

Science Unlimited Summer Camp  
Pre-Camp Package  
[uoft.me/sciencecamp](http://uoft.me/sciencecamp)

Congratulations on being selected to participate in the Science Unlimited Summer Camp.

The workshops you will take part in have been developed by the Departments of Astronomy and Astrophysics, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics and the School of the Environment. They are sure to challenge and inspire you.

This package contains important information for your week with us so please read it carefully and make sure to bring it with you.

There are important consent and information forms on pages 9/10 of this package that need to be returned to the Department of Physics.

So start reading and we look forward to seeing you in August!

**What's in this Package**

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**Your to do list!**

1. Read through this guide thoroughly
2. Bring this guide with you to the camp and keep it handy at all times
3. Ensure the forms on pages 9/10 of this package are returned by email or fax (our contact information is below)

**Contact Information**

Department of Physics  
University of Toronto  
60 St. George St. Toronto  
Ontario M5S 1A7 Canada

416-978-2231

[outreach@physics.utoronto.ca](mailto:outreach@physics.utoronto.ca)

## About Us

The Science Unlimited Summer Camp is your chance to get a taste of some of the research taking place in the Faculty of Arts and Science at the University of Toronto!

See what Departments of Astronomy and Astrophysics, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics and the School of the Environment are doing!

### The University of Toronto and the Faculty of Arts and Science

(<http://www.utoronto.ca> and <http://www.artsci.utoronto.ca>)

Established in 1827, the University of Toronto has one of the strongest research and teaching faculties in North America, presenting top students at all levels with an intellectual environment unmatched in depth and breadth on any other Canadian campus. With more than 80,000 students across three campuses (St. George, Mississauga and Scarborough) and over 500,000 alumni active in every region of the world, U of T's influence is felt in every area of human endeavor. The Faculty of Arts and Science is a vibrant intellectual community of students and scholars who are deeply committed to excellence, discovery and diversity. Arts & Science represents over half the student population on the main downtown campus. We are home to 944 of the world's top scholars and our Faculty is the largest in Canada and among the most comprehensive in North America.

### The Department of Astronomy and Astrophysics

[www.astro.utoronto.ca](http://www.astro.utoronto.ca)

The Department is actively engaged in a wide range of observational and theoretical research and offers Master of Science and Doctor of Philosophy degrees, as well as a wide range of graduate and undergraduate courses. Together with our sibling units, the Canadian Institute for Theoretical Astrophysics (CITA), Dunlap Institute for Astronomy & Astrophysics (Dunlap) and the Centre for Planetary Sciences, there are close to 100 faculty members, post-doctoral fellows and graduate students here that make up a lively and diverse atmosphere in research, teaching and outreach.



### The Department of Chemistry

[www.chem.utoronto.ca](http://www.chem.utoronto.ca)

Established in 1859, the Department of Chemistry takes pride in its teaching excellence, advanced research facilities and the development of distinguished scientists in the past and for the future. With 50 faculty members, 30 staff and 350+ graduate and postdoctoral students, the department focuses on the following research areas: Analytical Chemistry, Biological and Organic Chemistry, Chemical Physics, Environmental Chemistry, Inorganic Chemistry, Physical Chemistry and Polymer and Material Chemistry. Interdisciplinary research is also available with the medical sciences and engineering faculties. The departmental has a wide variety of services including a library, chemical stores, electronics and computing facility, glassblowing shop, machine shop, general stores, NMR lab, Mass Spectrometry lab and a X-Ray analysis lab.



## The Department of Computer Science

The Department of Computer Science (DCS) at the University of Toronto is ranked among the top 10 computer science departments in the world, and offers a wide array of research opportunities and programs of study. DCS is home to internationally-recognized faculty and students. Faculty in DCS have been presented with a wide variety of honours and awards over the years, including the Turing Award (the “Nobel Prize” of Computer Science), Academy Awards, and many other international and national honors. Our faculty and graduate students consistently produce high-impact research that is among the most highly cited in computer science and attracts attention far beyond the discipline.

