



Grant Update Rock Rovers NASA Hunch Program June 1, 2014

The Council Rock Education Foundation sends Council Rock students to space! Well, almost.

Two CR South high School students flew in the NASA zero gravity jet last month to conduct capillary experiments using hardware that they designed and built with the help of a CREF grant! Congratulations to teacher Fred Bauer and his team of design-build students for this great accomplishment - and demonstrating the true meaning of an innovative educational program!



For more information about the Education Foundation and our innovative educational programs, visit www.creducationfoundation.org

KYW interview with Kim Glovas of CBS Philly June 1, 2014

Transcript of Radio Interview:

KIM: I'm here with Fred Bauer, Science Teacher at Council Rock High School South in Holland, PA. Fred and his students have just returned from a trip to the Johnson Space Center in Houston, TX. Fred, tell us about the project-

FRED BAUER: This project was part of the NASA HUNCH program. Our students designed and built a capillary experiment that would test the rate of flow of fluid through capillary tubes for use onboard the International Space Station.

I provided the facility, the students provided the research, the development of the project, ideas and also the work and everything that took place in the project. The zero gravity simulation took place down in Houston on board the weightless wonder, which is an



aircraft that NASA uses in order to simulate zero gravity.

KIM TO ZOE: *how did you prepare for zero gravity?*

ZOE: I didn't. For the experiment we worked with each other – designed in December, mocked up designs in January and February and come March we had a working model that we were going to use in April. As for the flight itself, I didn't really prepare. I got to wear a military issue flight suit – olive green – lots of pockets!

KIM: So what day did you arrive?

ZOE: We arrived on late Thursday/Friday morning and we reported on Friday to the airbase. On Saturday we had a business thing, Sunday was a day off, Monday was a working day, Tuesday and Wednesday we flew and then we left to join the senior class on the senior class trip.

Justin and I got to be on the plane. I flew on Tuesday and Justin flew on Wednesday. We had 32 parabolas to fly the experiment – it took like an hour and a half.

During these parabolas is where we tested the rate of capillary action in zero G.

KIM: What were the results?

ZOE: well everything turned out relatively similar to the tests on earth, but you can read more about it in our report.

MATT: I designed the experiment and I also did all the electronic work. "It was based around a nano-lab design, it was a rectangular prism. It's about 4-inches by 4-inches by 8 inches, and your entire experiment has to fit in there because that's what you can put up to the International Space Station, for \$30,000. We also put an outer layer on it for extra protection because we were working with liquids. Of course if liquids get out into the plane, that can cause serious problems. So the outer layer was about twice the size of the prism and contained two of the nano-labs.

KIM: What are you going to do when you graduate?

MATT: I'm going to Northeastern Univ. I'm hoping to bring the university level of the HUNCH program to the University – to plan an experiment and conduct it. And when you are finished your results get published in a scientific paper.

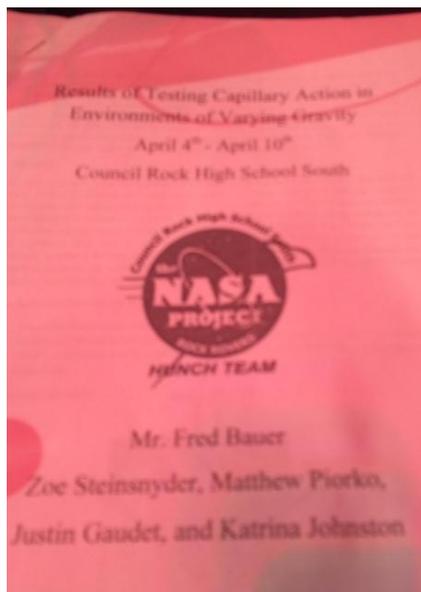


KIM: Where is the paper being published?

MATT: It's available online – Amazon and Barnes & Noble. We can get you the specific title of the book.

KIM: What does HUNCH stand for?

STUDENTS: High School Students United with NASA to Create Hardware.



FRED: This is the fourth year of this program. Council Rock South started in the MicroGX project which focused on teaching from space. Myself and four other teachers took the student experiment up in the jet – it was an ROV with a task of the astronauts being able to use it to inspect the station from the outside

During the entire experience, all the other teachers and myself kept saying “but it would be great if the students could experience this instead of us!” And at that time, we were not able, in that program, to take the students with us. One of the flight engineers in Houston said to us “well your students should get involved with the HUNCH program.”

So last year we started on the HUNCH program, redeveloping the ROV, and impressed Florence Gold, our Director in the Hunch program, so she moved us up and put us into an active school this year. The students jumped into it in September and designed it and got running right away.

