

NASA - International Space Station
Kids in Micro-g Experiment Design Challenge 2010-11

FAQ -- Questions From / Answers To Potential Challenge Entrants

Most Current Update: Wednesday, December 2, 2010

Question Number	Question	Answer
53	<p>(a) I am participating in your Kids in Micro-g proposal and I have a question. When you make the liquid pepper, what type of oil do you use?</p> <p>(b) We were coming up with ideas to base our experiment on, and we were wondering what liquid pepper is and how exactly to you make it or where could you buy it.</p>	<p>(a) It's a food grade oil similar to a grocery store cooking oil.</p> <p>(b) Liquid pepper is pepper mixed with a food grade cooking oil. It is something that could be made, however, you could try searching online for vendors who might sell it.</p>
52	<p>What is the approximate space available to throw paper airplanes?</p>	<p>It depends in which research module (lab) a chosen Kids in Micro-g experiment gets conducted. Below are the approximate available spaces of two labs likely to be the location of a given experiment. Please note, these dimensions do not include possible pre-existing obstructions from various hardware scattered around the module:</p> <p>Destiny Lab: Length = 8.5 m (28 ft), Width = 4.3 m diameter (14 ft). Kibo Lab: Length = 11.2 m (36.7 ft), Diameter = 4.4 m (14.4 ft).</p>
51	<p>I understand that the deadline for 2011 submissions is rapidly approaching and will indeed pass before I can get any information to the appropriate people as I have just found out about this wonderful program. I am wondering if there will be a similar program with similar rules for 2012, and if so, when will this information be forthcoming.</p>	<p>There are plans to have a Kids in Micro-g student experiment design challenge for the 2011-2012 school year. Ideally, the program should roll out in September 2011 with an early December 2011 deadline, however, these dates might shift, depending on what NASA's Teaching from Space Office decides. Since planning has not yet begun, the official rules, regulations, and requirements have not been finalized. However, it is anticipated the program will carry similar guidelines as this and last years' challenge.</p>

Question Number	Question	Answer
50	For our experiment we need drinking straws and liquid hand soap. Do the astronauts have those supplies on the space craft?	According to the Materials List posted at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html , there are no drinking straws or liquid hand soap available for use in the experiment design.
49	Are there batteries in the flash light that the students could use?	The flashlight is battery powered. However, we cannot remove them and use them for a different type of demonstration, as that would likely create a safety issue.
48	How do you want the cover page submitted? It's a PDF file online...so do you want me create my own/ copy it into a Microsoft Word document with an altered format/ or what?	A Microsoft Word version of the proposal template file has now been added to http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html so that you can download and type right onto the page. Then it must be converted to PDF format and submitted with the rest of your PDF-formatted proposal.
47	On the supply list, it lists "Soap, Bar Soap." What type of brand of "Soap" is it? Is there diverse choice of "Soap" available on the International Space Station	If you'll note on the materials list where it says "Soap, Bar Soap," it also says "(Ivory)," which would answer your question regarding brand. What is listed on the materials list is all there is available onboard to be used in designing your experiment. You will notice under the Hygiene sub-header that the only type of soap there is available is "bar soap," and the only brand there is available is "Ivory."
46	For the soft Earth, soft Moon and soft Mars (these are balls?) balls, I guess that we can get balls similar to these sizes for our classroom experiment (I haven't seen any of these in stores?)	The plush Earth, Moon, and Mars are on the list of available items for the Kids in Micro-g experiments on ISS. If you need them for in-class use, they are available online at www.peacetoy.com
45	When the water is put into a drink bag and suspended, is the bag clear so that observations can be made of the water (I'm thinking that it would be clear but would like to double check).	The drink bags do not have a clear portion. Zipper-top bags could be used for something that needs to be seen.
44	For the water available (no more than 4 oz) how will this be provided? Will the water already be in a closed bottle (like the shampoo bottles) – when will the water or liquid be added to the bottle?	Water is obtained by the crew from drink pouches filled from the onboard galley. The water is put into a drink bag and dispensed from there.