[web.cs.toronto.edu/](http://web.cs.toronto.edu/)



## The Department of Earth Sciences

The Department of Earth Sciences at the University of Toronto has a venerable 165 year tradition of research and education in the geosciences. Rankings place UofT it at the very top in the geosciences in Canada and among the very best institutions globally. The Department of Earth Sciences is internationally regarded for research in fundamental geoscience, having given rise to major advances in ore deposits geology, geophysics, Precambrian geology, marine geology, Quaternary geology and sedimentary basin analysis.

[www.es.utoronto.ca](http://www.es.utoronto.ca)



## The Department of Mathematics

Mathematics is undergoing an explosion in new ideas and techniques, as well as in the understanding of basic mathematical structures. The discipline is also central to areas of study from economics to engineering, where it provides theoretical concepts and fundamental language. Faculty here are major players in mathematics at the international level with active research programs in analysis, applied mathematics, geometry and number theory.

[www.math.toronto.edu/](http://www.math.toronto.edu/)



## The Department of Physics

U of T's Department of Physics is one of the top physics departments among North American public universities, offering an exceptionally broad range of theoretical and experimental research opportunities and educational programs. Offering a full range of major and specialist programs that include joint programs with allied departments such as Chemistry, Mathematics, Earth Sciences and Astronomy and Astrophysics. The undergraduate laboratories offer a comprehensive range of equipment allowing students to explore some of the most modern concepts in physics, while faculty and students are engaged in research in fields as diverse as condensed matter physics, quantum optics, subatomic physics, astrophysics, planetary and atmospheric physics and biological physics.

[www.physics.utoronto.ca](http://www.physics.utoronto.ca)



## School of the Environment

The School of the Environment is located within the Faculty of Arts and Sciences, and serves as a focal point to help to direct students, faculty and the outside community to environmental initiatives across the three campuses of the university. The School offers an undergraduate B.A. program in environmental studies and a B.Sc. program in environment and science, with exciting programs under development. In addition, collaborative programs are offered with departments and programs at U of T such as Chemistry, Geography, Geology, Human Biology, Physics, Philosophy, Psychology, and others.

[www.environment.utoronto.ca](http://www.environment.utoronto.ca)



## All About the Camp

### Camp Format

This camp is a collaboration between multiple departments and as such you will have an opportunity to participate in activities and visit various departments throughout your time here. Each activity will be a bit different from the others and will give you a good taste of the various facets of science and technology.

### Camp Activities and Locations

The activities you will participate in are hosted by various departments meaning you will be travelling to various buildings around the University of Toronto and will get a chance to experience first hand the facilities at the University.

### Instructors and Counsellors

You will have four camp counsellors who will be with you during your entire time at camp. They will meet you, escort you to different activities, supervise your lunchtime break and are available for any questions you might have. Your instructors will come from the different departments and will each have different insights and information to provide you with. These instructors come from wide range of backgrounds including faculty, graduate students, postdoctoral fellows and staff from the University.

### Classroom Expectations

All camp participants are expected to respect program staff, counsellors and other participants as well as their surrounding environment, including materials, equipment, facilities and areas at the University of Toronto.

Discrimination, harassment and bullying will not be tolerated and may result in the removal of the offending participant from the program. Please refer to our Code of Conduct for further information.

Students are responsible for their personal property. The University is not responsible for lost items and does not provide any insurance coverage for personal belongings.

### Electronic Devices

Please note that the use of personal mobile electronic devices (cell phones, iPods, laptops, hand-held gaming devices, etc.) is not permitted in the sessions and workshops unless otherwise directed.

### What to bring to camp

- A copy of this package
- Provincial Health Card
- Any medications you require (puffers, EpiPen, etc.)
- Sunscreen
- Notebook, pens, pencils, a ruler and a calculator

### Getting Here

While here you will be working in various locations across the campus as you explore various subject areas throughout the week. However, each day will start and end in the McLennan Physics building located at 60 St. George St. Please see the map on the right.

We ask that students arrive by 8:45 am each morning to room 111/Grad Lounge, where you will be met and escorted to your classroom for the day. There will be signage in the lobby pointing to the Lounge. The lobby can be accessed directly from St. George St. by walking through the courtyard and through the doors. It can also be reached from Huron St. by walking up the stairway and through the doors.

