Grant Reader Comments: This project should be viewed with an eye to the excellent level of creativity and student engagement in learning and sharing learning about energy.

Project name: A Student Run TEDx Youth Conference
Total amount of request: $10,000
Grade level(s): Grade 7, Grade 8, Grade 9, Grade 10, Grade 11, Grade 12
Number of Students: 100
Number of Teachers: 13


Relates to topic(s): This project is a combination of a variety of energy topics coming together to form the basis of the 2nd annual TEDx Conference held at our school. Specific topics related to energy include:

Our grade 7 & 9 science classes will look specifically at renewable and alternative energy sources through units on energy generation and plant energy.

Energy perspectives will be the domain of our sports medicine class. They will be using fitness trackers to look at human energy potential.

Energy technology & innovation will be represented through one of our distinguished alumni. The CEO of Organo Energy has been willing to give his time and energy to our students in many instances and again will be available to discuss the business he has created around waste management in the oil sector. We will also have a variety of community partners on hand to show students energy careers in the future.

Summary: This project aims to tell our school story of Energies. In conjunction with our 2nd annual TEDx Conference, our students will be investigating stories of energy through scientific and human perspectives in their core academic classes. The most compelling stories will be coached and refined to become TEDx talks for presentation at the annual TEDx youth conference held at our school. Students who are not actively working on presenting their own energy story will be able to participate through a number of behind the scenes technical roles pivotal for a successful conference.

Safety: There will be specific safety protocol surrounding basic school science lab guidelines. At the TEDx event and prior to the conference the main safety concerns are tripping hazards, electrical safety during set-up/take down, and student on-line presence. These concerns will be addressed in advance ensuring safety measures are practiced through drill prior to the event. Electrical concerns will be reduced through careful supervision and planning. Student on-line presence is continually addressed through our health curriculum and efforts will ensure that student information is not shared.

For an event like this, sometimes we see teachers saying ‘No safety issues’ - this application has done a good job keeping the entire project in mind and identifying potential issues. You do not need to go looking for safety issues, but pointing them out demonstrates a full grasp of your project.

PROJECT DESCRIPTION

Student Learning and Experience

Our school has been granted a TEDx Conference licence. In the spirit of ideas worth spreading, TEDx is a program of local, self-organized events that bring people together to share a TED-like experience. At a TEDx event, TEDTalks
video and live speakers combine to spark deep discussion and connection in a small group. These local, self-organized events are branded TEDx, where “x” represents an independently organized TED event. The TED Conference provides general guidance for the TEDx program, but individual TEDx events are self-organized (subject to certain rules and regulations). Our licence is for a youth event that is organized by both teachers and students in our school.

The theme for our 2nd annual TEDx Conference will be Energies. In conjunction with our licenced TED-Ed Club and curricular outcomes, our students will be working towards presenting their learning, ideas, and stories in regards to ‘Energies’ at the conference. A TED-Ed Club is a flexible, school-based program that supports students in discussing, pursuing and presenting their big ideas in the form of short TED-style talks.

Within this framework, there will be multiple points of entry for different grades. Students will be working within their grade specific projects with the best of the class coached into creating a TED talk for presentation at the conference. Additional community speakers will also be present for students to learn about different forms of energy. As this is our second conference, we are looking to expand on our previous audience of approximately 100 people, embracing more individuals from within our student body as well as the rest of our school community.

Each of the entry points listed below will be cross-curricular working within the framework of the current program of study, but also keeping in mind the mandate of the Inspiring Education Ministerial Order of students being engaged, entrepreneurial and ethical citizens.

Math outcomes will be prevalent throughout this project. Students will need to use a variety of skills to analyze and display their findings in mathematically appropriate ways. Students will be taught a variety of basic statistic applications to allow them to make intelligent conclusions and inferences about the data collected during each inquiry activity.

Grade Specific Student Entry Points:

Grade 7

Grade 7 students will enter into this project through the Plants for Food and Fiber unit of the science curriculum. In a pre-existing project, students will be planting fast growing food crops in greenhouse and lab conditions to make a determination of which treatment produces the highest yield. Students will take their yield and energy use data to reach conclusions about which growth environment is the most sustainable. In conjunction with Grow Calgary and Calgary’s Interfaith Food Bank, students will also have an opportunity to support their community with all crops donated to the Food Bank. Students will be working to share their stories of plant production through both scientific and narrative means.