Question Number	Question	Answer
43	Several of my students are participating in the Kids In Micro-G challenge. Can you please tell me more about the liquid salt and liquid pepper (dissolved salt, dissolved pepper – is this hot sauce, black pepper – what kind of pepper and what kind of salt?).	The salt is regular table salt dissolved in water. The pepper is regular black pepper suspended in a solution of oil (kind of like a cooking oil).
42	I'm a teacher in South Korea and I just found the Kids in Micro-g 2010-2011 activity. Are my Korean students eligible to enter the competition? Or is it for American students only?	At this time, the 2010-2011 competition is only for American students. However, it is hoped that the subsequent Kids in Micro-g challenges will be expanded to avail opportunity for international students as well.
41	Where can I learn more about NASA's Kids in Micro-g experiment design challenge?	You can find and learn everything you need to know about the program at: http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html
40	With our experiment we hope to prove that when mass is measured on Earth and in space, mass does not change. Our teachers tell us this is true, but we would like to actually measure it. Will this disqualify our experiment because we hope there will not be a change.	No, this does not disqualify your proposal as long as you and your students follow the proposal guidelines as outlined/available at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html . It is actually a very good science demonstration and a key concept for middle school students to understand.
39	Can you freeze ice to make water for your experiment?	No, we do not have access to the on-board freezers for this activity, as they are considered mission-essential facilities.

Question Number	Question	Answer
38	<p>I have a practical question about the experiments that the students I am working with might be conducting. I mentioned fluid physics in our call earlier.</p> <p>1) If water is available, how is it stored and deployed for the experiment?</p> <p>2) Can we ask that the water be deployed from a pipette or similar applicator?</p> <p>3) Also, I noticed that there are plastic bottles on the manifest. Is that the only option for measuring the liquids?</p> <p>4) Or is there a water delivery device that might be employed and we can use the grid in the background to calculate the growth of the pool? Many thanks.</p>	<p>1) We recommend the drink bags be used if the experiment is to deploy the water, as the crew is familiar with them and has used drink bags before for Education Payload Operations activities. Each holds a maximum of 12 ounces of water. 4 oz. of water per experiment is permitted for your use.</p> <p>2) Same as above. And, water can be deployed using the 6ml syringe.</p> <p>3) Measuring cups are not as useful on-orbit. Closed containers with known volumes are the best options for measuring liquids. The drink bag holds up to 12 ounces of liquid.</p> <p>4) Yes, the drink bags could be used in this manner.</p>
37	<p>I am writing regarding the kids in micro-g [video] modules 1 – 4 [posted on your Web site]. I am working with educators in a school district running on Macs rather than PCs. Streaming the videos is cumbersome through the Mac interface and time consuming for the classroom format. The school district won't grant me a network password, so I thought that if I could get a hard copy of the files, I would run them from my PC Laptop. Are there individual files that could be downloaded to my local drive for show in the class room? As usual, this needed to be done yesterday, so to speak. I just became aware of the problem and the classroom presentation is 9am tomorrow morning PST (Portland, OR). Any help or guidance resolving this hick-up would be much appreciated.</p>	<p>Yes, we can send you the individual video files (in .wmv format) that are posted at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html. Please note, however, these files range from 6mb to 19mb each so we will need to set up a way to transmit them to you, e.g., a dropbox or ftp site.</p>