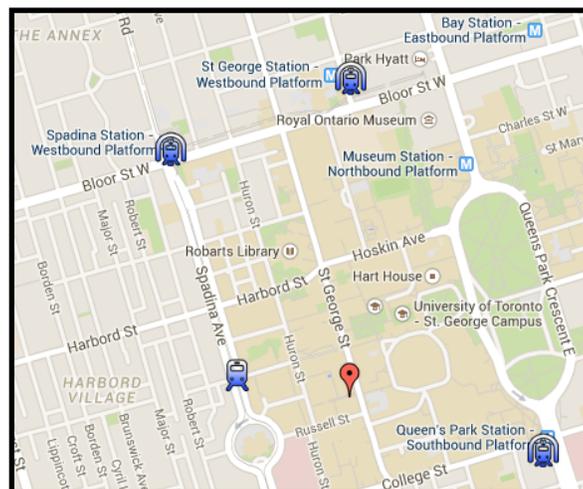
### Parking and Transit

Short term paid parking is available on Huron St. and Russell St., and a few spots on St. George St. as well.

Daily parking is available underground off Huron St. (just south of Russell) or on King's College Circle.

However we highly recommend taking public transit via subway to St. George St. or Queen's Park stations or the College streetcar line stops at St. George St.

More information on parking and transit can be found here: <http://www.transportation.utoronto.ca/>



## Program

### Astronomy

Over 100 years ago, Einstein's theory of General Relativity revolutionized the way we think about space and time. Rather than being static, he discovered that space-time is a malleable fabric that can be stretched and bent to form gravitational lenses, black holes, wormholes, and other exotic phenomena. In this session, we'll explore the mind-bending consequences of this theory using a simple experiment. We'll then visit our digital planetarium to see some of the latest discoveries in this field. Finally, we'll take you up to the observatory to see our large collection of telescopes, and if the weather cooperates, we'll use them to try to catch sun spots and solar flares in the act.

### Atmospheric Science

#### *Using Physics and Chemistry to Measure the Atmosphere*

Although the term climate change has become commonplace in our everyday language, few people actually know how climate-related data are measured and analyzed. This session will introduce you to a variety of instruments that make climate-related measurements of the atmosphere. You will participate in a series of climate-science activities including investigating cloud formation and the chemistry of aerosols by creating clouds in the laboratory; learning how to measure aerosol optical thickness using a sun photometer; and exploring the electromagnetic spectrum and the physics of light through spectroscopy by constructing a spectroscope and examining the spectra of various light sources.

### Computer Science

Computer science and information technology have always had connections to the sciences, but never as much as they do today. As new technologies develop, they allow for the possibility of new scientific discoveries and solutions to huge scientific challenges. By creating a single computer program, one can solve problems that might otherwise take an army of scientists years to figure out. In this workshop, using video gaming as a framework, we'll show you some of the basic tools of computing and how they can be applied to a variety of scientific problems. By the time you're done, you'll see how computers and technology might be applied to physics, chemistry, biology and forensics to represent and solve all sorts of cool problems!

### Chemistry

#### **Berry Solar Cells!**

Why are berries so brightly coloured? It's actually because they absorb a lot of light - raspberries look bright red because they absorb the other colours of light, so the light they reflect into your eye looks red. We will use the energy of the light they absorb to make electricity! You will get to extract dye from berries and build your own dye-sensitized solar cell using conductive glass, titanium dioxide nanocrystals, and an iodine electrolyte solution

### Earth Sciences

Earth Sciences encourage you to ask questions of your home planet. This session will take a hands-on approach using microscopy of rocks, minerals and plants to better understand the properties, processes, resources and history of the planet. Students will also analyze near-surface geophysical data collected at a forensic site.

## Mathematics

### ***Math: It's All Around***

Mathematics is in everything we see and everything we do, it surrounds us. From data encryption to fractal patterns in nature, math is everywhere and touches on just about everything. Come join us for some great hands-on activities showing the world of mathematics. The math portion of this program will focus on showing you some basic concepts in math that have far-reaching and fascinating effects and will introduce you to both pure and applied math topics.

## Physics

### ***Cosmic Rays***

Subatomic particles from space, called cosmic rays, are constantly raining down on us -- without us even knowing it. With some magical chemistry using dry ice and isopropyl alcohol, you can turn an ordinary fish tank into very your own "cloud chamber", a simple particle detector that will show you the cosmic rays!

