's magnetic field.

Additional educational objectives and opportunities offered by the project include:

- "Whole Orbit Data" for orbit illumination/eclipse demonstrations.
- Integration into the maths and physics curricula at primary and secondary levels
- Demonstrations of radio communications at schools
- More advanced demonstrations relating to antenna radiation patterns and levels of solar radiation. Long term effects of radiation on microcircuits and other subjects would also be possible.

Additionally the satellite will also enable the uploading (indirectly via a moderated host) of short greetings messages for schools to use and the deposition of the data received on a central database. This central data will then also be available to be retrieved by schools for display and analysis.

We envisage that inter-school competitions for, say, the most data collected in a period, the most inventive use of the data, or reports of "lessons learnt" from different age groups could be easily established with prizes and presentations.

FUNcube-1 is now to be launched from Russia on Nov 21st 2013 and the required aerial, FUNcube dongle, software and support information is expected to be made available to schools at a low cost shortly thereafter. Please register your interest in being kept up-to-date with this exciting project by going to www.funcube.org.uk

The FUNcube project is being undertaken by a team of experienced volunteers drawn from radio amateur members of AMSAT-UK and is part funded by the Radio Communications Foundation - a Registered Charity.

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