Question Number	Question	Answer
36	<p>1) I have some students participating in the kids in micro-g contest and some students have designed experiments using the nomex grid. Where do we buy this? I found some 48" X 64" nomex online but it was \$42 for one piece.</p> <p>2) Also, does it have a grid on it or is it just called a grid?</p> <p>3) If it has a grid on it, how far apart are the grid lines?</p> <p>4) And if we can't get it anywhere, will my students be disqualified for using a whiteboard that they drew gridlines on instead of the nomex grid?</p> <p>5) And is the engineering pad made of paper or is it laminated? The engineering pad is just special graph paper right?</p> <p>6) Oh, and can we assume that there are cameras or video available for stop frame data collection since you are going to broadcast the video of the experiment if it is chosen?</p>	<p>1) You do not need to purchase a blank piece of Nomex® since you would have to trace your own grid on it, anyways. The backdrop was produced in-house with the grid printed on it and intended for use in Education Payload Operations (EPO) experiments being conducted on board ISS. The Nomex® is only important on-orbit because it is fire-retardant, and so the crew will use the Nomex® backdrop that is indeed on orbit. The students can use any reasonable facsimile. Any other material with a 1" by 1" grid on it will work, as long as the grid is clearly visible.</p> <p>2) Yes there is a grid on it.</p> <p>3) The grid is 1" x 1".</p> <p>4) No. An accurate reproduction of the grid made by the students would be sufficient.</p> <p>5) The engineering pad is a paper pad with the standard engineering paper layout.</p> <p>6) The video of the experiment will be made available.</p>
35	<p>We are assuming there is a table-like surface that our apparatus can be anchored to using duct tape. What are the dimensions of this surface?</p>	<p>Yes, there is a maintenance work area that can be used as a flat surface if a table surface is needed. The Maintenance Work Area is 36 inches by 25 inches.</p>
34	<p>We are wondering if you have something like the following (on board ISS): matches, bottle, and a boiled egg.</p>	<p>The only supplies available for use are those contained in the full list at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html</p>
33	<p>Could you have wire (on-board)?</p>	<p>No wire is available on-board. The only supplies available for use are those contained in the full list at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html</p>

Question Number	Question	Answer
32	I was wondering if there could be a deflated balloon or a nail on the space craft for the experiment?	No, unfortunately there are no free-floating nails aboard ISS, as they would present a safety hazard. Also, there have not been any balloons located in any of the catalogs or lists of personal items that have been brought on board ISS.
31	I do not know if I am just overlooking this somewhere on the microgravity site or what. How many students can be in a group of experiments submitted? Can I enter all my student groups?	There is no limit to size of an individual student group. Group size is at the discretion of the educator. A single educator can submit up to 10 different experiment proposals developed by different student groups.
30	Is there a size/weight limit to the proposed experiment (either before assembly or fully assembled)?	<p>The size and weight of the proposed experiment are restricted to the work space available within the dimensions of the International Space Station's Destiny Laboratory. Those specs can be found and reviewed at the following Web site: http://www.nasa.gov/pdf/167120main_Elements.pdf.</p> <p>Also, please keep in mind that all the proposals will be reviewed by NASA's Office of Education for feasibility and by the Payload Safety Review Panel for safety, potential hazards, and any clearance issues.</p>
29	My students are wondering if the markers in the list are water soluble?	The highlighters are water soluble, however the Sharpies, including the colored pens, are not.
28	I'm trying to find out what email address to send current proposals to. I could not find it on your website.	You may send your proposals to this same email address that you submitted your question: isc-iss-payloads-helpline@mail.nasa.gov