### ***Magnetic Propulsion***

We will explore the interactions between magnetic and non-magnetic materials that are employed in propulsion technologies for land and water based vehicles. Students will learn about the physics underlying these technologies while enjoying the demonstrations. As an added bonus there will be an interesting hands-on activity for students, but the details are a secret!

### ***Scientific Computing in Physics***

Scientific computing is a major tool in physics research. In this workshop, students will learn about computer simulations of physical systems. How does one computerize the laws of physics? How does one model collisions? How do the approximations in computer models compare with reality? Simple models of projectile motion and collisions will be investigated in an effort to build a physically accurate "Angry Birds" simulation. Then we'll build the real thing!

## School of the Environment

### ***COBWEB Simulation Program***

This session provides students with an introduction to complexity using interactive activities and the COBWEB simulation program. The interactive activities are used to introduce a conceptual framework for discussing complexity (attractors, resilience, collapse, sensitivity to initial conditions, self-organization, agent-based modelling, game theory). These interactive activities are drawn from branches of mathematics (number theory and game theory) as well as physics and computer science. COBWEB has been used to represent a range of systems from neuroscience to ecology to geography to sociology. We will use some of these systems to explore how complexity can be used to understand the behaviour of a large number of systems. COBWEB also has built in modules for game theory (Prisoner's Dilemma) and spatial probability. Students will get an introduction to complexity, simulation and experimental design. They will also be able to obtain the software at no cost.

## Schedule

The camp runs from Monday to Friday. The day begins at 8:30am and end at 4:00pm.

Please arrive between 8:30am-8:45am in order to sign in and make your way over to the day's workshops.

Workshops will finish at 3:30pm, at that time you will make their back to 60 St George St to sign out and collect your belongings. You will be ready to be picked up by about 4:00pm or if you have permission to leave by yourself, you can leave after you have signed out.



## Policies and Procedures

### Health Insurance

#### Canadian Residents

Please bring your provincial health card and keep it with you at all times. Your card is required to gain access to health services in Ontario. If you are from outside the province, Ontario will bill your home province based on the information on your health card.

#### Non-Canadian Residents

You must purchase health insurance PRIOR to arriving in Canada. Please ensure you bring all health insurance documents with you and keep them with you at all times.

### Absences

Students are expected to arrive on time and participate in all programs provided. Attendance will be taken each morning by camp staff and any students absent without prior notice will have a call placed to their contact person. If you must miss a camp activity for any reason written permission needs to be obtained prior to the start of camp. In the case of illness please call our main office at 416-978-2231 before 9:30am.

### Meals

Students are encouraged to bring their own lunch for the camp as space will be provided for them to eat. Refrigerators and microwaves will be made available.

If students wish to purchase lunch there are a number of on/near campus options for food. In order to travel off campus for food, students must first have parental permission and must travel in groups of no less than 3 (with all members of the group being over 16 years of age).

On the Friday, there will be a complementary pizza lunch.

Please ensure that we are made aware of any allergies prior to the start of camp (see page 9).

### Refunds

Refunds minus \$49 can be issued before **June 30th**. After that, no refunds will issued. In addition, there are no refunds for absences or missed days.

### Scents

Please note that the University of Toronto follows a guideline on the use of perfumes and scented products (<http://www.ehs.utoronto.ca/resources/HSGuide/Scent.htm>). As such we ask all camp participants to respect these guidelines and refrain from bringing and wearing perfumes, colognes and other scented products during the camp.

### Emergency Contacts

Since you will not be permitted to use cell phones during camp time, if anyone needs to reach you they may call our main office at 416-978-2231 and a counsellor will be able to quickly find you. If you need to reach someone for an urgent matter you may ask your instructor to escort you out of the classroom and place your call.

### Emergencies and Directions

If for some reason you get separated from the group you can call the Department of Physics reception at 416—978-2231 and someone will be able to help you. In addition, you may wish to download the UofT iPhone app which can be very useful for navigating the campus and showing the locations and contact information of buildings, departments and even food vendors. Campus police can also be reached at 416-978-2222 (urgent), 416-978-2323 (non-urgent) or call 911 in an emergency.

## Code of Conduct

To attend the University of Toronto's Summer Science Camp, we require you to read and abide by our Student Code of Conduct. This Code of Conduct highlights behavior policies to keep everyone safe.