Specific outcomes for grade 7 include:

- Investigate practical problems and issues in maintaining productive plants within sustainable environments, and identify questions for further study
- Investigate life processes and structures of plants, and interpret related characteristics and needs of plants in a local environment
- Describe methods used to increase yields, through modifying the environment and by creating artificial environments
- Investigate and interpret variations in needs of different plants and their tolerance for different growing conditions
- Describe life cycles of seed plants, and identify example methods used to ensure their germination, growth and reproduction
- Identify questions to investigate arising from practical problems and issues
- Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data
- Relate the factors that influence individual food choices to nutritional needs of adolescents

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Grade 9

Grade 9 students will enter into this project through the Electrical Principles unit of the science curriculum. In a pre-existing project students will be given solar, wind, and hydroelectric turbines with the goal of understanding electricity generation from these alternative energy sources. They will research various models to collect current and voltage data.

Grade 9 students will be responsible for formulating testable hypotheses relating to one or more of the available turbines. Students will have scaffolded inquiry benchmarks that must be met prior to completion of the project. Students will analyze their data allowing them to apply what they have learned to industry examples. Students will work in conjunction with their ELA classes to create polished presentations of their work.

Students will investigate:

- Use of devices to convert various forms of energy to electrical energy
- Evidence of energy transfer and transformation
- Devices used for transforming mechanical energy into electrical energy
- Voltages and amperage in circuits
- Describe technologies for transfer and control of electricity
- Identify and evaluate sources of electrical energy
- Rephrase questions in a testable form, and clearly define practical problems
- State a prediction and a hypothesis based on background information or an observed pattern of events
- Formulate operational definitions of major variables in the study of electrical circuits
- Conduct investigations into the relationships between and among observations
- Use materials safely
- Analyze qualitative and quantitative data
- Test the design of a constructed device or system
- Identify and suggest explanations for discrepancies in data
- Identify potential sources of error
- Work collaboratively on problems; and communicate ideas, procedures and results
- Work cooperatively to develop and carry out a plan, and troubleshoot problems as they arise
- Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means

High School CTS

The high school sports medicine option will enter this project by looking at energy perspectives. These students will look specifically at human energy through the use of fitness trackers and heart rate monitors.

Students will be required to create a proposal of how they can use these devices to analyze the cardiovascular competencies and nutrition requirements of the wearers. Students will also be asked to think about the impacts of energy usage regarding nutrition and caloric intake of the wearer. For example, do diets high in protein require more energy to maintain? With teacher coaching, students will put their proposals into practice collecting and analyzing data. Students will be required to present their data using scientific and narrative means.

Students will be encouraged to make connections between their findings and novel concepts, such as human step electricity generation, when discussing the idea of human energy.

Specific curricular CTS outcomes:

- Evaluate the dimensions of wellness and factors affecting personal wellness

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• Analyze food choices and their effects on health and wellness
• Prepare an effective oral presentation

Within this project, there are also many opportunities for our students to connect with community partners. Two secured partners are COSIA (Canada’s Oil Sands Innovation Alliance) and Organo Energy. Both of these companies have interesting energy perspectives and will further allow our students to see a broader picture in the energy sector.

ELA 7-12

Although much of the focus upon this project is directly related to the science and math behind Energies, there are specific ELA outcomes that all students who participate in the inquiry projects listed above will need to further develop and master so as to convey their learning, enlarge their perspectives and develop their original ideas. The skills of effective communication, collaboration, design thinking, research and mindful text creation are skills specific to ELA both for our Junior High and Senior High students. Furthermore, those students who go on to develop talks about their projects for the TEDx Conference, or those students who wish to further pursue the theme of Energies in all of it’s possible manifestations through our sanctioned TED-Ed Club will practice, develop, and gain mastery in a number of ELA outcomes:

ELA 7-9

• Explore thoughts, ideas, feelings and experiences in order to discover, explore, clarify and extend ideas and new perspectives
• Comprehend and respond personally and critically to oral, print and other media texts with the intent to be able to create an original presentation
• Manage ideas and information effectively through the research, inquiry, and design thinking planning process
• Enhance the clarity and artistry of communication so as to produce presentations that effectively communicate a student’s learning and perspectives

ELA 10-12

• Respect, support and collaborate with others throughout the inquiry process so as to better develop collaborative skills that strengthen the school community.