KIM: Now over to “Kat”

KAT: I’ve been team leader for the ROV and Hunch projects for about 3 years now It’s my job to manage all the divisions of our team, whether they are engineers, business people looking to get sponsors, I deal with emails that go back and forth between us and NASA, send out papers, pretty much any management or administrative details. Kat would like to be a software engineer when she graduates. She’s going to Drexel University in the fall.

This experience was life-changing. I got to spend time in Houston and we got to do things that not even NASA employees got to do. That in and of itself is just amazing. All the things I got to see and the people I got to meet, it was fantastic and I can’t see myself doing anything else when I get older. I feel that the HUNCH program is something that I’m very passionate about. Working in the classroom and designing an experiment is one thing, but being able to take that up into zero gravity and test it like Zoe and Justin did, being able to see that our experiment has potential applications, it’s a feeling like no other.

ZOE: I am going to Rensselaer Polytechnic Institute for Chemical and biomedical engineering. I think now is an important time in my life to have this experience as opposed to being in college or being a grad student. I feel like now I was naïve enough and green enough that I was able to appreciate it to the fullest and I wasn’t jaded. There’s a statistic – “more people will reach the point of Mount Everest than will get to fly on the zero gravity plane.” Being young, being 18 and having my whole life ahead of me, is something that no one else will get to do.

MATT: It’s an amazing experience – something that a lot of other kids will never get to do. Mr. Bauer and Mrs. Gold have given us so many opportunities, but for me personally, the best part of it was working with that kind of hardware, because that is what I want to do when I get older. I got to work on-hand with the new micro-controller, which is like a miniature PC. It’s like if IBM went up to you and said “test this product” and put it in zero G!

Out of all the participating teams, only one was chosen to have their experiment flown and tested up on the International Space Station and given to the astronauts. Unfortunately, we were not the team selected, but it is our first of three years in the program, but personally I am very satisfied with the results.

KIM: tell us about zero G.

ZOE: The first time I felt zero gravity, you are lying down on the floor of the plane and the crest of the parabola is 40,000 feet and the bottom is 32,000, so you are dropping 10,000 feet in about 10 seconds. When you are on the upswing the blue suits – the NASA guys are just looking at you. Suddenly you feel nothing and you look down and you are floating- all you can do is giggle – for a solid 6 parabolas, all I could do was giggle. I irritated Mr. Bauer, he was like – “stop giggling” – he was getting annoyed after about the 7th parabola.

FRED: So one of the things about this was that the students simply because it was based on age. Even though not a lot of students had the opportunity to fly, being on ground crew was just as important as being in the flight crew.

The students contributed, no matter what level they were in. One of the most impressive things was dealing with the NASA engineers. The students had to meet all the parameters and specifications that NASA has to meet for any flight, whether it goes into orbit or not. So they are meeting all the specifications that any NASA engineer or contractor would have to meet in order to fly an experiment. Given all that, once they got down to Houston and started working in the hangar and putting the experiment together, one of the things that they just ignored, that impressed me the most, was not our experiment, not our flight, but the fact that in the hangar and during the evening, they worked with the other teams, helping the other teams get their experiments up to speed. So it wasn't just about their experiments, they jumped on board and

KIM: What do you want me to tell people about this team...

FRED: It's funny – because I consider myself so fortunate to be able to work with these students, and to be able to give them the opportunity to jump into this program. They are the ones that took this ball and made the project work. And I couldn't be prouder of any of my students because they came in at every level, started with nothing and developed this project to a successful goal where there were only 13 teams involved with this and only 8 teams went on to the second level of judging for their project going onto the International Space Station. And this was the first year these kids were involved.

ACTUAL PRINTED ARTICLE and link to radio interview:

<http://philadelphia.cbslocal.com/2014/06/01/students-at-local-high-school-experience-zero-gravity/>

PHILADELPHIA (CBS) – Zero gravity isn't something most of us will ever experience, but some students at one Bucks County high school got to do just that recently. Four students from Council Rock South High School were part of the HUNCH program: High school students United with NASA to Create Hardware.

Fred Bauer was the teacher who got the kids on board. "Students were tasked to work on hardware development for NASA, and in doing so, the final experiment had to take place in zero gravity."

Senior Matt Piorko designed the hardware. "It was based around a nano-lab design, it was a rectangle prism. It's about 4-inches by 4-inches by 8 inches, and your entire experiment has to fit in there because that's what you can put up to the International Space Station."

In April, the crew took it to NASA's Zero Gravity simulator in Houston to be tested. Some adjustments needed, but that's okay, there's another crew of seniors waiting in the wings to take over the project in the fall.