This Code outlines our general expectations on behaviour and the consequences of violating the codes. Violations of the codes are divided into "Major" and "Minor" categories. Incidents may be categorized as either "Major" or "Minor" by camp staff depending on the context.

### Major Offences

These offences are considered major as they break, or attempt to break, the Student Code of Conduct as informed by Ontario and Federal law, the Ontario Camping Association standards, and University of Toronto policy. This includes, but is not limited to:

- abusive (physical, sexual, emotional) or violent behaviour, including harassment and bullying, towards any member of staff;
- dropping or throwing objects, such as bottles or food, from, at or within the classrooms;
- sexist, racist or homophobic behaviour which is likely to promote or produce an atmosphere of hostility or intolerance in the classrooms;
- inappropriate physical contact;
- possession of illegal drugs;
- being under the influence of illegal drugs;
- a minor (under 19) in possession of alcohol;
- a minor (under 19) under the influence of alcohol;
- anyone above the age of majority (19) providing alcohol to underage students;
- possession of weapons, firearms or explosive devices;
- vandalism or destruction of property.

### Minor Offences

A minor offence will be judged as any violation of the Student Code of Conduct that does not carry a criminal charge and does not pose a serious safety risk. This includes, but is not limited to:

- skipping sessions or workshops;
- failure to cooperate with requests from camp staff members;
- unsanitary behaviour;
- leaving a scheduled activity without permission;

### Disciplinary Action

#### Major Offences

All major offences will result in immediate expulsion. The police may be called. Students will be asked to leave immediately and the cost of their return home will be the sole responsibility of the student and their parent/guardian. Refunds will not be issued.

#### First Minor Offence

Student will be issued a written warning. Parents may be contacted. Students and parents will also be cautioned that a second offence could result in expulsion.

#### Second Minor Offence

A meeting will be called between the student, a camp staff member and a representative of the Department of Physics to determine the action to be taken. Parents will be contacted. If an alternative solution cannot be agreed upon, the student will be asked to leave the program immediately and the cost of their return home will be the sole responsibility of the student and their parent/guardian. Refunds will not be issued.

#### Third Minor Offence

If a student is allowed to stay after the second offence and a third offence occurs, the student will be asked to leave the program immediately and the cost of their return home will be the sole responsibility of the student and their parent/guardian. Refunds will not be issued.

### Absences & Attendance

All students are expected to participate in and be on time for all activities. Students who do not wish to participate in a particular event must inform the staff in order to work out a mutually-beneficial outcome in accordance with camp policies.

### Boundary Policy

For lunches, students who have parental permission to travel off-campus, may do so in groups of 2 or more. Students must stay in the boundaries of Bloor to Dundas and University to Spadina and are to stay with their group at all times. Students must sign out for lunch and back in with their leaders.

## Consent and Information Form

Please ensure this form is returned by **July 31th, 2018** to the Department of Physics via mail or email to:

**Department of Physics**

University of Toronto  
60 St. George St. Toronto  
Ontario M5S 1A7 Canada

[outreach@physics.utoronto.ca](mailto:outreach@physics.utoronto.ca)

Student Name:	
Age:	
Emergency Contact Name:	
Emergency Contact Relation:	
Emergency Contact Phone Number:	
Emergency Contact Alternate Phone Number:	
Any Special Requirements:	

**Student Consent**

I \_\_\_\_\_, consent to follow and abide by the policies, procedures and Code of Conduct of the Science Unlimited Summer Camp as outlined in this package.

Signature - Student \_\_\_\_\_ Date \_\_\_\_\_

**Photography Release**

I give the University of Toronto permission to reproduce photographs taken at the 2018 Science Unlimited Summer Camp, and I agree that the University of Toronto is entitled to use the photographs described above in promotional materials.

- I am eighteen years of age or over
- I am the parent/guardian of the participant whose name appears as consent on the next page and I consent to these conditions.
- I do not give permission for the University of Toronto to reproduce photos that I appear in

**Student Arrival/Departure (please check one)**

- Student will be arriving and is allowed to depart on own.
- Student will be dropped off/picked up and must wait for a parent/guardian.

**Student Permission to travel for offsite (please check)**

- Student has permission to travel off campus for lunch.