Question Number	Question	Answer
27	For the Kids in Micro-g project: can I use video to explain the instructions/process of my project? Also, can I use MacBook applications (such as Pages and Keynote)? These applications are basically the same as Word and PowerPoint.	We regret we cannot accept video explanations or the use of any other computer software applications other than Adobe Acrobat (pdf documents) as submissions for the instructions/process of planned projects. These guidelines were given in an attempt to adhere to the most currently standardized use and availability of software applications not only for the contest entrants but for the potential evaluators as well, and diminishes a possibility of incompatibility along the way.
26	If water is involved in our experiment what are the design constraints?	<p>One of the goals of this exercise is to teach students how to be innovative within the same constraints the crew experiences every day. For example, Astronaut Don Pettit built a barn door tracker during Expedition 6 with spare parts.</p> <p>All selected experiments will be subject to scrutiny by the Payload Safety Review Panel. They will be looking for fire, electrical hazards, mechanical, and crew health hazards, among others. If water is a part of the experiment, consider how its use might present a hazard to the crew and/or their equipment.</p>
25	Are there any other items on-board that are acceptable that aren't on the list, for instance, test tubes?	Structural materials and containers not on the list will be disqualified.
24	I saw your article about the Kids In Micro-g challenge and noticed that the students are to use materials from a specific kit that can be obtained from NASA. I would like to know how much these kits are and how to obtain them?	The kits cannot be obtained from NASA but the contents of the available items can be obtained on the <i>Kids In Micro-g</i> Web page. The available items are commonly found in classrooms or are otherwise readily available to your educator. We ask that you construct your experiment using only materials on this list.

Question Number	Question	Answer
23	What is the maximum/minimum number size of student groups for this contest?	NASA does not have a requirement for the maximum or minimum number of students in a student group. This is a decision of the educator who will ultimately be submitting the experiment proposal to us. Our desire is that the student group is of a size that will facilitate learning for all members of the group as they work on the concepts for, and design of, the experiment proposal.
22	<p>Are the following materials available to use in the design challenge?</p> <p>2 small magnet 1 large magnet popsicle sticks hot glue/glue gun 1 sheet of tissue (kleenex) 1 small plastic bowl</p>	<p>Only the materials that are published on the list posted at the <i>Kids in Micro-g</i> Web site http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html are available for use in the challenge.</p>
21	In the supplies in the condiments- oil and vinegar are not included, are they permitted?	We would be hesitant to permit anything that was not on the published list as that item(s) would be an uncontrolled variable(s) in the experiment. The goal is to make the experiments performed on-orbit as identical as possible to those on the ground.

Question Number	Question	Answer
20	Where can I find information on the kinds of experiments students have sent on the Space Stations in the past? I found some references to some experiments, but no details about them.	<p>One area similar to what we are doing here is the DIME & WING program at NASA/Glenn Research Center. DIME & WING stands for “Dropping In a Microgravity Environment - What If No Gravity?” Information on the experiments being conducted through the DIME & WING program is located at http://spaceflightsystems.grc.nasa.gov/DIME.html.</p> <p>It is also recommended to look at information regarding the Education Payload Operation-Demonstrations (EPO-Demos) experiments being conducted, which you can find at http://www.nasa.gov/mission_pages/station/science/experiments/EPO-Demos.html, as well as what is described at the <i>Teaching From Space</i> website at http://www.nasa.gov/audience/foreducators/teachingfromspace/home/index.html.</p> <p>The Reduced Gravity Flight Program here at NASA/JSC is geared towards college students and is very technical, however, if you wish to learn more, please see http://microgravityuniversity.jsc.nasa.gov/ and http://microgravityuniversity.jsc.nasa.gov/se/</p> <p>Finally, for more general information about NASA's education programs, please visit http://www.nasa.gov/education.</p>
19	What is Nomex cord? What is a Nomex blue backdrop with grid?	Nomex is a strongly fire-resistant fabric and it's used in bungee cords, string, and the gridded backdrop. The backdrop is nothing more than a flat panel of Nomex.
18	What size are the rubber bands?	The rubber bands are the standard size used for office supply.
17	Are the condiments in bottles or in small sealed packets?	The condiments are in individual packets.