Excellent cross-curricular opportunities and the applicant has done an excellent job pointing out how the curriculum and the activities interact.

Creativity

Energy surrounds us in every aspect of our lives. By examining energy both in a traditional sense (including renewable and nonrenewable sources) and in a non-traditional sense (creative, collaborative, physical, intellectual, entrepreneurial and social) we are hoping our students begin to see not only connections with energy and their own lives, but also the need for a multidisciplinary approach to creating and harnessing ‘energies’ that sustain human life in all of its complexities. By examining the concepts and realities of ‘Energies’ as an all-encompassing, multi-disciplinary topic that will engage much of our school community, we will design learning experiences that not only address curricular objectives of the Alberta Curriculum in ELA, Science, Math, Physical Education, Social Studies and the Creative Arts, but more importantly, give precedence to student voice and interests, thus engaging

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and motivating our students to potentially embrace life-long inquiry and practice in all areas of ‘energies’.

In conjunction with the specific projects listed in the student learning and experience section of this grant, we intend to also use our current TED-Ed Club program to enable student-interest driven inquiry projects focusing upon exploration of a wide range of energy topics which will be shared with both the school community at our school wide academic fair and the global community at our annual TEDx live event.

This project aims to stimulate the creative and collaborative energies of our student body by providing leadership opportunities via the TED-Ed Club program and our TEDx event. Such roles could be: event (co-organizers, curators of content, social media management, event design, event marketing, and event tech team).

This project will provide specific instruction and learning opportunities for students in terms of inquiry based learning skillsets. Students need competencies in the following skills: effective internet searches, effective research using print materials, effective information management for both print and digital sources, assessment of source validity, correct citation of sources, appropriate use of sources (where to access creative commons materials), accessing mentors and help outside of their school, inquiry based planning methods, design thinking methodology, and collaboration etiquette.

Through this project our students will also develop tech skills enabling them to better share their ideas on global platforms: curation of content, masterful and ethical use of social media, specific tech skills in videography, photography, editing, audio engineering, and skills in event and logistics planning and management will be key components.

The fact that this project builds on an existing program within the school (The TED-Ed Club) does not reflect badly on creativity. Engaging existing school systems (environment clubs, leadership clubs, TED-Ed Clubs) and focusing attention on energy is something that can/should be considered. Being creative does not necessarily mean completely reinventing the wheel!

Timeline

September
- Initiation of TED-Ed Club & reveal theme of the TEDx conference to students
- Students think about topics of interest outside of project-based topics
- Behind the scenes organization of the TEDx event begins and continues until the conference in May

October to November
- Completion of sports medicine Human Energy project

December to January
- Working to secure community speakers and resources for conference

February to March
- Grade 9 students work to complete the alternative energy generation project
- TED-Ed Club and student organizers begin promoting conference with general student body
- Grade 7 students begin planting crops and foster relationship with the food bank
- TED-Ed Club students complete their talks

April
- Student and community speakers finalized
- Mentor and coaching sessions for student speakers begin

May
- Promotion of conference continues
- Mentor and coaching sessions continue for refinement
- Conference at the end of May

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June
- Reflection of conference occurs

Good level of detail in timeline - if it’s possible to be more specific, that’s certainly preferred, but judges do understand it is not always easy to nail down exact dates a year in advance.

Partnerships & Sustainability

This project allows for our students to work together to reach a common goal - successful execution of a conference! Within our school framework we have two things that are held close to the heart of the school our motto ‘We Move Mountains’ and our mission statement: To create a nurturing, engaging environment that provides an enriched, personalized education, preparing students for an ever-changing world.

This project, and all of the associated parts, fulfill both our motto and our mission. Students involved in this project will truly work together to move a mountain - A TEDx mountain, with all the moving and intricate parts that hosting an event of this calibre entails. They will also be provided opportunities to learn within an engaging environment. Students are expected to help personalize their education and as such, will be better prepared for the world of the future.

Through the nature of the TEDx conference, the students will have interaction with many stakeholders in the broader community. This will come in the form of energy stakeholders from the general public as well as those who call themselves part of the school community through alumni and parent relations. Also, by planning a conference that is multidisciplinary in its approach to energy, we are encouraging our students to embrace creative and innovative ‘out-of-the-box’ solutions and ideas that will widen their own perspectives and understandings about the nature of energy. As well, by being part of the TEDx world, students are automatically connected with a global family of creative and innovative thinkers sharing ideas, solutions and projects with each other. Students at our school will truly become members of a global community of solution seekers.

