



## GEERING Up!

UBC Engineering & Science  
for Kids



2012

## Final Report



GEERING Up! is a proud  
member of Actua.

Actua provides training, resources and support to a national network of local organizations offering science, technology, engineering and mathematics (STEM) education programs. Actua members reach over 200,000 youth per year.

A member  
organization of  
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**actua**  
Learning for Change.  
Découvrir pour demain.

### Vision

To provide all of the children and youth of British Columbia with the opportunity to investigate engineering, science, and technology in a fun, educational, and safe environment.

### Mission

GEERING Up! UBC Engineering & Science for Kids is a non-profit, student-run organization dedicated to promoting science, engineering, and technology to the children and youth of British Columbia through fun, innovative, and hands-on experiments and projects. GEERING Up! also strives to reach all children and youth, regardless of gender, ethnicity, culture, or socio-economic status, with special outreach for those groups traditionally underrepresented in the sciences. GEERING Up! provides valuable work experience to its employees, and enriches the University and community.



"Dear Instructors and JIs,

"Thank you for teaching us very much and this camp is amazing!

"Thanks for helping us, JIs, when we don't know what to do and thanks Instructors for teaching us how to make things with science and teaching us a lot of science and cool stuff. Thank you very much and see you again soon."

- Explorers Camper (Age 7)



## A Word from the Directors

The 17<sup>th</sup> season of GEERing Up! is marked with new and continuing partnerships, outreach initiatives, outstanding sponsorship support, and new program content. As a result, this year's team has reached 4860 children and youth in schools, outreach programs, community events, and summer camps.

As part of our continuing outreach initiatives, GEERing Up! travelled to Prince George and Kelowna. Twenty-one workshops were delivered to elementary school students in Prince George and Mackenzie and nineteen workshops in Kelowna. Prince George workshops reached 495 students and Kelowna workshops reached 393 students. 2012 was the inaugural summer for GEERing Up! camps in Kelowna and Prince George. Camps were well received by campers, parents, and partners. We were also happy to return to K'omoks this summer for another great week of camp.

This year was a success thanks to the dedication and enthusiasm of the entire GEERing Up! team who were supported greatly by the local community, national funders, the Faculty of Applied Science and the University of British Columbia. We hope to nurture the partnerships of this year, both old and new, for the coming year. We are confident that the 18<sup>th</sup> year of GEERing Up! will bring new and exciting opportunities for the children and youth of our community and our own team.

Mercedes Duifhuis & Martha Talbot  
Co-Directors





We asked workshop participants  
"What was the most exciting/coolest  
thing you saw, did or heard?"

They answered:

"The scientific method. I liked it  
because it was cool and interesting.  
I want to do it again!"

"That scientists and engineers are  
connected with their work."

"Making the car because I never  
knew you could make by using a  
balloon and that lids could be used  
as wheels or that a cardboard box  
could use as a centre of a car!"

"I learned how to make a non-  
pollutant car."

"Science is interesting!"

## Year in Review

### Workshops

In May and June, we delivered workshops to elementary schools, after school programs, and Girl Guide units across the Metro Vancouver area, Prince George, Mackenzie, West Kelowna and Kelowna. Our first week of workshops in Kelowna was a great experience and we hope to return in the future. The schools of Prince George and Mackenzie were glad to see us return for a second year.

Four workshop topics were offered this year:

- Sustainable Earth
- What Goes Around, Comes Around
- We've Got the Power
- Inventing! (for Girl Guides only)

With the help of our French-speaking Instructors, we offered French workshops to several Francophone and French-Immersion schools in Vancouver.

### Summer Day Camps

We hosted 25 on-campus camps in Vancouver over 7 weeks in July and August for children and youth aged 6 to 16. We also took our camp curriculum on the road and offered a week of camp in Prince George, K'omoks and Kelowna. Our weeklong programs were developed by our Instructors and covered a wide breadth of science and engineering topics. Some of the highlights this year included:

- A camp wide Rube Goldberg Machine
- Lego Mindstorm NXT robots
- VEX robots
- Hovercrafts
- Vernier Probe monitored thermoses
- Bacteria growth with Microbiology mentor

We also hosted many mentors and went on lab tours so that campers could experience how professionals and students put theory to work. This allows campers to learn about the variety of careers science and engineering have to offer. This year, the campers had the opportunity to visit many facilities at UBC: Wind Tunnel, Pulp and Paper Centre, Engineering Physics Lab, the Biology Greenhouse, and Pacific Spirit Park.