Question Number	Question	Answer
16	Can high school students participate and submit proposals?	This particular <i>Kids In-Micro-g</i> challenge is only open to grades 5-8 in the United States. NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.
15	Are there any such zero-g challenges/possibilities for grade 2 students?	The determination of grade level for student participation in <i>Kids In Micro-g</i> was based on a review of standards for science curriculum content at primary grade levels. From this review, it was determined that grades 5-8 would be the optimum grade levels to introduce students to microgravity concepts.
14	I was wondering if Canadian students could enter the competition?	Thank you very much for your question and your interest. The <i>Kids In-Micro-g</i> challenge is only open to grades 5-8 in the United States. NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.
13	Is there a list of materials that can be used located somewhere, other than included in a classroom?	The materials list can be found on the <i>Kids in Micro-g</i> challenge Web site at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html .

Question Number	Question	Answer
12	When is the deadline for this contest?	NASA will be accepting experiment proposals from Monday, October 18, 2010, through 11:59pm CST, Wednesday, December 8, 2010.. The winning proposals will be announced on Monday, January 31, 2011. Instructions for experiment proposal submissions are also posted at the <i>Kids in Micro-g</i> challenge Web site at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html .
11	Can homeschoolers be a part of kids in micro and is this where we send our kids in micro project?	Yes, home-schoolers in grades 5-8 course of study can participate. As with all participants, the entries must be submitted by an adult educator/teacher.
10	I don't live in America, so am I allowed to participate?	NASA is currently considering a contest for the next school year that could involve students from other countries, in conjunction with the international space agencies participating in the International Space Station program. There will also be additional opportunities for similar participation for grades 9-12 as well as university level students. Please continue to follow NASA and the ISS program for information on these future opportunities.
9	Hi, I was wondering that in the project Kids In Micro-G that if you are allowed to work with other people also saying if you can have a partner on it.	The intent is that the students will work in groups, lead by their teacher or educator. The teacher/educator will be the person responsible for submitting proposals on the behalf of the student groups. These details are covered in the submission instructions posted at the <i>Kids in Micro-g</i> Web site at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html
8	Is it possible for anything to be added to the list of supplies? I'm interested in using magnets, but if this is not possible I understand completely.	Magnets are not available. The only supplies available for use are those contained in the full list at http://www.nasa.gov/mission_pages/station/research/nlab/experimentchallenge.html
7	I was wondering, will water be added to the available materials list? It would be very helpful.	Yes, up to 4 oz. of cold water per experiment is available.

Question Number	Question	Answer
6	<p>I was wondering if you could add salt to the materials list because you don't have a powdery substance and I found a chemical reaction using ketchup and salt.</p> <p>How much of the condiments will there be?</p>	<p>There is liquid salt available on board the International Space Station, but powdery or granular substances are restricted because they can get free in the air.</p> <p>The amount of condiments available depends on what the student(s) want to use it for and how much. Condiments are sent up at the crew's discretion, so the condiments that are on board right now are not necessarily the same as what will be up there when the experiments are performed, because again, each crew picks out their own.</p> <p>If the students who want to use condiments can give us an idea of what they want to use and how much, this issue can be checked with and discussed with the Astronaut Crew Office about getting requests included.</p>
5	<p>Would it be possible to melt a pair of scissors or a paperclip in space using a magnifying glass? Or would this be impossible?</p>	<p>No, melting a pair of scissors or a paperclip in space using a magnifying glass would not be permitted for <i>Kids in Micro-g</i> experiments conducted aboard the International Space Station (ISS). The only combustion allowed to take place on board ISS is in carefully controlled experiment racks.</p>
4	<p>I was wondering if we could submit multiple entries?</p>	<p>Yes, each educator may submit up to 10 entries.</p>
3	<p>Are you allowed to have batteries in a flashlight, or does the flashlight have to be solar powered?</p>	<p>The flashlights are battery-powered.</p>
2	<p>I know that there is no water on the supply list but I was wondering if you were going to add it in November.</p>	<p>Yes, up to 4 oz. of cold water per experiment is available.</p>
1	<p>Would it be possible to say fill a zip-lock bag with something prior to take-off and seeing the reaction up in space?</p>	<p>No, we regret we cannot launch a bag of something and see the reaction in space.</p>