The budget for this project will allow for a successful conference as well as benefit many other departments and initiatives at the school. Although our TEDx conference is currently in its infancy, there is a dedicated group of teachers and students that aim to see this become part of the fiber that is sewn up in the school fiber. Some of the individual curricular parts of the project have come from previous BP A+ for Energy grant applications and continue to be refined each year to make them more impactful for the students involved.

This would have been a good point to describe the relationship with the former student and ‘COSIA’ mentioned earlier.

Evaluation Plan

As this project is multifaceted, the evaluation plan for this event will be quite dynamic.

Throughout this project students will be required to maintain detailed observations of their projects. This will be scaffolded by teachers as needed with a framework provided for student success. This may take the form of shared Google documents, drawings, photos, and e-portfolios. Depending on the grade level of the students expectations will differ with older students taking greater ownership over their assignments based on grade level abilities. All expectations will be provided to students prior to beginning an investigation.

Within curricular teams, teachers will evaluate the efficacy of each individual project based on the student ability to reach curricular outcomes related to energy as outlined above. This will be measured through formative and summative evaluation of students. Teachers involved in this process will need to complete a professional reflection of the individual projects to improve the project for subsequent years.

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The TEDx event will be evaluated by all attendees. As part of hosting a TEDx event, there are requirements that all attendees complete an evaluation of the conference. As is common practice, an ambassador of TEDx and/or members of TEDx events in good standing will be in attendance for evaluative purposes as well. The feedback collected will be used to refine the conference in future years.

A useful discussion could have been related to video recording and making the TED talks available online. These sorts of ‘summative’ activities are well regarded by the A+ for Energy Program, and will help you significantly in your final reporting! This is especially important in this project since the largest line item (that follows) is the HD video cameras.

Project Budget

<table>
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<tr>
<th>Expense</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Microphones (wireless headset mic) x3</td>
<td>$980</td>
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<tr>
<td>Battery pack for microphone</td>
<td>$200</td>
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<tr>
<td>Additional lighting</td>
<td>$400</td>
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<tr>
<td>HD video camera (x2)</td>
<td>$4,090</td>
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<tr>
<td>Fitness trackers (x10)</td>
<td>$2,500</td>
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<td>Video tripods</td>
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<tr>
<td>Memory cards for Camera</td>
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<td>Rocker control for camera</td>
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<tr>
<td>Video kit with tripods</td>
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<tr>
<td>Total expenses</td>
<td>$10,000</td>
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</table>

Explanatory notes: As a school, we have the scientific tools that we need to conduct our inquiry projects. However, for the Sports Medicine inquiry project we need the fitness trackers, as they will be the primary tool students use for diagnostics and data. The audio/video equipment might seem superfluous, but our project is ultimately about the “story” of our students and their exploration and inquiry into “Energies.” The delivery medium of this story is the “movie” of our TEDx event which, based upon the terms of every granted TEDx license, must be uploaded to the official TEDxYouTube Channel. Furthermore, from an ELA perspective, emergent and mainstream literacies of the 21st century include vlogging, shared content on multiple, video-heavy, social media platforms, the art of investigative journalism, the production of media, and the ability to be a capable editor and curator of aforementioned content. This equipment, just like the fitness trackers, provides students the ability to record the process of their inquiry projects, to use this film archive as feedback and evidence, and, most importantly meet all of the curricular outcomes listed in this grant proposal. Teachers involved in these projects can use this equipment to film their lessons, thereby creating an archive that is accessible by every student on demand. This equipment will also be used by our Fine Arts department (music, drama and art), by our Educational Technology program, and our emerging Audio/Visual club. The presence of this equipment will also provide students with the opportunity to learn valuable and marketable skills in terms of audio and film production and editing. Our school community also has a monthly speaker series on issues of interest and many Professional Development events. This equipment will enable us to create the quality audio and video we need in order to record and share that information.

This explanation is good (and does talk about publishing the videos on YouTube). Questions can arise in these sorts of budgets related to the specific items being purchased. In this case the applicant could have explained:

- Why two HD cameras?
- Why wireless headset mics?
- What is ‘Rocker control’?

Perhaps more detail on where the numbers came from in the budget would have been helpful as well.