### Girls Only! Initiatives

This year 71 girls participated in workshops designed specifically for Girl Guides of Canada. The workshop focused on the evolution of technology and the engineering design cycle and at the end each girl received her Inventing badge.

This July, GEERing Up! offered a week of Girls Only! Camp for grade 2 to 7 girls. While the camp curriculum was similar to the co-ed camps, the Girls Only! environment empowered the girls to explore their full potential in science, engineering and technology. We engaged additional female mentors during this week. The mentors inspired the girls to think about all the possibilities science and engineering have to offer. Engaging female mentors shows the girls that they can go on to careers in these fields.

### Health Sciences Programming

As part of Actua's national initiative to expose Canadian youth the field of health sciences, this year all GEERing Up! campers participated in at least one health sciences themed activity. Campers learned about biomedical engineering by building a prosthetic hand that they could manipulate to move objects, thought about the importance of medical careers when they learned about blood types and transfusions, and explored the respiratory system by building their own model lungs.

We also engaged two Canadian Institutes of Health Research (CIHR) researchers as mentors. One taught the campers about microbiology and the importance of bacteria and had the campers sample different areas of their camp room. The other talked about her research in psychology and had the campers do some basic memory experiments.

### Integration Support (IS)

Formally called Special Needs Integration Support. The IS Instructor provides support to all campers, focusing on those with exceptionalities, to ensure that everyone has a positive experience at camp. The IS Instructor works individually with campers as well as with the instructors to explore different classroom management techniques and methods of conflict resolution.

## By the Numbers

2 Directors  
9 Instructors  
1 IS Instructor  
40 Junior Instructors



4187 Workshop Participants  
193 Workshops  
4 Topics  
8 Cities



650 Campers, including:  
266 Girls  
23 Aboriginal Youth  
34 Bursary recipients



95% of Campers are considering returning next year.  
80% of Campers say they are more interested in science, engineering and technology because of camp.

### Aboriginal Outreach

This year GEERing Up!'s Aboriginal Outreach initiatives had four branches: workshops at the Vancouver Aboriginal Friendship Centre (VAFC), Aboriginal discount week in Vancouver, a week of outreach camp for the K'omoks First Nations, and the participation of six Aboriginal volunteers.

Through four complimentary after-school workshops the youth of the VAFC were exposed to circuits, propulsion, and design and build projects. Seven youth took advantage of Aboriginal discount week in Vancouver, a program we hope to expand in the future. Continuing a long-standing partnership, GEERing Up! returned to the K'omoks First Nation this year where we had 16 participants learn about science, engineering and health care careers. By partnering with UBC's Emerging Scholars Aboriginal Summer Camp, we were able to engage Aboriginal volunteers for a total of 40 hours each. The volunteers interacted with the campers and assisted the Instructors.

### At-Risk/Low-Income

GEERing Up! strives to make our programs accessible to all youth, regardless of their family's financial status. Thirty-three complimentary workshops were delivered at five different inner-city Vancouver elementary schools this year. We also visited two Boys and Girls Clubs. Our camp bursary program grew this year with bursaries, totaling \$6700, granted to campers who otherwise would be unable to attend camp.

### Community Outreach Events

This year the Euclid Math contest and the Vancouver Science Fair winners had the chance to participate in a design and build challenge led by GEERing Up!

A group of high school counselors from around the globe received a tour of the GEERing Up! summer camps and learned about student driven initiatives from the Co-Directors.

Through a new partnership with UBC's Brainwave program, we hosted two Saturday workshops for Vancouver youth unable to attend camp.



