

TEACHERS GUIDE FOR THE PREPARATION OF STUDENTS TO SPEAK TO THE ASTRONAUTS ON THE INTERNATIONAL SPACE STATION

This is a world wide educational project made possible through the co-operation of :

- The Space Agencies involved in the International Space Station
- AMSAT (Radio Amateur Satellite Corporation)
- ARISS (Amateur Radio on International Space Station)
- The National Amateur Radio Societies of several countries
- Verizon teleconferencing (for the Phone links)
- and a dedicated team of Amateur Radio Operators.

Submitting an Application and an educational project

- An Application form is available at <http://www.ariss-eu.org>
Go to the School Contacts page and download the Application from the left sidebar.
- The completed Application is to be e-mailed to :
jh.hahn@gmx.net and to gaston.bertels@skynet.be
- Please also submit a science and space oriented educational project, adapted to the grade(s) of the class(es) involved.
- When accepted, your Application will be put on the European waiting schools list, which can be downloaded from the website. Waiting time can be several months and up to two years, depending on astronauts' availability and number of waiting schools. There are lists of waiting schools in the USA, Europe and Japan.
- Two months before the contact, you will be informed by an ARISS mentor who will guide you through the remaining steps towards a successful ARISS School Contact.

Preparing a list of student questions to ask the astronauts

- The maximum time that the International Space Station will be within range is 10 minutes, so generally around fifteen questions can be answered. Sometimes, when the answers are short, more questions can be handled. Therefore we ask the school to prepare 20 questions.
- When preparing your list of questions, set them out as in the examples below, with the question number, the student's name, then the question, followed by the word **OVER**. The word OVER at the end of each question is important as it tells the radio operator when to change from transmit to receive. **(It's a good idea to choose a confident student to ask the first question and show the others)**
- On the day of the contact be sure that the students ask their questions in the same order as on your list, as a duplicate copy is sent to the astronauts on the ISS. This is so they can familiarize themselves with the questions and help the contact run more smoothly.
- When you have completed your students list of questions save it to disk and E-mail a copy to your mentor (or as he directs). This is the copy that the astronaut will get.
- Make sure that each student is familiar with their question and have a practice with them, asking the question into a make believe microphone. (It is surprising how many get "Stage fright" when put in front of a microphone.)
- It is a good idea for each student to have a card with their number and question on it, so they can read their question before the microphone.

Two weeks before your contact

- A minimum of two weeks prior to the contact **the school shall submit** to the schools ARISS mentor a short **story describing the school**. This should include the teachers name, number of students, age of students, size of school, and the expected media coverage etc, and how the preparations are proceeding. The story shall also include **the students' names and their questions**.
- Invite the parents to come and listen, and to bring their camera.
- Invite your local TV, radio station and news paper to attend and report on your activities
- Make sure you have someone taping the proceedings, most students will want a copy after.

Twenty-four hours before the contact (important !)

- Notify your ARISS mentor by fax or e-mail that you are ready.
- Check the phone number you have listed for the phone patch to be connected to by getting someone to call you on that number. If your contact to the Space Station is going to be via a telebridge link, (a phone patch), this is the only means that you can be connected so don't mess up on this number. Make sure that this number **WILL** be available and is **NOT** engaged an hour or so before the scheduled contact is to take place.

The Day has arrived for your contact with the ISS !

- The speakerphone (phone patch) or transceiver has been setup by an Amateur Radio Operator who will be in attendance.
- You will be given final instructions either by him or a mentor on the speakerphone, so don't panic.
- A few minutes before the predicted time, have the students line up in the correct order with their questions in their hand.
- The first student will then be asked to read his/her question into the microphone not forgetting to say **OVER**.
- As soon as the astronaut starts to answer your question pass the microphone to the next in line, and step quietly aside while listening to the reply.
- The astronaut will answer the question and when he or she is finished, will ask for the next question, or will say **OVER**.
- This is the signal for the next question. If this is followed all along the line, things should go smoothly.

What must be done when it's all over

- Within 1 week after the contact, the school shall submit the teacher's guide feedback form to NASA. The form is available at the NASA website:

https://neeis.gsfc.nasa.gov/JDbGenie/vol1/htdocs/edcats/user_ariss_report.html

- As well as NASA, ARISS expects to receive a report about this event within 2 weeks. The report will possibly be used for publication in a broader forum.
- Collect newspapers articles, videos and photos and send copies of these to ARISS-Europe chairman

**Gaston Bertels, ON4WF
Av. Paul Hymans 117 B29
1200 Brussels Belgium**

Disclaimer: ARISS can not be held liable in case a scheduled radio contact is not performed. All ARISS work is done by volunteers working in conjunction with the various space agencies and space operation constraints may force last minute cancellation.

Gaston Bertels, ON4WF
ARISS-Europe Chairman

Avenue Paul Hymans 117 B29
B-1200 Brussels, Belgium

Phone : +32.2.771.67.74
Mobile: +32.476.215.124
Fax : +32.2.771.49.89
E-mail : gaston.bertels@skynet.be
<http://www.ariss-eu.org>

Examples of typical questions asked by students to astronauts on the ISS

Note: Students are encouraged to think of their own questions.