**Student Health Record (circle correct reply)**

1. Has any allergies (including allergies to medication): Yes No
2. Has had recent injuries or accidents requiring medical attention:
 

Yes	No
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3. Has had a sickness lasting longer than one week within the past 12 months:
 

Yes	No
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4. Takes medication on a regular basis:
 

Yes	No
-----	----
5. Has a condition presently under a physician's or dentist's care:
 

Yes	No
-----	----
6. Is there any reason this student should not take part in any physical activity:
 

Yes	No
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If the answer is Yes to any of the above please explain:
7. Has completed poliomyelitis immunization by injections (Salk) or vaccine by mouth (Sabin):
 

Yes	No
-----	----
8. Has had tetanus toxoid and booster inoculation within the past 10 years:
 

Yes (Date: _____)	No
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9. Is in general good health with no serious physical impairments:
 

Yes	No
-----	----

If the answer is No to any of the above please explain:

## Consent and Information Form

please ensure this form is returned by **July 31th, 2018** to the Department of Physics via mail or email to:

**Department of Physics**

University of Toronto

60 St. George St. Toronto

Ontario M5S 1A7 Canada

[outreach@physics.utoronto.ca](mailto:outreach@physics.utoronto.ca)

Students will be provided with safety training to help them work safely in the laboratory environment and on departmental chemical waste disposal and emergency procedures. The students will be closely supervised at all times by experienced graduate students and professionals.

However, as you are aware, working in a laboratory does pose some risk that can result in exposure to chemical and physical hazards. The University of Toronto and the departments participating in the Science Unlimited Summer Camp do not provide any health or accident insurance coverage for your students and cannot assume any responsibility for injury to them or for loss or damage to personal property while on University of Toronto premises.

The students must agree to abide by the University of Toronto policies and procedures concerning safety and by departmental health, safety, and waste disposal rules as per documented instructions. Copies are available in departmental offices or web sites for you to review. The website links are:

<http://www.astro.utoronto.ca/resources/health-safety/>

<http://www.chem.utoronto.ca/safety/>

<http://www.es.utoronto.ca/about/health-and-safety-information/>

<https://www.physics.utoronto.ca/physics-at-uoft/services/health-and-safety>

Indicate your agreement with the conditions described here by signing this consent form.

I/We \_\_\_\_\_ and \_\_\_\_\_ hereby consent to the participation of the above named student in the 2018 Science Unlimited Summer Camp (August 13th-17th, 2018) and agree to release, indemnify and hold harmless the University, its employees and agents, from all claims of every kind (including costs, expenses, and legal fees) for damages and all suits instituted for damages arising out of said Student's participation in the said Camp, including specifically, but not limited to, those resulting from injuries occurring to said Student and caused by the negligence or malfeasances of the said Student or the negligence or the malfeasance of the said University of Toronto and its employees and agents. Consent is hereby given for the above named student to participate in the 2018 Science Unlimited Summer Camp and in those activities arranged for participants in said Camp. To the best of our knowledge and information, the above named student is physically and mentally able to participate in all activities.

We further recognize and hereby acknowledge the right of the University of Toronto or its representatives to withdraw the above named student from said Camp for cause, including but not limited to, failure of the above named student to obey the rules of the Camp and/or reasonable rules of good conduct. Such a student will be returned home at the parents/guardians expense.

Signature - Parent/Guardian

Date

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Dear Parent/Guardian,

My name is Steve Engels, and I am a Ph.D. student at the University of Toronto. I run the computer science session for the Science Unlimited program, where we present a series of video games that teach children about STEM subjects. After trying a series of these games, your child will get to see how they're made and learn how to make games of their own.

With your permission, I would like to ask your child to provide feedback on the games that they play, as part of my research on how to make educational video games into better learning tools. This letter is meant to tell you more details about the research I'm doing and what your child's involvement would be, followed by a form that you sign to indicate whether you agree to be part of it or not.

### Educational Gaming Research

There is a growing movement toward creating more interactive learning experiences, and educational gaming in particular can make education be more engaging, give immediate feedback to students, and allow students to share their work with teachers and peers. I expect that this research will provide great insight on creating enthusiasm for self-paced learning, and I plan to present the findings in journals and at conferences for other teachers and researchers.