## Financial Highlights

2011 Actual	2012 Projected*	
<b>REVENUE</b>		
\$41,361.25	\$37,577.00	Incoming Contingency
\$95,762.15	\$120,550.06	Camp Registration
\$6,216.01	\$8,115.98	Workshops
\$18,930.00	\$14,436.00	Local Funders
\$15,000.00	\$17,374.76	University Donations
\$12,878.00	\$35,082.20	Federal Government Funds
\$13,365.00	\$11,250.00	Actua Funding
\$0.00	\$6,724.55	Other
<b>\$203,512.41</b>	<b>\$251,110.55</b>	<b>TOTAL REVENUE</b>
<b>EXPENSES</b>		
\$485.58	\$678.45	Administration
\$6,038.35	\$5,793.35	Promotion
\$24,205.99	\$23,997.88	Materials
\$7,949.63	\$12,392.41	Program Delivery Travel
\$101,192.40	\$128,730.24	Staff Costs
\$4,019.91	\$1,531.69	Other Travel
\$19,954.88	\$6,365.18	Capital Upgrades
\$1,913.62	\$2,069.73	Awards and Recognition
\$175.05	\$1,160.00	Other
\$37,577.00	\$20,000.00	Forwarding Contingency
\$0.00	\$48,391.62	Continuity Planning
<b>\$203,512.41</b>	<b>\$251,110.55</b>	<b>TOTAL EXPENSES</b>

\* Includes actual revenue and expenses to August 22, 2012 and anticipated revenue and expenses to December 31, 2012.

### 2012 REVENUE



### 2012 EXPENSES



This year GEERing Up! experienced a 23% overall budget increase due significantly to increasing the number of summer camps offered in July and August compared to 2011 and additional federal funding. A three-year grant from NSERC PromoScience allowed us to expand our outreach initiatives and offer workshops and camps in Prince George and Kelowna.

The funds set aside for "continuity planning" are intended to support GEERing Up!'s transition to a year-round staff person. The addition of this staff person will allow for increased program growth and consistency for sponsors, campers and parents over the years.



"It was a joy to have started and ended my summer with GEERing Up!; I had an incredible time interacting with the campers, and talking with the instructors."

- Junior Instructor





## Staff and Volunteers

### Instructors

This year we increased our team by hiring two additional Instructors for a total of ten. Our team featured one Integration Support Instructor, two French-speaking Instructors and a variety of engineering, science and education backgrounds. The knowledge, skills, enthusiasm and passion offered by each of our instructors ensured that there was never a question that the summer would be great.

*Alice Lam – Christien Querengesser – Erin Anderson –  
Jack Park – Jakob Manning – Julia Schneider –  
Leyla Salmi – Madison Grist – Rafael Jacinto –  
Sarah Lee Johnston*

### Junior Instructors

This year we had an amazing group of 40 grade 11/12 and university students volunteer to be Junior Instructors (JIs). Each Junior Instructor was asked to attend a day of training in June and make a two-week commitment to the program; many came back for additional weeks. While at camp, the JIs had the opportunity to interact with the campers, experience UBC campus and, in a team, plan and deliver their own camp project to the youth. Our program would not be possible without all their time and dedication and we are so thankful for all of their work. We are also very happy that many of them have indicated an interest in returning next year!

### Board of Advisors

The GEERing Up! Board of Advisors is comprised of former directors and instructors. The Board provides long-term memory and ensures the ongoing success and quality of the programs. Furthermore, the Board also preserves the sustainability of the organization.

GEERing Up! also receives support from the Faculty of Applied Science through our staff and faculty advisors as well as the assistance of the administrative staff.

We asked campers to complete the sentence: "This week at camp I learned..."

They said:

"You can see colonies of germs."

"Unit switches are the more sensitive versions of bumper switches."

"You can make a camera out of a box."

"There are four types of blood."

"How wind tunnels are used for research."

"Salt is made of sodium and chloride."

"Circuits aren't only batteries and lights; there are other things."

"That engineering is fun and you can make things."



## THANK YOU TO OUR SPONSORS



## 2012 Actua National Funders



## A special thanks to the following individuals and organizations for their help and support this year:

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**GEERING Up!**  
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