EXAMPLE 1

1. My name is Michelle. What are the detrimental effects that no gravity has had on your body? **OVER.**
2. My name is Erica. Has there ever been a child born from a man or woman that had traveled in space for a long period of time? If so what if any were the side affects? **OVER.**
3. My name is Oliver. Do chemical reactions that normally precipitate on Earth precipitate in micro-gravity? Do certain fractures or bones and flesh wounds heal faster in space? **OVER.**
4. My name is Lori. How long does your oxygen supply last during and EVA? **OVER.**
5. My name is Jesse. How long does it take you to regain all your physical ability when you come back to Earth? **OVER.**
6. My name is Alexandra. Do you find that your physical well-being has greatly declined due to the lack of gravity? Does Exercise (i.e. Treadmill, running) seem more strenuous than on Earth? **OVER.**
7. My name is Brad. In the ISS is the oxygen recycled continually or do the spacecraft delivering new supplies or crew bring up new oxygen canisters? **OVER.**
8. My name is Sam. During the meteor showers the last few months, how did the ISS protect itself? Can you see the meteor showers or the comet that is now in the southern hemisphere from space? **OVER.**
9. My name is Matt. Is the make up of the air in the ISS similar in proportions to that on Earth? If different how does it affect you? **OVER.**
10. My name is Jody. What is a typical day like on the ISS? **OVER.**
11. My name is Brooke. What types of experiments are you currently running and how does micro-gravity affect them? **OVER.**
12. My name is Mike. Have animals or organisms been born in space? If so how did the micro-gravity affect them? **OVER.**
13. My name is Amanda. Why did you want to be an astronaut and what prerequisites in school did you have to take? **OVER.**
14. My name is Steve. What type of experiments in medicine are you doing? **OVER.**
15. My name is Mary. Do any of Newton's Laws of Motion not hold on the ISS? Is so which ones and why? **OVER.**

EXAMPLE 2

1. My name is John. Why are the pods that are used as a rescue vehicle have to be changed every so many months? **OVER.**
2. My name is Lindsey. Since there are people from different countries on the ISS, what is the language spoken on the Station and what kind of food do you eat? **OVER.**
3. My name is Cindy. What is the hardest thing to adjust to in space? **OVER.**
4. My name is Kerry. Do you think building a wall of solar panels, attaching them to an orbiting satellite or station, and beaming the energy back to Earth would be a feasible and economical idea? **OVER.**

5. My name is Jason. Does NASA have plans to produce artificial gravity in space on the ISS? **OVER.**
6. My name is Martin. When the ISS is occupied with a full crew (7-8) how many astronauts will be allowed out on an EVA at one time? How far from the ship can you go? Will any of the others be required to be in the rescue pod during an EVA? **OVER.**
7. My name is Abby. If you could bring only one luxury to space with you, what would it be and why? **OVER.**
8. My name is Jack. Are you allowed to drink alcoholic beverages at any time in space, if so what? **OVER.**
9. My name is Sam. What do you miss most (besides your family) while living on the ISS? **OVER.**
10. My name is Brian. When we see pictures of Earth that were taken in Space, we don't see any stars, do you see them on the station? **OVER.**
11. My name is Roy. How many years do you have to train to be an astronaut or cosmonaut? What did you have to take in college? **OVER.**
12. My name is Brandi. If you cry in space, what happens to the tears (i.e. do they fall downward)? **OVER.**
13. My name is Mark. What is the coolest thing you have seen or done on the ISS yet? **OVER.**
14. My name is Lindsey. If space keeps expanding, what do you think may be on the other side? **OVER.**
15. My name is Christy. If someone were to die while on the ISS, would their body be returned to Earth or would it be allowed to float in orbit above it until it burns up in the atmosphere? **OVER.**

EXAMPLE 3

1. My name is Paul. How much training did you do to get ready for space? **OVER.**
2. My name is Martin. What does it feel like when you blast off? **OVER.**
3. My name is Matt. On your way up, what things do you do? **OVER.**
4. My name is Steve. How does zero gravity affect your body. **OVER.**
5. My name is James. What do you do when you get sick in space? **OVER.**
6. My name is Patrick. How many rooms does the space station have? **OVER.**
7. My name is Kelly. What is your biggest research project at this time? **OVER.**
8. My name is Kyle. What is the most interesting information, or object, that you found in space? **OVER.**
9. My name is Beth. What do you do with your spare time while on the space station...if you every have any?! **OVER.**
10. My name is Lindsey. How come when you stand on the moon you see other planets, but when you stand on Earth you don't see any? **OVER.**
11. My name is Paul . Do you have any books in space? **OVER.**
12. My name is Erik. Does it rain in outer space? **OVER.**
13. My name is Matt. What is your favorite part about being an astronaut? **OVER.**