### Research Studies in General

The program leaders for Science Unlimited have agreed to be part of my research study on educational video game design. Proper research studies also require consent from you and your child in order for us to collect any data from your child during our activity. If you or your child choose not to participate, this will not affect your child's ability to take part in the activities mentioned at the beginning of this letter (playing educational games and learning how they work).

If you and your child agree to participate, we will conduct a short interview after playing each game, to get feedback on how effective they are as learning tools. Your consent is completely voluntary and can be withdrawn at any time while we are working on this research. If at any point you decline to participate, I will not include your child in the study, nor will I interview him or her.

The data we collect will consist of your child's age, grade level and gaming experience, but will not include an identifying information (such as his or her name), nor will it include any way to contact them after the study. We anonymize the data we collect, and only present statistics across the entire pool of data when we present our findings.

Any information collected during this research will be stored in a locked cabinet in my room for five years after the completion of the study and then destroyed. I will ensure that no one knows your child has taken part in my research by using pseudonyms for all people and the school.

### This Research Study

My observations will take place on August 13, 2018 and will involve the 50 student attendees at Science Unlimited. I will be observing the children while they are playing the educational games and getting their feedback during their play sessions. In addition to asking for your consent, I will also invite your child to participate in this research. If you both agree, I will take notes and use an audio recording to transcribe your child's feedback following the activity. Finally, I would like to interview your child before and after playing the game about the science and math concepts that the game is meant to teach, with specific questions about their reaction to the game.

Here is a sample list of questions that I will ask:

On a scale from 1 to 7, how much did you enjoy this game?	How could the game have been more effective, or what were you expecting?
How long do you think you've been playing?	How would you describe this game to others?
What was the most challenging part?	What was your favourite part of the game?
How difficult was the game? (scale from 1 to 7, 1 being easy, 7 being hard)	What was your least favourite part of the game?
What was the game about?	What did you learn from this game?
On a scale from 1 to 7, how much did you feel you learned about ____? (1 for no learning, and 7 for a great deal)	How interested are you in learning more about this material? (scale from 1 to 7, 1 for not interested, 7 being very interested)

After providing feedback on the game, your child will learn about how these games were made, and taught how to make games of their own.

There are numerous benefits that your child may experience from participating in the study. Firstly, the educational content of the games. Secondly, the motivation to learn more about these science and math subjects. Finally, the understanding of how these games are made, and how anybody can make games of their own.

### Once You've Decided

If you choose to consent to your child's participation in this research, please sign and return one copy of the attached consent form and keep a copy of this letter and the consent form for your records. If you would like a copy of my final report, please check the appropriate box on the consent form. I would be happy to answer any questions or concerns you may have, if you contact me at [sengels@cs.utoronto.ca](mailto:sengels@cs.utoronto.ca). You may also contact my supervisor, Dr. Jim Hewitt at [jim.hewitt@utoronto.ca](mailto:jim.hewitt@utoronto.ca) or 416-978-0123, and may contact the University of Toronto ethics review office at [ethics.review@utoronto.ca](mailto:ethics.review@utoronto.ca) or by telephone at 416-946-3273.

Thank you for your consideration of this request.

Steve Engels, PhD Student  
Ontario Institute for Studies in Education/University of Toronto

Please return one signed copy and retain the other for your records.

*CONSENT FOR PARTICIPATION IN EDUCATIONAL RESEARCH*

I agree to my child's participation in Steve Engels' research study. He has explained in writing the purpose of the study, what my child will be asked to do and how much time it will take. I have had the opportunity to get additional information regarding the study from my child's teacher. My questions have been answered and I know I can ask more questions about the research later. I understand that I can say no and that my child can withdraw from the research study at any time without any negative consequences.

I understand that the researcher working on this study will keep the data confidential. He will keep my child's identity anonymous by using pseudonyms for my child, the teacher, and the school. I understand that the researcher intends to present findings in magazines and conferences. I understand that the researcher will observe my child's class, and there will not be any out-of class assignments because of this research.

I understand that if I have questions or concerns, I can contact the researcher.

Finally, I say that I have read and fully understand the consent form. I sign it freely and voluntarily.

Date: \_\_\_\_\_

My child's name \_\_\_\_\_

My Name (please print): \_\_\_\_\_

\_\_\_\_\_  
*Signature*

Please send the results of the study \_\_\_\_\_ Yes \_\_\_\_\_ No

Email address: \_\_\_\_\_