

Careers in Science

Maria Nickel – A Passion for Space Science



««« **Interviewed by Stan Taylor**

Stan Taylor is a retired elementary school teacher. He currently does science workshops for Scientists in School and is a member of the *Crucible* and *Elements* Editorial Committee (CEEC).



Curriculum Connection: Grade 6 Space, Grades 9 and 12 Astronomy and General Interest.



Maria Anna Katherina Nickel was born in Edmonton, Alberta. She attended the University of Manitoba where she earned a Bachelor of Physical Education with minors in Geography and Athletic Therapy. She also attended Brandon University where she earned her B.Ed. Maria is currently working on a Masters of Education degree. Maria teaches at Middle Years Interlake School Division, Woodlands, Manitoba. She has been there since November, 2000.

I met Maria in Houston at the Space Exploration Educator’s Conference (SEEC) in February 2013. I wrote about the conference in the April issue of *Elements*. I asked Maria some questions about her career and her passion for space and science education. Let’s learn about this interesting and driven young woman.

Q: Why did you choose science as a career?

A: I have always loved science and found I was assigned to teach it more and more even though my degree designation is not in Science. Many of my Phys. Ed courses were science-based as were my athletic therapy courses.

Q: How did you become interested in space science?

A: My dad took me to see *Star Wars* as a kid and we watched *Star Trek* together. I always loved it due to that exposure.

Q: Why do you call your students “space kids”? How did this title come about?

A: This came about when I was thinking of starting up my space club at school in the Fall of 2009. We learn all about space. They are my “space kids” and always will be.

Q: What kinds of activities do you have your “space kids” participate in?

A: I learned many wonderful activities at some excellent programs that I attended, such as the Canadian Space Agency conference in Longueuil, QC and the Space Academy and Advanced Space Academy in Hunstville, Alabama.

Then, Chris Hadfield did a live Skype from Kazakstan, Russia with our entire school in the gym on December 15, 2010, while he was in the middle of Training for Command of the ISS. The Canadian Space Agency arranged it. My space club kids asked the majority of the questions along with a few Grade 8 students. It was such a thrill.

Q: How did you learn about experiments Chris would be doing on the ISS?

A: On the [CSA website](#) and his [Twitter](#) feed.

Q: How did you get your experiment of the wringing of the wet towel to the ISS?

A: This was not actually our experiment. It was done through a contest organized by the Canadian Space Agency all across Canada back in October, 2012. School groups or individuals could participate. I had to come up with an experiment that Chris could do with a list of materials already on the ISS. I believe that two Grade 10 girls from Alberta came up with this particular experiment and Chris did it on the ISS.

Q: But you did send another experiment to him on the ISS... What was the hypothesis for your experiment?

A: The hypothesis was, "will cosmic radiation affect the DNA mutation of yeast cells? Will the antioxidants in green tea slow that mutation?" (Yeast cells act similarly to cancer cells. My student researchers wanted to do an experiment on cancer.) We will know if our hypothesis is accurate or not when it gets back from the ISS in late December. (See <http://ssep.ncesse.org/?s=DNA+experiment> for more information.)

Q: What steps did you take to get your experiment to the ISS?

A: Our actual experiment in the STUDENT SPACEFLIGHT EXPERIMENT PROGRAM Mission 3 will be going to the ISS November 11, 2013, barring any delays from NASA scheduling (there has been a lot of that lately; it seems to be a natural part of the space program). The steps that will be taken are as follows:

- Placing our experiment in the FME (Fluid Mixing Enclosure) containment container designed and supplied by NanoRacks LLC in Houston, TX;
- Having a crate set up by Magellan Aerospace, Winnipeg and using their customs broker to secure the full transport to NanoRacks LLC who will then arrange for final transport and paperwork to NASA at Kennedy Space Center in Florida for final payload loading onto the Falcon 9 Rocket and the Space X Dragon transport capsule.

The Student Spaceflight Experiment Program is undertaken by the Arthur C. Clarke Institute for Space Education (<http://clarkeinstitute.org>) in partnership with Nanoracks, LLC. This on-orbit educational research opportunity is enabled through NanoRacks, LLC, which is working in partnership with NASA under a Space Act Agreement as part of the utilization of the International Space Station as a National Laboratory.

Q: Where should students start if they want to pursue a career like yours (elementary and secondary students)?

A: They need to get a bachelor's degree in science and then take their degree in education at a university. Their immediate focus of study should be in science and mathematics. Oral and written communication skills should also be honed.

Q: What other skills do you need to be successful in your field?

A: Patience, willingness to think outside the box, and being able to research and find unique experiments that will “hook” your kids to get them excited about science are the keys to success.

Q: What are some of the major issues you deal with in your field?

A: The major issues are a lack of funds with which to buy supplies, enough time to get all the curriculum completed in the year, students who lack knowledge of the Scientific Method, and severely below grade level students lacking the proper support to help them achieve at the same level as their peers.

Q: What is, in your opinion, the most interesting or intriguing part of your job?

A: To see that “aha” light go on, and see it in my students’ faces as they light up with excitement at what they are doing in science and begin to understand it more.

Q: What do you like least about your job?

A: I don’t enjoy the seemingly endless mountain of paperwork that gets in the way of teaching.

Q: What are the most rewarding aspects of your career? What do you wish was different?

A: Rewarding aspects are the comments from my students, such as: “I love science”, “This is fun, Mrs. Nickel”, and “When do we get to do more?” Especially nice are the comments from kids in younger grades whom I don’t yet teach, saying: “I can’t wait to apply to be in space club”, or, “I can’t wait to be in your science class. I hear it’s going to be fun.”

What I wish was different is the following:

- More professional development planned by teachers;
- Full-time teacher’s aides to assist below-grade level children or hiring more teachers to work specifically with below-grade level students within a classroom;
- Sufficient specialized supports for children with high needs (behaviour, academic, or cognitive) so there is success for all.

Today there are so many more specialized needs by children that the classroom teacher is, in my opinion, stretched too thinly.

Q: Was last February your first visit to the Space Exploration Educators’ Conference (SEEC)?

A: No. My first one was February, 2012.

Q: What did you like most about the experience?

A: The best part was being able to attend all the unique, challenging classes that very much help enhance my classes and meeting all the wonderful people who share my excitement for space education. I posted the following on Facebook while at the conference: “OMG so having a BLAST here at JSC Houston. Learned awesome activity for my kids on Osteoporosis, did Habitat NASA pods and I got to go inside, use the glove box, operate the mechanical lift and transport myself as the astronauts do when they train in this pod, to the second level in the living quarters they are testing to send to the Moon or Mars to colonize. Learned also how to build a vertical launching and



Official SEEC Photo 2013 Gangham Space Gals: Becky Russell Loy, Jacqui Flowers and Maria Nickel with Clay Anderson (right) and Gangham prodigy Eric the intern (left) at NASA's Johnson Space Center, Houston, TX

gliding shuttle, a Geo Bat, a solar system game and build an ISS model. Went to Kemau Island for supper with buddies, and listened to a JAXA astronaut (Japan) on his adventures in space as a medical doctor. Awesome and more to do tomorrow. So so so fun.”

Q: It sounds like you had the time of your life! Are you presenting at the 20th Anniversary of SEEC?

A: Yes! I am planning on presenting at the 20th Anniversary of SEEC, as long as I have permission to do so from my school division. My presentation will be on our experiment to the ISS, my space club and how to run a space riot for kids Grades K – 8.

Q: What was your first experience at Space Camp, Alabama like?

A: Life altering! It was the first PD experience that changed the way I view science.

Q: What did you like most about the advanced Space Camp?

A: It was incredible to have so many supportive, like-minded fellow teachers who encouraged my geekiness, love and excitement for space and to get such positive feedback and lesson ideas to share with my kids and colleagues back home in Canada.

Q: What other kinds of opportunities might be available for someone with your educational/experiential background?

A: This is all new to me. I am starting to get requests to be a keynote speaker at events, to help plan Aerospace weeks, and I am receiving museum requests for help to overhaul their space science classes to schools. Maybe it will lead to working for a space company to help kids get hooked on the industry as a career. I would so love to do that; to be able to get paid to go into classrooms across Manitoba or anywhere in Canada to promote space science programs.

Q: What have you accomplished so far that you are really proud of?

A: Being one of 10 Canadians chosen and one of 280 from around the world out of 1,500 applicants to attend the Honeywell Space Academy for Educators for one week in Huntsville, Alabama, 2009.



Being chosen as one of only two Canadians out of 28 from around the world to attend the Honeywell Advanced Space Academy for Educators for one week. Our training and education was conducted in two locations. This first part was at Huntsville Alabama at the US Space and Rocket Center and the second part was at the Kennedy Space Center in Florida in 2011. That was the year that Atlantis was the last shuttle to fly. My Advanced Academy crew-mates of 28 and I were on the platform launch pad in Florida at Kennedy Space Center. We did not see the actual launch as Atlantis was still being prepped, so I watched the launch on TV with the rest of the world on July 8, 2011.

Middle Years Interlake School Division was the first Canadian school division and elementary set of schools to be accepted into the Student Spaceflight Experiment Program in the USA, as well as the first Grade 5 experiment in Canada to go to the ISS.

Q: What are your interests and hobbies?

A: I love to bake, cook, and design theme cakes. I play volleyball, beach volleyball, ball hockey, sponge hockey, softball, listen to music, watch the Food Network, enter contests of all kinds and see action adventure movies (science fiction, drama, mystery). I like travelling with my husband and spending time with family and friends.

Q: What are your future plans?

A: I want to be the best science teacher I can, and to constantly learn so as to excite the kids about space. I never want to stop learning! My big dream is to build the same Space Academy in Canada for teachers and kids, like the one in Alabama, at the US Space & Rocket Center. If we had something like that in Manitoba, we would retain more students in school and have many more be excited about science.

We wish Maria continue success as she continues to get children excited about Space.



Editor's note:

Maria was featured in an article in the *Winnipeg Free Press* recently. The article may be found on page 10 through the following link: <http://publications.winnipegfreepress.com/i/169581>